U. S. DEPARTMENT OF COMMERCE National Bureau of Standards

FUNDAMENTAL PHYSICAL CONSTANTS

These constants were compiled by E. R. Cohen and B. N. Taylor under the auspices of the CODATA Task Group on Fundamental Constants, officially adopted by CODATA, and published in J. Phys. Chem. Ref. Data, Vol. 2, No. 4 p. 663 (1973), CODATA Bulletin No. 11 (Dec. 1973), and DIMENSIONS/NBS (Jan. 1974).

Quantity	Symbol	Num. value	Uncert.*	Units (SI)
Speed of light in vacuum	c	299792458	1.2	$m \cdot s^{-1}$
Permeability of vacuum	μ_0	12.5663706144		10^{-7} H·m^{-1}
Permittivity of vacuum, $1/\mu_0 c^2$	ϵ_0	8.854187818	71	10^{-12} F·m^{-1}
Fine-structure constant, $[\mu_0 c^2/4\pi]\,(e^2/\hbar c)$	α	7.2973506	60	10^{-3}
	α^{-1}	137.03604	11	
Elementary charge	e	1.6021892	46	10^{-19} C
Planck constant	h	6.626176	36	10^{-34} J·s
$h/2\pi$	$\hbar$	1.0545887	57	10^{-34} J·s
Avogadro constant	N_A	6.022045	31	10^{23} mol^{-1}
Atomic mass unit**	u	1.6605655	86	10^{-27} kg
Electron rest mass	m_e	9.109534	47	10^{-31} kg
Proton rest mass	m_p	1.6726485	86	10^{-27} kg
Proton to electron mass ratio	m_p/m_e	1836.15152	70	
Neutron rest mass	m_n	1.6749543	86	10^{-27} kg
Elementary charge to mass ratio	e/m_e	1.7588047	49	10^{11} C·kg^{-1}
Magnetic flux quantum, $h/2e$	Φ_0	2.0678506	54	10^{-15} Wb
Josephson freq.-voltage ratio	$2e/h$	4.835939	13	10^{14} Hz·V^{-1}
Quantum of circulation	$h/2m_e$	3.6369455	60	10^{-4} J·s·kg^{-1}
Faraday constant, $N_A e$	F	9.648456	27	10^4 C ; mol^{-1}
Rydberg constant, $\alpha^2/2\lambda_C$	R_∞	1.097373177	83	10^7 m^{-1}
Bohr radius, $\alpha/4\pi R_\infty$	a_0	5.2917706	44	10^{-11} m
Classical electron radius, $\alpha\lambda_C$	r_e	2.8179380	70	10^{-15} m
Thomson cross section	σ_e	0.6652448	33	10^{-28} m^2
Free electron g-factor, μ_e/μ_B	$g_e/2$	1.0011596567	35	
Free muon g-factor	$g_\mu/2$	1.00116616	31	
Bohr magneton, $e\hbar/2m_e$	μ_B	9.274078	36	10^{-24} J·T^{-1}
Electron magnetic moment	μ_e	9.284832	36	10^{-24} J·T^{-1}
Proton gyromagnetic ratio, H_2O	γ_p'	2.6751301	75	10^8 s^{-1}·T^{-1}
corrected for diamagnetism	γ_p	2.6751987	75	10^8 s^{-1}·T^{-1}
Proton magnetic moment	μ_p	1.4106171	55	10^{-26} J·T^{-1}
in Bohr magnetons	μ_p/μ_B	1.521032209	16	10^{-3}
in nuclear magnetons	μ_p/μ_N	2.7928456	11	
in H_2O in Bohr magnetons	μ_p'/μ_B	1.52099322	10	10^{-3}
in H_2O in nuclear magnetons	μ_p'/μ_N	2.7927740	11	
Electron-proton mag. mom. ratio	μ_e/μ_p	658.2106880	66	
Nuclear magneton, $e\hbar/2m_p$	μ_N	5.050824	20	10^{-27} J·T^{-1}
Compton wavelength:				
electron, $h/m_e c = \alpha^2/2R_\infty$	λ_C	2.4263089	40	10^{-12} m
proton, $h/m_p c$	$\lambda_{C,p}$	1.3214099	22	10^{-15} m
neutron, $h/m_n c$	$\lambda_{C,n}$	1.3195909	22	10^{-15} m
Muon-proton mag. mom. ratio	μ_μ/μ_p	3.1833402	72	

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Quantity	Symbol	Num. value	Uncert.*	Units (SI)
Muon magnetic moment	μ_μ	4.490474	18	10^{-26} J·T^{-1}
Muon to electron mass ratio ..	m_μ/m_e	206.76865	47	
Muon rest mass	m_μ	1.883566	11	10^{-28} kg
Molar volume, ideal gas, s.t.p	V_m	22.41383	70	10^{-3} m^3·mol^{-1}
Molar gas constant	R	8.31441	26	J·mol^{-1}·K^{-1}
Boltzmann constant, R/N_A	k	1.380662	44	10^{-23} J·K^{-1}
Stefan-Boltzmann constant ...	σ	5.67032	71	10^{-8} W·m^{-2}·K^{-4}
First radiation constant, $2\pi hc^2$	c_1	3.741832	20	10^{-16} W·m^2
Second radiation constant, hc/k	c_2	1.438786	45	10^{-2} m·K
Gravitational constant	G	6.6720	41	10^{-11} m^3·s^{-2}·kg^{-1}
Ratio, kx-unit to ångström, $\lambda(CuK\alpha_1)$≡1.537400 kxu	Λ	1.0020772	54	

ENERGY CONVERSION FACTORS AND EQUIVALENTS

Quantity	Num. value	Uncertainty*	Units
1 kilogram (kgc^2)	5.609545	16	10^{29} MeV
1 Atomic mass unit (uc^2)	931.5016	26	MeV
1 Electron mass (m_ec^2)	0.5110034	14	MeV
1 Muon mass ($m_\mu c^2$)	105.65948	35	MeV
1 Proton mass (m_pc^2)	938.2796	27	MeV
1 Neutron mass (m_nc^2)	939.5731	27	MeV

1 electron volt		1.6021892	46	10^{-19} J
1 eV/k		2.4179696	63	10^{14} Hz
1 eV/hc		8.065479	21	10^5 m^{-1}
1 eV/k		1.160450	36	10^4 K
Voltage-wavelength conv., hc .		1.2398520	32	10^{-6} eV·m
Rydberg constant	$R_\infty hc$ ..	2.179907	12	10^{-18} J
		13.605804	36	eV
	$R_\infty c$	3.28984200	25	10^{15} Hz
	$R_\infty hc/k$	1.578885	49	10^5 K
Bohr magneton	μ_B	5.7883785	95	10^{-5} eV·T^{-1}
	μ_B/h	1.3996123	39	10^{10} Hz·T^{-1}
	μ_B/hc	46.68604	13	m^{-1}·T^{-1}
	μ_B/k	0.671712	21	K·T^{-1}
Nuclear magneton	μ_N	3.1524515	53	10^{-8} eV·T^{-1}
	μ_N/h	7.622532	22	10^6 Hz·T^{-1}
	μ_N/hc	2.5426030	72	10^{-2} m^{-1}·T^{-1}
	μ_N/k	3.65826	12	10^{-4} K·T^{-1}

*Uncertainty (1 std. dev.) applies to last digits of preceeding column; μ_0 is exactly $4\pi \times 10^{-7}$ H·m^{-1}. For some entries, energies are given in non-SI units. For values in SI units, see revised reprint of the January 1974 DIMENSIONS/NBS article.

**10^{-3} kg·mol^{-1}/$N_A$$^{-1}$

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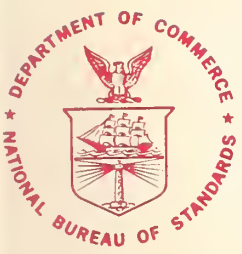

NBS SPECIAL PUBLICATION 399

Volume 1

U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards

NBS FORTRAN Test Programs

Volume 1—Documentation for Versions 1 and 3

NATIONAL BUREAU OF STANDARDS

The National Bureau of Standards [1] was established by an act of Congress March 3, 1901. The Bureau's overall goal is to strengthen and advance the Nation's science and technology and facilitate their effective application for public benefit. To this end, the Bureau conducts research and provides: (1) a basis for the Nation's physical measurement system, (2) scientific and technological services for industry and government, (3) a technical basis for equity in trade, and (4) technical services to promote public safety. The Bureau consists of the Institute for Basic Standards, the Institute for Materials Research, the Institute for Applied Technology, the Institute for Computer Sciences and Technology, and the Office for Information Programs.

THE INSTITUTE FOR BASIC STANDARDS provides the central basis within the United States of a complete and consistent system of physical measurement; coordinates that system with measurement systems of other nations; and furnishes essential services leading to accurate and uniform physical measurements throughout the Nation's scientific community, industry, and commerce. The Institute consists of a Center for Radiation Research, an Office of Measurement Services and the following divisions:

Applied Mathematics — Electricity — Mechanics — Heat — Optical Physics — Nuclear Sciences [2] — Applied Radiation [2] — Quantum Electronics [3] — Electromagnetics [3] — Time and Frequency [3] — Laboratory Astrophysics [3] — Cryogenics [3].

THE INSTITUTE FOR MATERIALS RESEARCH conducts materials research leading to improved methods of measurement, standards, and data on the properties of well-characterized materials needed by industry, commerce, educational institutions, and Government; provides advisory and research services to other Government agencies; and develops, produces, and distributes standard reference materials. The Institute consists of the Office of Standard Reference Materials and the following divisions:

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THE INSTITUTE FOR COMPUTER SCIENCES AND TECHNOLOGY conducts research and provides technical services designed to aid Government agencies in improving cost effectiveness in the conduct of their programs through the selection, acquisition, and effective utilization of automatic data processing equipment; and serves as the principal focus within the executive branch for the development of Federal standards for automatic data processing equipment, techniques, and computer languages. The Institute consists of the following divisions:

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THE OFFICE FOR INFORMATION PROGRAMS promotes optimum dissemination and accessibility of scientific information generated within NBS and other agencies of the Federal Government; promotes the development of the National Standard Reference Data System and a system of information analysis centers dealing with the broader aspects of the National Measurement System; provides appropriate services to ensure that the NBS staff has optimum accessibility to the scientific information of the world. The Office consists of the following organizational units:

Office of Standard Reference Data — Office of Information Activities — Office of Technical Publications — Library — Office of International Relations.

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[1] Headquarters and Laboratories at Gaithersburg, Maryland, unless otherwise noted; mailing address Washington, D.C. 20234.
[2] Part of the Center for Radiation Research.
[3] Located at Boulder, Colorado 80302.
[4] Part of the Center for Building Technology.

NBS FORTRAN Test Programs
Volume 1—Documentation for Versions 1 and 3

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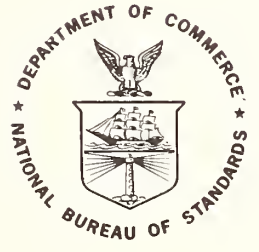

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FOREWORD

It has now become imperative, because of the multitude of computers on the market and the corresponding multitude of FORTRAN compilers, to develop a means of testing the overall quality of these compilers, thereby making meaningful comparisons possible. The National Bureau of Standards has sponsored a project to develop methods and tools to assist in the evaluation process. Before the evaluation process can be undertaken, it is necessary to develop a primary tool, such as a set of FORTRAN programs which can validate whether a FORTRAN compiler is in compliance with the FORTRAN specification as described in the American Standard FORTRAN document X3.9-1966.

In 1966 the National Bureau of Standards formulated the design criteria and specifications for the development of such a set of FORTRAN programs. The initial implementation of this design was performed, under contract, by the Advanced Computer Techniques Corporation in 1967. Since this time, these programs have been desk checked, computer checked, revised, extended, many test units replaced, and the system reorganized to improve the tests and decrease the difficulty of performing the actual validation process.

Version 2 of these test programs was prepared by NBS, under contract, for the Joint Technical Support Activity of the Defense Communications Agency.

The purpose of these FORTRAN programs is to assist in the validation of FORTRAN compilers. There is no attempt to measure the performance of the compiler or the object program efficiency.

Currently, the FORTRAN Standard, ASA X3.9-1966, is undergoing revision and the FORTRAN language is being extended by the X3J3 technical committee of the American National Standards Institute (formerly identified as the American Standards Association). The revised FORTRAN Standard will be considered for Federal adoption. This will, if approved, require that the test programs be revised accordingly.

The National Bureau of Standards wishes to thank the Bell Telephone Laboratories for the preparation of the camera-ready copy of the program listings derived from the NBS FORTRAN Test Program Distribution Tape. These listings appear in Volumes 2 and 3 of this report.

ABSTRACT

NBS FORTRAN TEST PROGRAMS

The NBS FORTRAN test programs, written in Standard FORTRAN, are designed to test whether a FORTRAN compiler accepts the forms and interpretations of the FORTRAN language as described in the American National Standard FORTRAN document X3.9-1966. The test programs, comprised of 116 test units, are structured into two versions, each containing approximately 14,500 punch card images. The test units may be used as separate executable FORTRAN programs, or may be linked end to end with other test units, with a minimum of user effort, to improve operating efficiency. Version 1 is structured into 116 executable FORTRAN programs, and Version 3, containing the same 116 test units, is structured into 14 executable FORTRAN programs for use on large FORTRAN processors.

The test program design criteria was to:

- Constrain all test programs to the FORTRAN Standard X3.9-1966.
- Reduce the effect of those areas in which the FORTRAN Standard does not prescribe a method or solution, e.g., range, precision, size of computer, etc.
- Simplify the use of the FORTRAN test programs.
- Test FORTRAN language elements before they are used in support of other tests.
- Maintain an open ended system so that tests may be changed or added.

The test programs require the use of a card reader, printer and one intermediate tape unit.

During the development of the test systems ten different computing systems were used, and the current set of tests were run on five major systems. The largest test unit required less than 3,000 words of memory and when structured into 14 executable programs the largest program required less than 6,000 words of memory to execute the compiled programs. The test units, for the most part, are straight line programs and during the debugging of the tests, less than 15 minutes was required to compile and execute the set of 14 structured FORTRAN programs, excluding card read and printer time.

The magnetic tape, containing the NBS FORTRAN Test Programs, Version 1 and Version 3, together with the documentation (3 volumes) is available from:

National Technical Information Service
Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22151

The magnetic tape is available in 800 cpi recording density in the following forms:

7 track even parity BCD, recorded from the FORTRAN H set punch card code (see FORTRAN Standard, Appendix D X3.9-1966)
9 track odd parity EBCDIC code
9 track odd parity ASCII code

Key words: Computer programming language; FORTRAN: FORTRAN validation; language validation; standards FORTRAN; test program design.

INTRODUCTION

This document, Volume 1 of three volumes, contains the documentation, including the systems design, operating procedures, expected test results and distribution tape organization for a set of FORTRAN Test Programs developed by the Institute for Computer Sciences and Technology, National Bureau of Standards. These test programs are written in ASA Standard FORTRAN and test the language elements described in the ASA Standard FORTRAN document X3.9-1966.

The NBS FORTRAN Test Programs, Version 1, contain 116 test units, each structured as an executable FORTRAN program.

The NBS FORTRAN Test Programs, Version 3, containing the same 116 test units, structured into 14 executable FORTRAN Programs, have been organized for use on large FORTRAN Processors for the purpose of reducing the number of systems control cards needed to perform the tests.

The NBS FORTRAN Test Programs, recorded on magnetic tape as approximately 14,500 punch card images for each version, contain the FORTRAN source language programs and data. Extensive FORTRAN comment lines are interspersed throughout the programs to enable the user to both run the programs and determine the nature of the tests without the need for additional documentation. The test results contain information related to the expected results.

Volume 1, Section I describes the system design, the programming techniques and conventions used in the program development and should enable the user to extend, alter or reorganize the test programs.

Volume 1, Section II defines the organization and operating procedure for performing the tests and contains a set of representative results obtained from actual running of the test programs on several FORTRAN processors.

Volume 1, Section III describes the order and location of each test unit and data as recorded on magnetic tape for distribution.

Volume 2 contains the program listings for the NBS FORTRAN Test Programs, Version 1.

Volume 3 contains the program listings for the NBS FORTRAN Test Programs, Version 3.

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NBS FORTRAN Test Program Results

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NBS FORTRAN Test Program Results

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A. FORTRAN TEST PROGRAM DESIGN

A1. Objective:

To develop a set of FORTRAN test programs, available to a wide range of FORTRAN processors with a minimum of user effort required to perform the tests. These tests shall conform to the ASA FORTRAN Standard X3.9-1966.[1]

A2. Design Criteria

a) To constrain all test programs to the FORTRAN language described in the ASA FORTRAN Standard X3.9-1966.

b) To reduce the effect of those areas in which the FORTRAN standard does not prescribe a method or solution; the programs must be adaptable to differing environments such as:

- Size of computer and I/O facilities.
- Power of the FORTRAN compiler as reflected in the size and complexity of a FORTRAN program.
- Variations in the range and precision of numeric values.
- Differences in form and media for submitting a program and data.
- Differences in procedures for compiling and running a FORTRAN program.

c) To simplify the use of the FORTRAN test programs.

- The cost of computer time for compiling and running must be kept to a minimum.
- The cost of human resources for the analysis of test results, determination of test failures and the comprehension of the test design must be taken into consideration in the system design.

d) To test FORTRAN language elements before they are used in support of other tests.

e) To maintain an open ended system so that tests may be changed or added.

A3. Design Considerations

It is recognized that any set of programs which is designed to test a complex set of specifications, such as ASA FORTRAN (X3.9-1966) can never test every interaction of every FORTRAN statement, with all permissible forms, in all permissible positions in an executable program. However, it is desirable to design a system such that those parts of the language which have been tested are relatively easy to determine and at the same time permit extensions to the system without extensive knowledge of the entire system.

The test programs must be designed with the realization that a FORTRAN processor might not accept various elements of the language and the action could be identified at one or more of the following times or conditions:

a) Compile time.

- The compiler might terminate without completion of the compilation and with insufficient information for the user to determine the cause.
- The compilation may be completed with diagnostic messages on the program listing, which as a general rule (although outside of the FORTRAN standard specification) assist in locating the trouble.

b) Link Edit and Load Time.

- The executable program may fail to meet the loader, etc., requirements-which may or may not be identified in the program listing.

c) Execution Time.

Conditions in the computer or compiler may produce improper machine code which causes the test program to be aborted before completion. (Any one or more of these conditions could occur prior to obtaining the test program results.)

d) Unexpected Test Results.

The running of the test programs could produce printed results which were different from the expected results. This can occur if:

- Some well defined element of the Standard FORTRAN language was implemented in the compiler in a variant way.
- Some ill defined part of the language was interpreted by the compiler writer different from the test program writers.
- An improper interpretation of the standard by the test program writers.
- An actual bug in the test programs.
- An actual bug in the compiler.

Because many unforseen difficulties can occur during the running of the test programs, where it will be necessary for the user to refer to the program listing to determine what elements of the language are being tested as distinct from those elements which must be used to support the test, it is imperative that the program listing be liberally interspersed with FORTRAN comment lines to assist the reader.

Because the FORTRAN standard document is a semi-technical specifications document without a rigid definition of the semantics of the language, the document is subject to interpretation differently by different individuals.

The ASA FORTRAN Standard is a reference standard and does not address the medium or its coded characteristics, so that the form of the FORTRAN program on a medium such as punched cards is outside the scope of the standard. However, because a common medium is punched cards, and the H-set punch card code was designed for FORTRAN, the H-set is deemed the most universally

accepted card code on which to prepare the FORTRAN test programs and data for a processor. If a processor does not accept this card code it is reasoned that a conversion routine probably does exist which could convert this set to the processor punch card code.

If the programs are to be available to both large and small FORTRAN processors the I/O facilities must be kept to a minimum. If the processor has a card reader then most likely a printer and either one tape unit or a disc would also be available, so that the test programs could be confined to these I/O devices.

In order to determine what capabilities existed for FORTRAN or FORTRAN-like compilers in 1966 when this project was initiated, a survey of the literature was made and specifications for forty compilers were compared. From this unpublished study, a "FORTRAN processor" was defined to contain the minimum range and precision of numeric values and the most limited program size which could be found among the forty compilers examined. This lead to the constraints used in the test programs which are described under Program Information Section I-D.

The assumption was made, because of the nature of FORTRAN, that all processors probably had something akin to "Compile-Load-and Go" as a form of operations.

Each test program, if it were to run on a small computer, must be limited in size. It is theoretically possible to test almost all characteristics of the language in a single executable program if a processor were large enough. However, it might be desirable to test a new compiler on a large computer for the first time with small test elements, so that any difficulties might be recognized more rapidly, while any later running of the test programs or updated versions of the compiler could be performed more economically if the test elements were combined into larger executable programs.

In order for the test units to be run independently and later combined into larger executable programs, as well as changed or expanded it was necessary to consider the following:

- The required positioning of certain FORTRAN statements such as specification statements and statement functions.
- The choice of symbolic names, such that they did not constrain the testing of elements of the language, and at the same time would not require the knowledge by the user of symbolic names which had been used when changes or expansion of the test were necessary.
- The allocation of statement labels so that duplication would not result.
- The handling of those aspects of a FORTRAN program which are not covered by the standard such as precision, size of program, number of arguments, depth of DO nesting, the number of subprograms, etc.

A4. Design Implementation

The FORTRAN test programs are not designed for use in debugging of a FORTRAN compiler. In fact, the assumption has been made that the compiler, for the most part, is working but may not have all of the FORTRAN language features available in the system.

Those elements of the language which are used in support of test units are limited to what can be considered "defacto FORTRAN". That is, language features which were not universally implemented in 1966 but which appear in the standard are tested but are never used in support of other tests. Therefore, such features as: extended range of a DO, the Gw.d format field descriptor, a constant of the form 26E1 containing no decimal point, etc., are not used after their appearance in a test unit.

The test program units, for the most part, are small main programs with straight line logic. Each test unit is implemented to be run as a separate test or linked end to end with another test. All data used within a program test unit is defined within that unit, except the tests for the FORMAT statement which require external input data to be read.

The selected order of the test units is dictated by the need for testing the basic fundamentals of the language so that these features may be used to support later tests. Certain elements of formatted READ and WRITE are tested first, so that test results can be written out.

The initial test of the DATA statement appears as an early test sequence because a constraint would be placed upon the use of symbolic names in other test units prior to the occurrence of the DATA statement test if the test appeared later in the set. Other appearances of the DATA statement are in a subprogram and as a format specification. These are for the purpose of the tests and no further use is made of this statement.

All testing is performed at the main program level except those concepts and associations which are unique to a subprogram. One test unit which is performed at the main program level containing a variety of FORTRAN statements is basically duplicated in a test unit which performs the same statements at the subprogram level. Other appearances of subprograms in the test set are basically for the purpose of argument association testing and for those FORTRAN statements which may occur only in a subprogram.

The FORTRAN statements used in the test units may appear, at first glance, to be nonsense operations. To comprehend the true meaning of the statement in a test unit, it is necessary to read the statement transforming the variable name or constant used into its attributes and utilization associated with an operator. Such an example might be: A one dimensional array element appearing in a common block is raised to the power of an unsigned integer constant.

To assist the test program implementors as well as the reader of the test programs, naming conventions described in Program Information,

Section I-D, have been used throughout the programs to convey the attributes of the name, which appear in specification statements, directly in the name itself, so that no reference need be made to the specification statements to comprehend this information. In addition, comment cards have been used freely in the test units to convey the nature of the test and the operations being performed.

The design of a computer program system for automatic insertion of operating system control cards and the linking of test program units was initiated. Further analysis into the problems has brought to light the potential difficulties of using the output of such a system and its doubtful economics. For the following reasons, this system has not been implemented:

- The lack of common terminology for similar functions among various operating systems control languages would cause difficulty in communicating with a wide audience the information required to be inserted into an automated system for producing the desired effect. For example, what is called a JOB card in one system is called a RUN card in another, while what is called a RUN card in another system may be called an EXECUTE card in the first system. Because similar terminology for operating system control functions is used for functions of the system at different levels of control, it would be necessary to describe levels of functions to a user, who might not be aware of this logic.

- The FORTRAN standard does not define the order of presentation to a compiler of program units, so that this becomes an additional burden to the user to comprehend when this order may not affect the majority of FORTRAN processors.

- Operating systems control cards may require special control punch codes which are outside the codes defined for data use. For example, a control card which contains a code containing the digits 6, 7, 8 and 9 in a single column on the card can be obtained only by a keypunch device with provisions for over striking in a single column.

- To produce punched cards from an automated system with special codes outside the normal punch card character set would require the software-hardware system to permit column binary cards to be punched. This facility, although available in the hardware of some systems is not available to the user because of software constraints. Of the computer systems surveyed, only one system permitted column binary cards to be produced and this facility is available only to the assembly language programming system.

- If cards can be produced by the column binary operations from the system, the device which interprets and prints on the card would not necessarily print the appropriate symbols, because codes for certain FORTRAN characters and the control card codes may have different graphic associations or no valid association.

- If the test programs with their interpersed operating systems control cards were placed on tape, there is no assurance that the receiving installation has provisions for using or even obtaining punched cards from such a tape. Although the images on tape would be in coded character representation for the receiving installation, the operating system may not permit the reading of control card sensitive information and the passing of it to an applications program for the purpose of producing punch cards. If the tape is read as a binary tape, the parity bit, record size, pulse code and blocking characteristics might not conform to the receiving computer's requirements.

Because of these numerous difficulties which may affect the user and the potential additional costs which may be encountered in preparing the test program information at the receiving installation, these test programs have been prepared for use without the inclusion of systems control cards.

To simplify the task of grouping test units together into larger programs for testing, and thus eliminate the need for an abundance of systems control cards to operate each test unit as a separate computer run, those cards which must be revised are identified in the test units as comment cards containing the characters "C=" in the first two columns. The FORTRAN specification statements taken from different test units require the elimination of duplicate names to conform to the language definition. To simiplify this task, symbolic names appearing in a "C=" specification statement will always appear in the same type of specification statement throughout the entire program test set, so that elimination of duplicate names is achieved by inspection of a collection of a similar type of specification statement. That is, if an array declarator in one program test unit is contained in an INTEGER statement, all other occurrences of that symbolic name in a specification statement will be in an INTEGER statement and not in a DIMENSION statement. See Structuring, Restructuring and Extending Test Programs, Section I-E.

A5. FORTRAN Concepts Excluded from the Test Programs.

Because the FORTRAN Clarification Reports [2, 3] do not have the status of updating the current ASA FORTRAN document X3.9-1966, extreme caution was exercised in making use of some of the interpretations in the FORTRAN test programs. The following FORTRAN Statements and concepts have been excluded from the FORTRAN Test Programs:

a) An I/O unit number specified by an unsigned integer constant. All I/O statements express the unit numbers as integer variable names which are assigned values in the first executable statements. This increases program portability.

b) PAUSE and PAUSE n. These statements are excluded from the test because many systems do not permit them and, action by an operator would be required to resume the program test.

c) The name of a Basic External Function specified as a user subprogram name. This action would not permit the inclusion of a Basic External Function so defined to appear in any test unit which was combined with other test units.

d) An external procedure written in a language other than FORTRAN. Unless Basic External Functions can be considered in this class of procedures no test is made of this facility.

e) As currently structured in Version 3, with test units 169 and 179 in Parts 11 and 12, respectively, a single labeled common block does not receive initialized data from more than one Block Data Subprogram. The proposed revised FORTRAN Standard tentatively places such a restriction upon Block Data Subprograms.

   Combining these test units would test the ability to initialize data from more than a single Block Data Subprogram to a specified labeled common block. Individual data elements, however, are not initialized more than once.

f) Formatted and Unformatted records on the same I/O device within the same test unit. This concept is the subject of a FORTRAN clarification. Because a unit may be declared by the implementor not to contain this property, because this concept conflicts with the Magnetic Tape Label for Information Interchange Standard (X3.27-1969) and because this concept does not enhance program interchange, this feature was excluded from a single test unit. However, when test units 196 and 197 are combined in an executable program as in Version 3 Part 12 this feature is tested.

g) A Formatted external output field whose width does not contain enough character positions to include a positive sign and a leading zero. This concept is the subject of a FORTRAN clarification. Because these optional character positions are described in the FORTRAN Standard in the same paragraph which describes the optional external exponent form (implementor option), it is unclear whether the optional character positions are an implementor or a user option.

h) A subprogram name passed as an actual argument, and then a corresponding dummy name appearing in an argument list of a function reference or CALL to a lower level subprogram. The rules of the FORTRAN standard are incomplete. Because a dummy subprogram name may not appear in an EXTERNAL Statement it is unclear how a subprogram name may be passed more than one level and maintain a proper association as a subprogram.

i) A labeled FORMAT statement which is not referenced in an I/O statement. It is unclear in the FORTRAN Standard whether a standard conforming FORTRAN program may contain such a statement which is not referenced.

j) Hollerith constants are constrained to the FORTRAN character set, and therefore the character set is a subset of the characters capable of representation by the processor. This increases program portability.

k) The ENDFILE statement appears in a test unit but cannot be tested, because the action is undefined when an endfile record is encountered during execution of a READ statement.

A6. Interpretations Made to the FORTRAN Standard

The following interpretations have been made to the FORTRAN Standard:

a) Those items identified in the FORTRAN Clarification Reports as "Correction to Typographical and Transcription Errors" and "Corrections to Mistakes" in the FORTRAN document X3.9-1966 have been recognized and the interpretation to the standard is as if these items had actually been corrected in the original document.

b) A relational operator is not immediately followed by a signed constant. A left parenthesis appears between the relational operator and the signed constant. The FORTRAN standard does not appear to permit two adjacent operators.

c) Hollerith data does not appear "under the guise" of a complex or double precision type.

d) The word "range" may not be broadened to include "extended range" and therefore a GO TO or arithmetic IF statement in an "extended range" may not reenter the DO nest at a common terminal statement.

e) The FORTRAN Standard does not state how a Hollerith constant is positioned in a storage unit. In order for a Format Specification to be introduced into an array by way of a DATA Statement, the following assumption has been made based upon the Aw Format field descriptor, "Let 'g' be the number of characters represented in a storage unit", and "w" be the value of n in the nH form of a Hollerith constant, then:" If the field width is less than g, the w characters will appear left justified with g-w trailing blanks in the internal representation [1, page 22L22].

f) There are no separate class rules for Basic External Functions and therefore referencing of these is handled under Class V, an external function. By these rules a Basic External Function may be passed as the actual argument of an external procedure reference provided the symbolic name appears also in an EXTERNAL statement.

g) The unit of angular measurement for the trigonometric functions is assumed to be expressed in radians.

h) "The value zero is considered neither positive nor negative", does not constrain the appearance as a constant to be an unsigned zero, but may appear with either a plus (+) or minus (-) sign.

i) The FORTRAN Standard does not describe the condition of non-nested DO loops contained in an outer DO loop, nor is this condition described in earlier FORTRAN implementation manuals. However, this concept is fundamental to the DO loop and is considered defacto.

In the following picture each bracket is considered to be a DO loop:

B. DESCRIPTION OF EACH SEGMENT

The FORTRAN Test Programs are made up from 185 segments containing sequences of FORTRAN statements. There are 116 main program sequences, whose segment number and name are each printed with the test program results, 63 subprograms which are each associated with a single test, and 6 sequences, one of which (segment 007) is always associated with each executable program. Elements from the other five sequences (segments 000, 001, 003, 005, 006) are included when appropriate. The FORTRAN Test Programs Version 1 and 3 are structured to include the necessary elements from these segments. The following is a brief description of each segment:

000, _____, (non-executable) contains a Directory of Test Programs introduced by comment lines before the first executable program on Version 1. In Version 3, the Directory appropriate to each of the 14 parts is inserted before each of the 14 executable programs.

001, SPECS, (non-executable) declares variable types, function types, and array sizes and types for use in later segments of the test programs. This segment is not executable since it contains only specification statements, but statements from this segment are included in other segments, as required, to furnish the necessary specifications for an executable program.

003, DATA1, (non-executable) examines the format of the DATA statement, which causes variables and array elements to be initially defined. It is run with segment 010, DATA2.

005, BSFDF, (non-executable) defines arithmetic statement functions of type integer and real. Segment 005 is run with segment 110 and 197.

006, FSFDF, (non-executable) defines statement functions of type double precision, logical, and complex.

The expressions contain constants, variables and intrinsic function references, references to previously defined statement functions and to external functions. Segment 006 is run with segment 111.

007, IODEF, (included in all executable programs) defines the system input, system output and a work unit to be used in the testing programs. Three integer variables are given values in simple assignment statements, to be associated with those units, which must be included with each program that requires such definitions. However, the values assigned to these variables may be changed to satisfy specific computer systems. These units are referred to by the following variable names:

NUVI - for results, usually a line printer defined as unit 6.

IRVI - for input, usually a card reader defined as unit 5.

INVI - for intermediate input/output data, usually a magnetic tape defined as unit 9. This unit is used only in Segments 180, 182, 196, 197, and 200.

In Versions 1 and 3, 6 input cards (three of which are prepared by the user) are associated with this segment but run with segment 008. In Version 3 also each one of the executable programs (14 Parts) contains these cards so that the user can identify the environment of the execution of the tests.

008, FMTRW, (executable) tests the FORMAT and formatted I/O statements. Under control of the FORMAT statements in the segment, 40 data cards are read in from the system input unit, and written to the system output unit. The reading into and writing from a FORMAT specification as well as the symmetry of the terminal slash in a FORMAT specification is inserted into segment 007 but executed as part of segment 008. Also written to the output unit, are lines of data produced by Hollerith information showing how the data should appear. Additional tests are performed in Segment 310.

009, AFRMT, (executable) tests FORMAT and formatted I/O statements as related to A-conversion. It tests that the Aw descriptor causes w Hollerith characters to be read into or written from a single list item, provided w does not exceed the number of characters representable in a single storage unit. The last line of the test results should print the last letters of the alphabet equal to the number of Hollerith characters contained in a storage unit. If the number of characters is less than 4, the first three test lines will contain missing characters, but the corresponding Hollerith information should be aligned.

010, DATA2, (executable) tests the contents of variables and array elements which were initialized by way of the DATA statement, in segment 003. Via formatted output, the contents of the initialized variables and array elements are written out. The values are integer, real, double precision, complex and Hollerith. The FORMAT statements are varied, and contain descriptors, repeated by parentheses and constants.

011, AASGN, (executable) tests simple arithmetic assignment statements with the formation of integer and real constants.

013, DASGN, (executable) tests the formation of double precision constants, the referencing of double precision array elements and the assignment of values to this type in arithmetic assignment statements. The proper application of the unary sign to double precision is also tested.

015, CASGN, (executable) tests the formation of complex constants, the referencing of complex variables and array elements and the assignment of values to this type in arithmetic assignment statements. The proper application of the unary sign to complex types is also tested.

016, LASGN, (executable) tests logical assignment statements. Values are assigned to integer variables used in relational expressions of logical assignment statements. Variables and array elements are declared logical in type statements, then used in mixtures of relational expressions and logical expressions which are assigned to variables and array elements. Logical values are either true or false.

017, INTRL, (executable) tests arithmetic assignment statements in which each side of the equation is of a different type. Integer values are assigned to real and double precision variables and arrays; real values are assigned to integer and to double precision variables and arrays.

020, UGOTO, (executable) tests the unconditional GOTO statement. Branching into labeled executable statements, in both a forward direction and a backward direction and to statements immediately following the GOTO. Each set of statements causes an integer to be generated. The test is designed to cause the unconditional transfers to be executed in such an order as to produce a consecutive set of integer values.

021, AGOTO, (executable) tests the GOTO assignment statement. The integer variable used in an ASSIGN statement is referenced only in an assigned GOTO statement, while defined as a statement label. Assigned GOTO statements branch only to excutable statements; they have a maximum of nine branches, though the ANSI standard does not specify a maximum. The value of the integer variable after the execution of the ASSIGN statement is designed to correspond to a statement label in the list of the assigned GOTO statement.

022, CGOTO, (executable) tests the computed GOTO statement. Lists in the statements have nine or fewer statement labels, which are within the same program unit. The integer variable referenced is always greater than zero and does not exceed the number of statement labels in the list.

030, 031, 032, 033, examine the formation of expressions with the addition or subtraction operator. Expressions involve variables, array elements and constants in varying orders, such as:

variable $\pm$ array element $\pm$ constant
variable $\pm$ constant
array element $\pm$ constant
array element $\pm$ variable.

In each of these segments, numeric values are assigned to the variables and array elements which are then referenced in simple arithmetic statements.

030, ARBAD, (executable) forms expressions in which real values or integer values are added together. Expressions contain two to eight terms. One expression contains only variables, one contains only array elements and an other contains only constants.

031, ARFAD, (executable) combines double precision values with the addition operator. Values are positive or negative variables and array elements. Two, four or five terms make up each expression.

032, ARBSB, (executable) forms expressions in which real or integer values are subtracted. Values are positive or negative variables and array elements. Expressions contain two to four variables, array elements and constants.

033, ARFSB, (executable) examines expressions involving the subtraction of double precision values. Values are positive and negative. Elements are variables, array elements and constants. Statements contain two to four variables, array elements and constants.

034, ARBAS, (executable) combines both addition and subtraction in expressions containing real or integer values. Variables, array elements and constants appear in various combinations and orders. Numeric values which are assigned are positive and negative. Expressions contain two to six elements.

035, ARFAS, (executable) combines subtraction and addition in expressions with double precision values. Some expressions contain parenthesized expressions within parenthesized expressions, others contain variables, array elements and constants without parentheses.

036, ARBMI, (executable) tests the multiplication of integer values, which are both positive and negative. One to six multiplication operations occur within a single expression.

037, ARBMR, (executable) tests the multiplication of real values. Expressions contain two to seven terms. Values are positive and negative.

038, ARFMD, (executable) tests expressions which involve the multiplication of double precision values. Variables, array elements and constants occur in various orders in expressions which contain from two to seven terms.

039, ARBDV, (executable) tests expressions of type real or integer in which variables and constants are divided by variables and constants. Some expressions contain successive division operations, in order to examine the order of evaluation of the terms.

040, ARFDV, (executable) tests the division of double precision variables, array elements and constants. Within an expression, values are of the same type and divisors are never zero. Expressions contain one to four division operations.

041, ARBEX, (executable) tests expressions in which integer or real values are raised to integer or real powers. The exponent assumes values which include zero and a negative one. Successive exponentiation occurs in some expressions so that the order of evaluation might be examined.

```
A**B
(A**B)**C
(A**B)**(C**D)
```

042, ARFEX, (executable) tests expressions in which double precision values are raised to real and double precision powers. Exponentiated values are raised to exponentiated values. Expressions contain variables, array elements, and constants.

043, ARBHI, (executable) tests the hierarchy of operators and parentheses. Only integer expressions are used in this segment which also tests that the laws of association and commutation may be applied. Integer terms containing division, do not follow these laws. The order of evaluation, generally, is according to the following hierarchy:

1. exponentiation
2. multiplication/division
3. addition/subtraction.

The elements of the expressions are then regrouped, using parentheses, to cause new orders of evaluation.

050, SBB67, (executable) tests the formation of subscripts for integer and real arrays, where the form of the subscript is either an integer variable, v, or an integer constant, k. Arrays are one, two or three dimensions, and the variables in the subscripts are given values in simple arithmetic assignment statements.

051, SBB45, (executable) tests the formation of subscripts for integer and real arrays, where the form of the subscript is either a variable plus a constant, v+k, or a variable minus a constant, v-k. Expressions also contain array elements with constant subscripts. Variables and constants in subscripts are of integer type.

052, SBB13, (executable) tests the formation of subscripts for integer and real arrays where the form of the subscript is a variable multiplied by a constant, c*v, or a variable multiplied by a constant plus a constant, c*v+k, or a variable multiplied by a constant minus a constant, c*v-k. Through simple arithmetic statements, real and integer values are assigned to variables and array elements. Integer values are assigned to the variables occuring in subscripts of array elements, which are then computed; the array elements are then used in the evaluation of the expression in which they occur.

053, SBF17, (executable) tests the formation of subscripts for double precision arrays using the allowable subscript constructs: v, k, v+k, v-k, c*v, c*v+k, c*v-k, where c and k are integer constants and v is an integer variable. Arrays are one, two or three dimensional; subscript expressions are of integer type and the values assigned to array elements are of double precision type.

054, SIMIF, (executable) tests simple forms of expressions in an arithmetic IF statement and a logical IF statement followed by a GOTO, so that these statements may be used in subsequent tests, the logical IF is further tested in segment 300, and the arithmetic IF in segments 301 and 302.

055, IFABS, (executable) references the intrinsic functions, ABS, and IABS, which obtain the value of the argument, disregarding the sign. The arguments are integer, real variable names, and expressions.

056, IFFLT, (executable) references the intrinsic function, FLOAT, which is to convert an integer to the real form. Arguments are integer variable names and expressions.

057, IFFIX, (executable) references the intrinsic function, IFIX, which is to convert a real value to the integer form. Arguments are real variable names and expressions.

058, IFSGN, (executable) references the intrinsic functions, SIGN and ISIGN which are to transfer the sign of the second argument to the first argument. Arguments are integer or real variable names or expressions.

059, IFDAB, (executable) references the intrinsic function, DABS, which obtains the value of a double precision argument, disregarding the sign. Arguments are double precision variable names and expressions.

060, IFTRN, (executable) references the intrinsic functions, AINT, INT, and IDINT which are to truncate real and double precision values. Arguments are variable names.

061, IFMOD, (executable) references the intrinsic functions AMOD and MOD, defined as remaindering. The arguments are real and integer variables, respectively.

062, IFMAX, (executable) references the intrinsic functions AMAXO, AMAX1, MAXO, MAX1, DMAX1, which are to choose the largest argument of a set of arguments. Arguments are real, integer, and double precision variables. There are two to five arguments in each argument list, though the ANSI standard does not set a limit on the number of arguments.

063, IFMIN, (executable) references the intrinsic functions AMINO, AMIN1, MINO, MIN1, DMIN1, which are to choose the smallest value of a set of arguments Arguments are integer, real, or double precision variables. There are two to five arguments in each list.

064, IFDSG, (executable) references the intrinsic function DSIGN, which is the transfer of sign from the second argument to the first. The two arguments are double precision variables.

065, IFDIM, (executable) references the intrinsic functions DIM and IDIM which are to obtain the positive difference. Arguments are real and integer variables, resp.

066, IFSGL, (executable) references the intrinsic function SNGL, which is to obtain the most significant part of a double precision value. Arguments are variables and expressions. The first and the last result should be the same value.

067, IFREL, (executable) references the intrinsic function REAL which is to obtain the real part of a complex quantity. Arguments are variables.

068, IFIMG, (executable) references the intrinsic function AIMAG, which obtains the imaginary part of a complex value. Arguments are constants and variables.

069, IFDBL, (executable) references the intrinsic function DBLE, which expresses a single precision argument in double precision form. Arguments are variables and intrinsic function references.

070, IFCPX, (executable) references the intrinsic function CMPLX, which is to form a complex value from two real arguments. Arguments are constants and variables.

071, IFCJG, (executable) references the intrinsic function CONJG, which is to obtain the conjugate of a complex value. Arguments are constants and variables.

072, IFBMS, (executable) tests the use of arithmetic expressions of several terms or containing references to intrinsic functions as arguments to other intrinsic functions.

073, IFFMS, (executable) references many of the intrinsic functions. The arguments to them consist of all the primaries.

080, EXPON, (executable) references Basic External Function, EXP, the exponential function of type real. The arguments which are powers of 2, are real variables and expressions containing intrinsic functions.

The expected results printed to a precision greater than the computed results in the Basic External Function tests, are obtained from Table values.[4]

081, DEXPO, (executable) references Basic External Function, DEXP, the double precision exponential function. Arguments are powers of 2, ranging from -16.0D0 to +16.0D0. Some arguments are expressions containing intrinsic functions.

082, CEXPO, (executable) references Basic External Function, CEXP, the complex exponential function. The testing range extends from 0 to 16 by steps of PI/3.

083, LOGTM, (executable) references Basic External Function, ALOG, the natural logarithm function of type real. Arguments are real variables and expressions containing intrinsic functions.

084, DPLOG, (executable) tests Basic External Function, DLOG, the double precision natural logarithm function. Arguments are double precision variables and expressions containing intrinsic functions.

085, CXLOG, (executable) references Basic External function, CLOG, the complex logarithm function. The testing range extends from 0 to 5.E7 by steps of PI/3.

086, COLOG, (executable) references Basic External Function, ALOG10, the common logarithm function of type real. Arguments are real variables and expressions containing intrinsic functions.

087, DCLOG, (executable) references Basic External Function, DLOG10, the double precision logarithm function. Arguments are double precision variables and expressions containing intrinsic functions.

088, SINUS, (executable) references Basic External Function, SIN, the trigonometric sine function of type real. The arguments which range from 0 to 2 PI, are real variables and expressions containing intrinsic functions.

089, DPSIN, (executable) references Basic External Function, DSIN, the double precision trigonometric sine function. The arguments which range from 0 to 2 PI are double precision variables and expressions containing intrinsic functions.

090, CSICO, (executable) references Basic External Functions, CSIN and CCOS, the complex trigonometric sine and cosine functions. Arguments are complex variables.

091, COSNS, (executable) references Basic External Function, COS, the trigonometric cosine function of type real. The arguments range from 0 to 2 PI, and are real variables and expressions.

092, DPCOS, (executable) references Basic External Function, DCOS, the trigonometric cosine function of type double precision. Arguments are double precision variables and expressions which range from 0 to 2 PI.

094, TANGH, (executable) references Basic External Function, TANH, the hyperbolic tangent function of type real. Arguments are real variables and expressions containing intrinsic functions.

095, SQROT, (executable) references Basic External Function, SQRT, the square root function of type real. Arguments are real variables and expressions whose values are prime numbers.

096, DSQRO, (executable) references Basic External Function, DSQRT, the double precision square root function. Arguments are double precision variables and expressions whose values are prime numbers.

097, CSQRO, (executable) references Basic External Function, CSQRT, the complex square root function. Arguments are complex expressions.

098, ARCTG, (executable) references Basic External Function, ATAN, the trigonometric arctangent function of type real. Arguments are real variables and expressions containing intrinsic functions and whose values are powers or sums of 2.

099, DACTG, (executable) references Basic External Function, DATAN, the single argument trigonometric arctangent of type double precision. Arguments are real variables and simple arithmetic expressions containing intrinsic functions, whose values are powers or sums of 2.

100, ACTG2, (executable) references Basic External Function, ATAN2, the two argument trigonometric arctangent function of type real. Arguments are real variables and expressions containing intrinsic functions, whose values are powers or sums of 2.

101, DATN2, (executable) references Basic External Function, DATAN2, the two argument trigonometric arctangent function of type double precision. Arguments are double precision variables and expressions containing intrinsic functions, whose values are powers or sums of 2.

102, DMODA, (executable) references Basic External Function, DMOD, the remaindering function of type double precision. Arguments are double precision variables.

103, CABSA, (executable) references Basic External Function, CABS, the modulus function. Arguments are the elements of an array of type complex.

110, BSFTS, (executable) references statement functions defined in an earlier segment, 005. The arguments are integer or real constants, variables and arithmetic expressions. Type statements are used to reaffirm the type of some intrinsic functions.

111, FSFTS, (executable) references statement functions in which the arguments are logical, double precision or complex constants, variables, and logical or arithmetic expressions. The statement functions were defined in segment 006. Type statements are used to reaffirm the type of some intrinsic functions.

140, CPXAD, (executable) tests expressions in which complex values are added or subtracted. Complex variables and constants occur in various orders and combinations, with two to nine elements in each expression.

141, CPXMU, (executable) tests expressions in which complex values are multiplied by complex values. Expressions contain from two to ten terms in various orders and combinations of complex variables and complex constants.

142, CPXDV, (executable) contains expressions in which complex values are divided by complex values. Variables and constants appear both as dividends and divisors. Some expressions involve only complex variables, some only complex constants, and others a combination of both.

143, CPXEX, (executable) involves the exponentiation of complex values. The value of the integer power varies from 3 to 100. Expressions contain variable and constant values raised to variable or constant powers. Each expression contains a single term.

144, CPXOP, (executable) performs several arithmetic operations within an expression containing complex values. Each of the arithmetic statements performs addition, subtraction, multiplication, division, and exponentiation. Only the exponents are of integer type.

145, CREAD, (executable) performs addition and subtraction within an expression containing complex and real values. Other than in exponentiation, complex values may only be combined with real values.

146, CREMU, (executable) performs multiplication of real and complex values within an expression. The number of terms in an expression varies from two to four.

147, CREDV, (executable) performs division of complex values by real values and of real values by complex values. Expressions contain terms in which values are variables or constants.

148, CREOP, (executable) performs, within an expression, addition, subtraction, multiplication and division of complex and real values, and exponentiation of complex values. Exponents are integer values, only. The hierarchy rules determine the order of evaluation.

149, MISC3, (executable) contains arithmetic assignment statements in which the statements are continued for several lines and are interspersed with many blanks. Blanks occur within variable names and throughout the statements which are one to twenty lines in length. The statements involve real and integer values only. The digits, the letters and the special FORTRAN characters make up the list of continuation characters for the multiple line statements. The digit, zero, and the character, blank, are not legitimate continuation characters, but are used in the initial line of a statement.

150, MISC4, (executable) has interspersed blanks within arithmetic assignment statements containing complex values. Statements are one to twenty lines with letters and special characters to indicate the continuation. Statements occur which have a single character on a line; others have one or two terms of the expression on a line. Uncounted blanks do not appear in the midst of Hollerith information. Continuation lines of both a FORMAT statement and an assignment statement contain non space characters in columns 2 through 5. The arithmetic assignments used in this segment are similar to those used in segment 148.

160, BRFCP, (executable) references REAL functions, contained in segments 400, 420, 430, 440, 450, 460. The arguments of the functions are either integer or real variable names, array names, array element names, and arithmetic expressions. Arguments are given numerical values in arithmetic assignment statements, and their names, values, or expressions appear in the argument list of the function reference. Function references contain one or two arguments in the argument list with only one list containing many arguments.

161, BIFCP, (executable) references INTEGER functions contained in segments 401, 421, 431, 441, 451, 461. Arguments are integer or real variable names, array names, array element names and arithmetic expressions. Argument lists contain as few as one argument and as many as twenty arguments, though no limit is imposed by the ANSI standard. The expression in which the references occur are of the same type as the function value to be returned.

162, FRFCP, (executable) references REAL functions; the arguments are the types integer, real, double precision, complex and logical, and are variable names, array names, array element names, and external procedure names. The functions referenced are contained in segments 402, 422, 432, 442, 452. Reference is also made to two intrinsic functions, REAL and AIMAG, which return the real part and the imaginary part of complex values, resp. to the expressions in which they occur. Common storage is shared by the referencing program and a function.

163, FIFCP, (executable) references INTEGER functions with arguments of types integer, real, double precision, complex and logical. Variable names, array names, array element names and external procedure names appear in the argument lists. Common storage is shared by the referencing program and a function. The functions referenced are in segments 403, 423, 433, 443, 453. One argument list contains twenty-one arguments; all others contain one or two arguments.

164, CFCCP, (executable) references COMPLEX functions with arguments of types integer, real, double precision, complex, and logical. The argument lists include variable names, array names, array element names and external procedure names. The functions referenced are contained in segments 404, 414, 424, 434, 444, 454, 464. Common storage is shared by the referencing program and a function.

165, DPFCP - (executable) references DOUBLE PRECISION functions with arguments of types integer, real, double precision, complex and logical. Variable names, array names, array element names, and external procedure names appear in the argument lists. Common storage is shared by the referencing program and a function. The functions referenced are in segments 405, 415, 425, 435, 445, 455, 465, 475. These functions return a value which is of the same type as the expressions in which they occur within the calling program.

166, BFCCP, (executable) references LOGICAL functions with arguments of types integer, real, double precision, complex and logical. The argument lists include variable names, array names, array element names, and external procedure names. Referenced functions are in segments 406, 416, 426, 436, 446, 456, 466, 476; the value of the function returned from each reference is of type logical. Common storage is shared by the referencing program and a function.

167, SBRTN, (executable) calls subroutine subprograms. Arguments are the types integer and real and include variable names, array names, expressions and a Basic External Function. A CALL from a subroutine is made to another subroutine. One subroutine CALL contains no argument list. Subroutines called are in segments 407, 417, 427, and one of them shares common storage with the calling program.

168, FSBRT, (executable) calls subroutine subprograms. Arguments are the types integer, real, double precision, complex and logical and include variable names, array names, and expressions. A CALL from one subroutine is made to another subroutine; one subroutine CALL contains no argument

list. Subroutines called are in segments 408, 418, 428, and share common storage with the calling program. Values are returned via the argument list of the CALL.

169, BLKDT, (executable) uses a block data subprogram. Labeled common blocks contain variable names and dimensioned arrays. Implicit types of variables and arrays are overridden by double precision, complex and logical statements. The block data subprogram used to supply the initial values of the labeled common blocks is contained in segment 409. This segment writes out the values which are contained in the labeled common blocks.

179, BLKDA, (executable) uses three block data subprograms, which contain six labeled common blocks with elements to be initialized. Elements of any block are initialized through only one of the block data subprograms contained in segments 419, 429, 439. Implicit typing is sometimes overridden by double precision, complex, and logical statements. This segment writes out the values which are contained in the labeled common blocks. They correspond to the labeled common blocks of the block data subprogram.

180, UNFRW, (executable) tests the unformatted WRITE statement and the unformatted READ statement with and without a list. Included in the segment is an ENDFILE statement. This segment uses an intermediate tape.

182, BACUP, (executable) examines the backspace statement. Data is created in memory, written to tape, then changed in memory. The tape is then backspaced, and the data read to memory in a forward direction. The data block is 1024 words in length and is written and read by way of unformatted input/output statements. This segment uses an intermediate tape.

190, DOTRM, (executable) examines DO statements and DO ranges which terminate with a CONTINUE, ASSIGN, or logical IF statement. DO statements meet the requirements that parameters of the DO must be greater than zero, and must not be redefined during the execution of the range of that DO. In some DO statements, the incrementation parameter appears; in others, it does not appear and has an implied value of one.

191, DOLMT, (executable) examines a DO statement and its range, in which the parameters are integer variable names. Numerical values are given for them in arithmetic assignment statements occurring before the DO statement. The DO range consists of an arithmetic assignment statement involving the induction variable and the terminal statement which is a CONTINUE.

192, DONSC, (executable) examines DO ranges contained within other DO ranges, the parameters of which are integer constants and variables. Each range of a DO within the nest has its own terminal statement. Another nest of DO's has a single terminal statement. Nests contain two to five DO statements and the DO range includes arithmetic IF statements and GO TO statements.

193, DONSI, (executable) examines a DO statement and its associated range, in which an exit is made from the range of a DO before the DO has been satisfied. The induction variable is used both within and outside of the range of the DO.

194, DONSX, (executable) examines a DO nest which has an extended range. Exit from the innermost DO is by way of an unconditional transfer, reentry is by way of an arithmetic IF statement.

195, DONML, (executable) examines the ranges of DO's which are within the range of another DO, but are not nested. All parameters are integer constants and the ranges contain arithmetic assignment statements.

196, DONIO, (executable) examines the ranges of DO's which have input or output statements as the terminal statement. The terminal statements include a READ, a REWIND and a WRITE statement, each of which is also the only statement within the range of that DO. This segment uses an intermediate tape.

197, MORDO, (executable) examines DO ranges which have within, references to statement functions and intrinsic functions, CALLS to subprograms, and DO's with extended ranges. Input, output and rewind statements are also within these DO ranges. This segment uses an intermediate tape.

200, SUBR1, (executable) passes the I/O assignments through common then calls a subroutine subprogram without an argument list, and returns to an unlabeled CONTINUE statement. The subroutine called is contained in segment 410. This segment uses an intermediate tape.

300, LOGIF, (executable) examines the logical IF statement. Variables and array elements, declared logical, are assigned values of true or false. These values are then used in the logical IF statement, which includes an executable statement which is not a DO statement nor an other logical IF statement. A signed zero constant is tested in a relational expression.

301, BARIF, (executable) examines the arithmetic IF statement which contains integer or real values and references to intrinsic functions. The effect of the sign of zero is tested.

302, FARIF, (executable) examines arithmetic IF statements in which the expressions contain double precision values and references to intrinsic functions.

310, IOFMT, (executable) examines the formatted READ and WRITE statements and FORMAT statements as they relate to fields of input card images. There are 38 card images read as input to this segment; the formats under which the variables and array elements are read and written include each of the descriptors. Formats occur in which there is a one to one correspondence between elements in the list and descriptors; other formats occur which do not have the same number of descriptors as there are elements in the lists. Segment 310 examines additional features not contained in segment 008.

312, RDFMT, (executable) examines formatted READ and WRITE statements in which the format specifications are contained within arrays. Reference is to an array name, in place of the reference to a format statement label. The format specifications contained in arrays do not have nH field descriptors. FORMAT specifications are defined in DATA statements, read in as elements of an array, and passed as an argument to a subroutine. There are 13 card images read in this segment.

350, MISC5, (executable) examines the specifications of the program form. This includes verifying that comments are not executed, that every statement within the unit, can be reached, that all characters in a line are accepted, that labels can be one to 5 characters long and may be placed anywhere in columns one to five. Other features of program form are also examined.

351, FUNMX, (executable) further tests some Basic External Functions by using trigonometric formulas.

352, NAMES, (executable) determines whether the compiler can distinquish predefined function names and data names from FORTRAN verbs. The names of intrinsic functions and FORTRAN verbs appear as variable names and array names in a program unit. In other units of the same program, these names appear as intrinsic function names and as FORTRAN verbs. Subprogram units are segments 413, 463, 473, 483.

360, SPEC2, (executable) examines the use of integer variables and arrays and real variables and arrays, which are either in COMMON, or appear in EQUIVALENCE statements, or both. All array names are in DIMENSION statements; some have two or three dimensions, which are written as one dimensional arrays in the EQUIVALENCE statement. The array element successor function defines a relation by which a multi-dimensional array can be made equivalent to a one dimensional array. The order of the specifications is DIMENSION, COMMON, EQUIVALENCE and no dummy arguments appear in COMMON or EQUIVALENCE statements. Numeric values are assigned to variables and array elements to which other variables and array elements have been equivalenced. The associated variables and array elements are then used in arithmetic assignment statements, DO statements, IF statements and computed GOTO statements. A special blank common arrangement is used in this segment and this segment may not be combined with other segments requiring blank common.

Segments beginning with segment 400 are subprograms.

400, AFS, to be run with main program segment 160, is a real function of one real argument. The value of the function is the result of multiplying the dummy argument by a constant.

420, BFS, to be run with main program segment 160, is a real function of two real arguments which are added together to produce the value of the function.

430, CFS, to be run with segment 160, is a real function of an integer argument, which is the power to which a constant is raised, to produce the value of the function.

440, DFS, is a real function of two integer arguments, one of which is subtracted from the other producing the power to which a real constant is raised. The result is the value of the function. This function is referenced in segment 160.

450, EFS, is a real function of a real array, the size of which is declared in a DIMENSION statement. The value of the function is the sum of the elements of the array. This function is referenced in segment 160.

460, FFS, is a real function with twenty arguments of integer and real variables and integer and real arrays. The expression defining the function contains addition, subtraction, multiplication and exponentiation of arguments. This subprogram is referenced in segment 160.

401, IAFI, is an integer function of a single real argument. The value of the function is the product of a constant and the argument. This subprogram is referenced in the main program contained in segment 161.

421, IBFI, is an integer function of two real variables. The value of the function is the sum of the two arguments. This subprogram is referenced in the main program contained in segment 161.

431, ICFI, is an integer function of an integer variable. The value of the function is obtained by exponentiating a real constant. This segment is referenced in the main program contained in segment 161.

441, IDFI, is an integer function of two integer arguments. The value of the function is obtained by raising a real value to the power which is the difference between the two arguments. The real variable is defined in a DATA statement. Segment 441 is referenced in segment 161.

451, IEFI, is an integer function with a single argument consisting of an integer array. The size of the array is declared in a DIMENSION statement and the elements of the array are added together to produce the value of the function. Segment 451 is referenced in connection with segment 161.

461, IFFI, is an integer function with twenty arguments of real variables and arrays and integer variables and arrays. The dimensionality of each array is declared within the subprogram. The value of the function is obtained by evaluating the equation which contains addition, subtraction, multiplication and exponentiation, of variables and array elements. This segment is referenced in segment 161.

402, GFS, is a real function of a double precision argument. The argument is assigned to the function name. This subprogram name is passed as an argument in segment 162 to segment 442, JRFS, which references it.

422, HFS, is a real function of two complex variables. The value of the function is obtained by assigning the imaginary part of the product of the complex values to the function name. This segment is referenced in segment 162.

432, IRFS, is an explicitly typed real function of a logical variable. The function value is defined by one of two logical IF statements, depending upon the value of the argument. This segment is referenced twice in segment 162.

442, JRFS, is an explicitly typed real function of an external procedure (segment 402) and a double precision variable. The value of the function is the value of the external procedure of which the double precision value is the argument. This segment is referenced in segment 162.

452, RFS, is a real function with twenty-one arguments of all the types of variables and arrays and an external procedure which is not referenced. Array and variable types are declared in logical, complex and double precision statements. Adjustable arrays appear in this subprogram. This segment is referenced in segment 162.

403, IFI, is an integer function of a double precision variable. The variable is assigned to the function name to produce the value of the function. This segment is referenced in segment 163 and also passed as an argument from segment 163 to segment 453 and segment 443.

423, JFI, is an integer function of two complex arguments. The value of the function is the imaginary part of the product of the two arguments. This segment is referenced in segment 163.

433, KFI, is an integer function of a logical argument. The value of the function is determined by one of two logical IF statements, depending upon the value of the argument. This segment is referenced twice in segment 163.

443, LFI, is an integer function of the external procedure IFI (segment 403) and a double precision variable. The value of the function is the value of the external procedure of which the variable is the argument. This segment is referenced in segment 163.

453, MFI, is an integer function with twenty-one arguments of all the types of variables and arrays and an external procedure. An adjustable array and its adjustable dimensions are dummy arguments of this subprogram. This segment is referenced in segment 163, and is similar to segment 452 except for function type, and the dummy function is referenced.

404, AFC, is a complex function, explicitly typed, of a real variable. The sum of the real variable and a complex value is the value of the function. This segment is referenced in segment 164.

414, BFC, is a complex function of an integer argument. A complex value is raised to an integer power to produce the function value. This segment is referenced in segment 164.

424, CFC, is a complex function of a real array. The elements of the array are subtracted from a complex constant to produce the function value. This segment is referenced in segment 164.

434, DFC, is a complex function of a double precision variable. The value of the function is obtained by subtracting a complex constant from the product of a complex constant and a real variable. This segment is referenced in segment 164.

444, EFC, is a complex function of a complex variable. The function value is the complex argument minus a constant. This segment is referenced in segment 164.

454, FFC, is a complex function of a logical variable. The value of the function is determined by one of two logical IF statements, depending upon the value of the argument. This segment is referenced twice in segment 164.

464, HFC, is a complex function with twenty-one arguments of all the types of variables and arrays and a complex function which is not referenced. Variable and array types are declared in type statements in the subprogram. Adjustable arrays are arguments in this subprogram. A value is passed through common and is redefined within the subprogram. This segment is referenced in segment 164 and is similar to segment 452.

405, AFD, is a double precision function of a real argument. The value of the function is set equal to the argument. This subprogram is referenced in segment 165 and also passed as an argument from segment 165 to segment 455.

415, BFD, is a double precision function of an integer variable. A double precision constant is raised to the power of the integer variable. This segment is referenced in segment 165.

425, CFD, is a double precision function of a double precision argument. The value of the function is the value of the argument. This segment is referenced in segment 165.

435, DFD, is a double precision function of two complex variables. The value of the function is the imaginary part of the product of the two complex variables. This segment is referenced in segment 165.

445, EFD, is a double precision function of a logical variable. The value of the function is determined by one of two logical IF statements, depending upon the value of the argument. This segment is referenced twice in segment 165.

455, FFD, is a double precision function of an external procedure (segment 405) and a double precision variable. This segment is referenced in segment 165.

465, GFD, is a double precision function of a double precision array. The elements of the array are added together to produce the value of the function. This segment is referenced in segment 165.

475, HFD, is a double precision function with twenty-one arguments of all the types of variables and arrays and a double precision function which is not referenced. Adjustable arrays are arguments in this segment. A value is passed through common and redefined in the function subprogram. This segment is similar to segment 452 and is referenced in segment 165.

406, AFB, is a logical function of a real variable. This function is referenced in segment 166.

416, BFB, is a logical function of an integer argument. This segment is referenced in segment 166.

426, CFB, is a logical function of a double precision argument. This segment is referenced in segment 166.

436, DFB, is a logical function of a logical variable. The value of the function is the value of the argument. This segment is referenced in segment 166.

446, EFB, is a logical function of a complex variable. This segment is referenced in segment 166.

456, FFB, is a logical function of a real array. This segment is referenced in segment 166.

466, GFB, is a logical function of a real variable and a logical external procedure (segment 406). This segment is referenced in segment 166.

476, HFB, is a logical function with twenty-one arguments of all the types of variables and array elements and an external function which is referenced. This segment is referenced in segment 166.

407, AAQ, is a subroutine subprogram with integer and real variable and array names and a function in the argument list. This subprogram, called in segment 167, calls another subprogram (segment 417), whose argument list contains integer and real array names.

417, ABQ, is a subroutine subprogram called from another subroutine subprogram (segment 407) which is called in segment 167.

427, ACQ, is a subroutine subprogram which has no argument list. Variables and arrays are passed through common; some are redefined within the subprogram. This segment is referenced in segment 167.

408, ADQ, is a subroutine subprogram with twenty-four arguments of type integer, real, double precision, complex, and logical variables and arrays. This subprogram, called in segment 168, calls another subprogram (segment 418), whose arguments are integer and real variables and arrays.

418, AEQ, is a subroutine subprogram called from another subroutine subprogram (segment 408). The arguments are integer and real variables and arrays. This subroutine is used with segment 168.

428, AFQ, is a subroutine subprogram which has no arguments. Variables and arrays are passed through common; some are redefined within the subprogram. This segment is referenced in segment 168.

409, BLOKD, is a block data subprogram, which contains type, EQUIVALENCE, DATA, DIMENSION, and COMMON statements. These are the allowable statements in a block data subprogram, in which data statements assign values to variables and array elements which are in labeled common blocks. Hollerith data is assigned to each type of array, which are one, two, and three dimensional. This segment is to be run with segment 169.

410, SUBRQ, is a subroutine subprogram which contains no argument list and returns no values to the calling program. Arguments are passed through blank common. The subprogram contains FORTRAN statements, including input/output statements and references to intrinsic functions. This subroutine is called in segment 200. This segment is similar to main program segment 197.

Segment 419 BLAKD,
Segment 429 BLBKD,
Segment 439 BLCKD, are three block data subprograms, each of which, through data statements, assigns values to a different labeled common block. Each of these subprograms contains all of the statements allowed in a block data subprogram and each contains arrays of one, two, and three dimensions. These segments are run with segment 179.

411, SMCQ, is a subroutine subprogram called from a logical IF statement in the calling program, segment 300.

412, MDQ, is a subroutine subprogram called from within a DO of the calling program. It is called from segment 197.

462, FMTQ, is a subroutine subprogram called by segment 312. FORMAT specifications and Hollerith constants are passed as arguments of the subroutine. An empty FORMAT specification is also tested.

413, MAQQ, is a subroutine subprogram in which an intrinsic function name is used as a variable name and a second intrinsic function name is referenced. This subroutine is called from segment 352.

463, MBQQ, is a subroutine subprogram in which an intrinsic function name is used as a variable name. It is called from segment 352.

473, AMQQ, is a subroutine subprogram in which an intrinsic function name is used as a variable name. This subroutine is called from segment 352.

483, BMQQ, is a subroutine subprogram in which several intrinsic function references are nested and one intrinsic function name is used as a variable name. This subroutine is called from segment 352.

C. TEST UNIT SEGMENTS INDEXED TO THE FORTRAN STANDARD DOCUMENT ASA X3.9-1966

The following is the table of contents to the FORTRAN document X3.9-1966 with the corresponding FORTRAN Test Program Segments identified.

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D. PROGRAM INFORMATION

The following points describe the organization of FORTRAN test programs:

The programs are divided into a number of small segments.

Most segments, except for specification statements, I/O assignment statements, statement functions, subprograms and DATA statements, are completely self-contained.

Most segments are very simply written with the testing devoted to related features described in the ASA standard. The number of FORTRAN statement types is minimized in order to make each test less dependent on other language features.

Every segment begins with a heading of comment lines which gives the segment name, segment number, pertinent ASA references, purpose of the segment and restrictions observed in the segment.

The last line in every segment is marked by a comment line with the message "END OF TEST SEGMENT xxx."

Comments, throughout each segment, give detailed ASA references and additional explanations of the coding.

D1. Conventions Used in the Test Programs

Certain conventions have been adopted and are used throughout the document, the program code and the test results. These conventions provide the user with a means to:

identify types of data,

determine the number of dimensions associated with a given array,

distinguish program elements,

correlate references between the ASA FORTRAN standard document and the pertinent test segments.

The conventions are described below.

a) Segment Identification

Each segment is identified in the following two ways:

By a 3- to 5- character (A-Z, 0-9) descriptive name (e.g., DPLOG, SBRTN).

By a unique 3-digit (0-9) number.

Both the segment name and number appear in the program listing, the documentation and the generated test results.

b) Line Numbers

Line numbers, columns 73-80, are outside of the standard, but are usually available in an implementation of the FORTRAN Standard, when the source statements are introduced to the processor from punched cards.

The scheme used to identify FORTRAN lines is a compromise between the ability to associate the program listing with this document and the card handling problem. The FORTRAN test program listing represents both a statement of the program for the processor and a document for the user. The program listing also assists in the consolidation and isolation of test units. Although each line number is unique, a test program unit may contain FORTRAN lines with columns 74-76 (segment number) with segment numbers 001-007 inserted within the test units. Columns 73-80 are coded in the following fashion:

Column 73 contains	P	for FORTRAN Test Version 1.
	H	for FORTRAN Test Version 3.
Columns 74, 75, 76 contain	nnn	where 'nnn' are 3 unique digits (0-9) which identify the program segment. (The greatest segment number allowed is 699).
Columns 77, 78, 79 contain	mmm	where'mmm' are 3 digits (0-9) representing a line number within the program segment.
Column 80 contains	x	where x is either zero or five and allows for the insertion of lines at a later time.

In Version 1, the sequence numbers (columns 77-80 for segments 001 and 007 start with 0010 and are incremented by 5, with each new segment number (columns 74-76) forcing the beginning sequence number to be even.

In Version 3, the sequence numbers (columns 77-80) for segments 000, 001, and 007 are increased by 5 in column 80 and each Part is initiated by the following sequence number: Part 1, 0010; Part 2, 0400; Part 3, 0700; Part 4, 1200; Part 5, 1800; Part 6, 2300; Part 7, 2700; Part 8, 3200; Part 9, 3700; Part 10, 4300; Part 11, 4800; Part 12, 5400; Part 13, 6000; Part 14, 6400; and the statement function definition segment 005 imbedded in segment 197 begins at 0500.

c) Statement Labels

Each statement label is a string of four digits (0-9). To avoid duplicate labels in the test program, the first three digits of the string contains the number of the segment in which the statement label is found. (See the description of columns 74-76 above). The fourth digit is used to make the string unique within that particular segment.

This convention provides ten unique labels per program segment. When more than ten labels are needed in any segment, digits 1-3 of the extra labels contain a unique number between 700 and 999, instead of the program segment number. For this reason, the greatest program number allowed is 699. A table of currently used additional statement numbers is contained in Section I-D3e.

d) Format of Comments

Every comment line contains 'C' in column 1, followed by five asterisks (*) or a "C=" in columns 1 and 2.

Each segment is preceded by a heading of comment cards which give the segment name, segment number, purpose of the segment, restrictions observed, ASA references and miscellaneous comments.

Additional comment lines, interspersed with the actual coding describe the specific purpose of the coding which follows and give pertinent ASA references.

Comment lines containing "C=" in columns 1 and 2 denote the required Specification statements, I/O Assignment statements, STOP statement and END line needed to construct a FORTRAN program if each main program segment is to be run as a separate test unit.

e) Format of the Generated Test Results

The generated test results of every segment start on a new page and are headed by several lines which give the segment name, segment number, purpose of the segment (very briefly stated), and ASA references. The printed area is constrained to an 8 1/2 by 11 inch page, with a maximum of 57 lines printed per page.

f) Naming Conventions

A unique 3- to 5-character designation is used to identify a variable, array, function or subprogram. The combination of the last two characters in the name indicates the type and category. The character preceding the last two flags items which appear in COMMON or EQUIVALENCE statements. One or two optional characters may begin each name to make it unique. The conventions are as follows:

If character 5 is (or last character)	I	the type is integer;
	S	the type is real;
	D	the type is double precision;
	C	the type is complex;
	B	the type is logical;
	H	the actual argument is Hollerith;
	Q	the string represents a subroutine.

If character 4 is (or next to last character)	V	the string represents a variable;
	F	the string represents a function;
	n	where 'n' is a digit (1-3), the string represents an array with n dimensions;
	a	where 'a' is any other letter (A-E, G-U, W-Z) for cases in which none of the other codes are applicable.
If character 3 is	W	the name is a dummy argument;
	X	the name appears in a COMMON statement;
	Y	the name appears in an EQUIVALENCE statement;
	Z	the name appears in both COMMON and EQUIVALENCE statements;
	a	where 'a' is any other letter (A-V), the name appears neither in COMMON nor in an EQUIVALENCE statement.
Characters 1 and 2 are	aa	where 'aa' are any letters (A-Z) associated with the string. These two characters are used only to insure that each name is unique. Either or both of them may be omitted, if desired.

Examples of this convention are A3I, BBXVD, CBFS, PAAQ where the strings represent a 3-dimensional integer array, a double precision variable (used in a COMMON statement), a real function name and a subroutine name, respectively.

D2. Assumed Levels for Non-specified FORTRAN Areas

The ASA standard does not impose specifications in many areas that are clearly subject to limitations in actual FORTRAN compilers. Therefore, in order to design meaningful tests, some additional specifications have been established. These limits are described below.

a) Level of Nesting

The DO loop segments of the program contain a maximum of FIVE nested loops.

b) Number of Arguments

The test program contains subprograms with up to TWENTY-FIVE arguments.

c) Size of Arrays

The size of arrays is generally very small, i.e., usually less than TWENTY words.

d) FORMAT Standards

FORMAT statements never cause more than FORTY characters on a line to be generated in the output.

e) Number of Parentheses

Expressions in the test program never exceed TEN levels of parentheses.

f) GO TO Branches

The number of branches in assigned and computed GO TO statements never exceeds TWELVE branches.

g) Constant Length

Constants are kept small in order not to exceed the storage unit length capacity of some computers. The limits on constant length are set as follows:

Integer constants	- 5 digits
Real constants	- 7 digits
Double precision constants	- 14 digits
Complex constants (each half)	- 7 digits
Hollerith constants	- 2 characters except in segment 009 which tests A-conversion for 1 to 4 characters and 26 characters for the truncation test.

D3. Names and Statement Numbers Used in the Test Programs

Only those names which are used as array names, external function and subroutine names, common block names, and variable names appearing in a DATA statement appear in the following lists. The list of array declarators appearing in type statements and COMMON statements is supplied to assist the user when he wishes to extend or revise the test programs.

a) Subprogram Names Used in the Test Program Set and the Number of Arguments

Integer Functions		Real Functions		Logical Functions	
IAFI	1	AFS	1	AFB	1
IBFI	2	BFS	2	BFB	1
ICFI	1	CFS	1	CFB	1
IDFI	2	DFS	2	DFB	1
IEFI	1	EFS	1	EFB	1
IFFI	20	FFS	20	FFB	1
IFI	1	GFS	1	GFB	2
JFI	2	HFS	2	HFB	21
KFI	1	IRFS	1		
LFI	2	JRFS	2		
MFI	21	RFS	21		

Double Precision Functions		Complex Functions	
AFD	1	AFC	1
BFD	1	BFC	1
CFD	1	CFC	1
DFD	2	DFC	1
EFD	1	EFC	1
FFD	2	FFC	1
GFD	1	HFC	21
HFD	21		

Subroutines	
AAQ	9
ABQ	3
ACQ	0
ADQ	24
AEQ	8
AFQ	0
MDQ	2
SMCQ	1
FMTQ	22
SUBRQ	0
MAQQ	2
MBQQ	2
AMQQ	2
BMQQ	2

Block Data Subprograms-No Names Permitted In FORTRAN Language But Identified by Comment Cards As:

BLOKD
BLAKD
BLBKD
BLCKD

b) Array Declarators in Type Statements and COMMON Statements

Double Precision

AC1D(10)
A1D(4)
A2D(2,2)
A3D(2,2,2)
BC2D(7,4)
CC3D(7,2,2)
DPA1D(5)
DPA2D(2,2)
EP1D(43)
FC2D(5,5)
MCA3D(1,4,2)
RC3D(3,3,3)

AX1D
AX2D
AX3D
DX1D
DX2D
DX3D

Complex

A1C(12)
A2C(2,2)
A3C(2,2,1)
B1C(8)
B2C(4,2)
B3C(2,2,2)
LL1C(32)
LM2C(8,4)
LN3C(9,2,2)
EP1C(30)

AX1C
AX2C
AX3C
DX1C
DX2C
DZ3C

Logical

A1B(2)
A2B(2,2)
A3B(2,2,2)
GG1B(2)
GH2B(1,2)
GI3B(1,1,2)
MCA1B(7)
L1B(10)

AX1B
AX2B
AX3B
DX1B
DX2B
DX3B

Integer

I1I(5)
I2I(2,2)
I3I(2,2,2)
MCA3I(2,3,3)
IU2I(4,2)
IT3I(4,2,2)
IU3I(2,3,3)

Dimension

```
AC1S(25)
AC2S(5,6)
AC3S(1,1,3)
A1S(5)
A2S(2,2)
A3S(3,3,3)
CMA1S(5)
CMB1S(5)
EP1S(33)
IAC1I(5)
IAC2I(2,7)

MCA1I(5)
L1I(10)
IAB1I(4)
IAB2I(3,3)
IAB3I(2,2,2)
AB1S(4)
AB2S(3,3)
AB3S(2,2,2)
IV1I(1024)
ZU1S(12)
ZU3S(3,2,2)
ZU2S(4,2)
ZT1S(4)

YER1S(7)
J(2)
JJ(1,1)
JJJ(1,1,1)
JJJJ(1,1)
JJJJJ(1)
JJJJJJ(1)
GOTO(2,2)

IF(5)
MX1I(3)
TX1S(3)
MMY1I(400)
NNY3I(20,10,2)
MX2I(2,3)
TX2S(2,2)
WAZ2S(3,2)
RVY1S(2)
RVY2S(1,2)
JY2I(2,2)
JY1I(5)
NZ1I(4)
NZ2I(4,2)
WAZ1S(2)
```

Common

```
IAX1I(4)
IAX2I(3,3)
IAX3I(2,2,2)
AX1S(4)
AX2S(3,3)
AX3S(2,2,2)
AX1D(2)
AX2D(2,2)
AX3D(2,2,2)
AX1C(2)
AX2C(2,2)
AX3C(2,2,2)
AX1B(2)
AX2B(2,2)
AX3B(2,2,2)
/BLK1/JAX1I(2)
      JAX2I(3,3)
/BLK2/DX1S(2)
      DX2S(2,2)
/BLK3/DX1D(2)
      DX2D(2,2)
/BLK4/DX1C(2)
      DX2C(2,2)
/BLK5/DX1B(2)
      DX2B(2,2)
/BLK6/JAX3I(2,2,2)
      DX3S(2,2,2)
      DX3D(2,2,2)
      DZ3C(2,2,2)
      DX3B(2,2,2)
```

c) Blank Common Organization and Block Names

There are two separate mappings of COMMON in the Program Set. Segment 360, the last test in the program set, tests COMMON, EQUIVALENCE, and DIMENSION using a special organization of blank COMMON not associated with any other program segment. For this reason segment 360 may not be combined with any of the segments listed below which make use of a different arrangement.

The following ordering of blank COMMON is used in Segments 162, 163, 164, 165, 166, 167, 168 and 200.

```
AXVS
CXVS
IXVI
IAX1I(4)
IAX2I(3,3)
IAX3I(2,2,2)
BXVS
AX1S(4)
AX2S(3,3)
AX3S(2,2,2)
AXVD
AX1D(2)
AX2D(2,2)
AX3D(2,2,2)
AXVC
AX1C(2)
AX2C(2,2)
AX3C(2,2,2)
AXVB
AX1B(2)
AX2B(2,2)
AX3B(2,2,2)
```

The six labeled COMMON blocks are identified by the names:

BLKn where n is 1 to 6

The organization of the data in the labeled COMMON blocks is specified in Segment 179.

d) Variables and Array Elements Defined in DATA Statements

Symbolic names of variables and array elements with their corresponding values are defined in DATA statements in segment 003 and tested in segment 010. When augmenting the test programs the following variable names and array element names may not appear in subsequent DATA statements nor be redefined in tests which precede segment 010 (e.g., 008 or 009). No restriction is placed upon the redefinition of these variables or array elements in test segments which follow segment 010.

DATA Statement 1 Symbolic Name	Form and Value of the Entry
I1I(1)	0
MCA3I(1,2,1)	2* 10
MCA3I(2,2,2)	
IAC21(2,5)	3* 246
IAC2I(2,6)	
MCA31(2,1,1)	

DATA Statement 2 Symbolic Name	Form and Value of the Entry
EP1S(8)	2* 0.0
EP1S(10)	
EP1S(12)	2*-750.05
AC2S(5,5)	
EP1S(11)	.24615E3
AC2S(5,3)	2.4615E2
AC2S(5,2)	3.54674E+3

DATA Statement 3 Symbolic Name	Form and Value of the Entry
BVD	+34567890.1D-3
DPA2D(2,1)	345.678901D+2
CVD	112233.5D-08
DPA2D(1,2)	11.22335D-4
DVD	3.4D12
DPA2D(2,2)	0.34D13

DATA Statement 4 Symbolic Name	Form and Value of the Entry
ADSVC	2*(11.1, 22.22)
LN3C(9,1,2)	
LL1C(30)	(-3.45E1, -67.8E-1)
LN3C(8,2,2)	(-34.5E0, -6.78E0)
LM2C(8,3)	(10.E0, -20.E0)
LN3C(9,1,1)	(1.0E1, -2.0E1)
LL1C(32)	(-20.0E1, +4.E3)
LN3C(8,1,2)	(-200.E0, +4000.E0)

DATA Statement 5

Symbolic Name	Form and Value of the Entry
MAVB	2* .TRUE.
MCA1B(6)	
MBVB	.FALSE.

DATA Statement 6

Symbolic Name	Hollerith Data Form
GI3B(1,1,2)	2HNO
GG1B(1)	2* 2HAD
EP1S(15)	

DATA Statement 7

Symbolic Name	Form and Value of the Entry
I1I(2)	3* 0
IAC2I(1,5)	
IAC2I(1,3)	
I1I(5)	4* -750
IAC2I(2,4)	
MCA3I(1,1,2)	
AVI(Integer type)	
EP1S(13)	2* 0.
AC2S(2,6)	
AC2S(1,6)	2* 246.15
AC3S(1,1,1)	
AC2S(3,6)	354674.E-2
AC3S(1,1,2)	354.674E+1
AC2S(4,6)	35467.4E-01
AVD	3* -.295D5
A1D(1)	
DPA2D(1,1)	
MCA3D(1,1,1)	-29.5D+3
A1D(2)	3456.78901D+01
MCA3D(1,1,2)	0.345678901D+5
LL1C(29)	2* (1.11E1, +222.2E-1)
LN3C(8,2,1)	
BCVC	(-34.5, -6.78)
LM2C(8,4)	(-.345E2, -678.E-2)
GH2B(1,1)	2* .TRUE.
GI3B(1,1,1)	
MCVB	.FALSE.
I1I(3)	2* 10
I1I(4)	
MCA3I (1,2,2)	+246
AC2S(5,6)	-.75005E03
JVS (type REAL)	-7.5005E+02
EP1S(14)	2HBC
AC3S(1,1,3)	2H*=
IAC2I(1,4)	2H P
CHEVC	2* (10., -20.)

```
LL1C(31)
DCVC                                (-200., +4000.)
LM2C(8,2)                           (-2000.E-1, +400.E1)
A1D(3)                              +1122.335D-6
MCA3D(1,3,1)                        0.00001122335D+2
A1D(4)                              34.0D11
MCA3D(1,4,1)                        0.034D14
MCA1B(7)                            2* .FALSE.
GH2B(1,2)
```

e) Statement Numbers Used (and Not Used) Between 7000-9999 With the Segment Numbers Associated

Statement Label	Segment #	Not Used	Statement Label	Segment #	Not Used
7000-7001	160		8863-8864	410	8865
7002-7003	161	7004-7006	8866-8869	410	
7007-7009	163		8870-8873*	015 & 410	8874-8875
7010-7012	162	7013			
7014-7022	165	7023-7029	8876-8878	410	8879-8899
7030-7034	166	7035-7079	8900-8909	190	8910-8919
7080-7105	008	7106-7107	8920-8929	192	8930-8939
7108-7112	008	7113-7117	8940	194	8941
7118-7120	008	7121	8942	194	8943
7122-7124	008	7125	8944	194	8945
7126-7135	008	7136-7137	8946-8954	194	8955-9189
7138-7156	008	7157-7169	9190-9198	197	9199-9300
7170-7173	017	7174-7199	9301-9308	302	9309-9319
7200-7201	020	7202-7209	9320-9349	310	9350-9901
7210-7219	021		9902-	190	9903-9904
7220-7229	022	7230-7359	9905	190	9906-9907
7360-7369	360	7370-7539	9908	190	9909-9919
7540-7546	054	7547-7849	9920-9921	192	9922
7850-7852	085	7853-7879	9923	192	9924-9929
7880	088	7881-7889	9930-9931	312	9932-9938
7890	089	7891-7899	9939-9960	300	
7900-7909	190		9961	197	9962
7910	091	7911-7919	9963-9964	197	9965
7920-7929	192	7930-7939	9966-9969	197	
7940-7947	194	7948	9970-9975	302	9976-9979
7949	194		9980-9989	301	9990-9993
7950-7956	300	7957-7991	9994-9995	073	
7992	092	7993-8094	9996-9997	063	
8095-8123	350	8124-8209	9998-9999	062	
8210-8216	021	8217-8219	1-14	350	
8220-8226	022	8227-8299	22	350	
8300-8337	301	8338-8359	333	350	
8360-8366	360	8367-8859	22255	350	
8860	410	8861-8862			

*These statement numbers appear in a main program and a subprogram.

E. STRUCTURING, RESTRUCTURING AND EXTENDING THE TEST PROGRAMS

E1. Program Structure

Version 1 has been structured as 116 executable FORTRAN programs with provisions for linking test units end to end. Version 3 has been structured into 14 executable FORTRAN programs.

Every main program test unit contains at least two segment numbers, the first executable statements which assign the I/O unit numbers, identified as segment 007 in columns 74-76, and the test segment identified by the 3-digit identification 008 to 360.

An executable program includes some of the following segment numbers:

Specification Statements	Segment 001
DATA Statements	Segment 003
Statement Function Definitions	Segment 005 or 006
I/O Assignment Statements	Segment 007
Main program segments	Segment 008-360
Subprograms	Segment 400-483

Because test units may be linked end to end, the segment numbers 001 to 007 are identified by these numbers within the test unit in which they are embedded to facilitate the identification and location of these elements in a FORTRAN program and to aid in the elimination of duplicate elements when test units are consolidated.

Each test unit, even when consolidated with other test units, can be viewed from the program listing as an independent test because the necessary Specification statements, I/O assignment statements, STOP statements, and END lines are inserted as specially structured comment lines in their appropriate locations. Lines beginning with the characters "C=" identify these otherwide FORTRAN statements.

E2. Consolidating Test Program Units Using Version 1

Version 1 contains a directory of the test segments as a set of 342 comment lines before the first test segment. These are identified as segment 000 and may be used to create a directory to head any consolidation of the test programs. (A directory of only those test units appearing in a specific part heads each executable program in Version 3.)

In both versions, comment lines have been inserted to ease the burden of coupling test units together or isolating them.

Specification statements and END lines have unique position requirements in the FORTRAN standard. Specification statements must precede Statement Function definitions and the first executable statement, and the END line must be the last line of a program unit. Comment lines may be anywhere before the END line.

Each main program unit in Version 1 has been created as if it had been developed from Version 3. That is, the comment lines inserted into each test unit which directs the user how to create a single test program from a consolidated set has actually been performed to create Version 1, leaving the comment lines in place. This permits the user who has consolidated the test programs to later isolate individual test units as needed with directions for the process contained in the program. For example, in segment 008 test unit, the FORTRAN text contains the following message:

```
C***** WHEN EXECUTING ONLY SEGMENT 008, THE SPECIFICATION STATEMENTS
C***** WHICH APPEAR AS COMMENTS MUST HAVE THE C= IN COLUMNS
C***** 1 AND 2 REMOVED
```

Below this message is a set of comment lines which, except for columns 1 and 2, look like Specification statements with the segment number 001 in columns 74-76. In Version 1, this action has already been performed leaving the C= comment lines in the program and inserting the actual Specification statements below these comment lines but with the segment number changed from 001 to the test segment number, in this case 008. The four digit sequence number, columns 77-80 is unique for these inserted lines, and is assigned characters and digits which will facilitate the location of these lines. Similar messages appear before the I/O assignment statements and the STOP statement and END line. The following identification code has been assigned for columns 74-80:

Specification Statements	nnnAxbb
I/O Assigment Statements	nnnBdbb
STOP and END	nnnCdbb

Where nnn is the test segment number in which the statements are embedded, x is 1 to 9 and A to F, and d is 1 or 2. The last two character positions are blank. Specification statements may contain continuation lines, so that the sequence number is significant.

In order to link test units end to end into a single executable program, it is necessary to eliminate duplicate specifications, STOP and END lines, and I/O assignment statements (if the unit numbers are changed by the user). These appear only in the main program test units. Elimination of duplicate symbolic names from the Specification statements is performed on each of the nine (DIMENSION, COMMON, EQUIVALENCE, EXTERNAL, REAL, INTEGER, DOUBLE PRECISION, COMPLEX, and LOGICAL) statements independently. That is, if dimension information is expressed in a type statement instead of a DIMENSION statement, all test programs which require this specification information for a particular symbolic name will be consistent.

The appropriate directory and the consolidated specifications, identified as segment 001, should be placed in front of the first test unit of the consolidated set, the I/O assignments placed as the first executable statements (segment 007) within the first test unit, and a single STOP statement and END line must appear as the last lines of the main program unit. If Statement Function definitions are a part of a test unit, these

must be placed before the first executable statement. Segments 110, 111, and 197 contain Statement Function definitions. If segments 110 and 197 are combined into the same executable program, one copy of segment 005 must be removed. Test units should be performed in the order of the directory, particularly segment 010, Data Statement Use, must appear in order, because the potential reuse of data names appearing in a DATA statement in other program test units cannot be guaranteed.

If during the consolidation process, an attempt is made to include more test units than the FORTRAN processor will accept into a single executable program, it will be necessary to return the specification statements, I/O assignment statements and STOP and END lines to the appropriate test units not included with the finally consolidated set for later use in another consolidation. The segment number associated with these lines identified by the letters "A", "B", and "C" in column 77 is contained in columns 74-76.

When test programs are consolidated into larger executable programs, it is desirable to have some means of identifying the test results with some additional information related to the environment of performing the tests, such as computer name, compiler version, operating system version, date, and any additional information which would distinguish successive running of the test programs. This can be achieved by incorporating the FORTRAN lines, identified as segment 007-which are embedded in segment 008 starting with the comment line "IDENTIFY THE SOURCE OF THE TEST PROGRAMS", into the first test of each consolidated test set following the I/O assignment statements. The last continuation line of the FORMAT statement at Statement Label 0071 should be altered to reflect a unique means of identifying each executable program. In Version 3, this has been done by identifying each executable program as a PART, numbered from 1 to 14. The first six input cards associated with segment 008 will then be required for running each of the consolidated test sets. Cards 1, 3 and 5 are prepared by the user, replacing the dummy information on the card images supplied, with the environmental information. See Section II-A2 Input Data Preparation.

The number of test segments which may be linked end to end is a function of the power of the FORTRAN processor with the following exceptions:

a) Segment 360 may not be linked with any other test segment which uses blank common.

b) Segments 169 and 179 when consolidated into a single program will cause different elements of a specific labeled common block to be initialized from DATA statements in different BLOCK DATA subprograms. While the current FORTRAN standard does not exclude this, it is anticipated that the future revised FORTRAN standard may prohibit the user from so doing.

E3. Deleting a Section of a Test Unit

If certain test elements fail to perform on a system because some elements of the FORTRAN language have not been implemented and the test unit cannot be executed, it will be necessary to inspect the test unit to determine what statements together with the corresponding WRITE statements are affected. When a section of a test unit is altered it is recommended that those statements which are changed or deleted have appropriate comment cards inserted to identify the change. This can be achieved by making the current statements into comment lines with a character other than blank, *, or = as the second digit and a comment card containing the number of lines which follow in the replacement. If a statement which is deleted contains a statement label, it will be necessary to repunch the card with the four digit statement label right justified and replace column 1 with a "C".

If a program test unit is too large for running as a single test unit it may be separated into smaller units for testing. This may be necessary for test segment 008, Formatted READ and WRITE, because of its current size and the number of FORMAT statements included in this test unit. The sample Result Output should be inspected. The breaks in the program should conform to locations where a new page indicator is detected at the beginning of a FORMAT statement. Data cards are identified in the program listing and the card number is given at the point of the appropriate READ statement.

E4. Deleting an Entire Test Unit

All test units are identified by segment numbers in columns 74-76. Test units contain "C=" comment cards for specification statements and I/O assignment statements with segment numbers 001 and 007, respectively. STOP and END cards appear at the end of each test unit as "C=" comment cards with the sequence number the same as the test unit number. All cards related to a test unit may be removed by inspection of the program listing. Any subprogram which is associated with that program test unit will not be assoicated with any other program test unit and may be removed. Distinctive comment cards separate test units.

E5. Adding to a Test Unit

Any program test unit may be extended by appending statements after the last executable statement in a program test unit. See Program conventions for symbolic name and statement label use Section I-D. Result output pages have been limited to 8 1/2 by 11 inch pages with a new page indicator for each page. All variables must have their values initialized in the test unit. Any new specifications must be introduced into "C=" cards within the test unit and a check made of the specifications contained at the beginning of the Part in Version 3. Array declarators used in the test set are identified in Section I-D-3.

E6. Adding New Test Units

Be sure that the programming conventions used in this test set are followed. A segment number which has not been used less than 399 may be used for a main program test. Numbers 400-699 which have not been used are available for subprograms. In general, the number chosen should be high enough so that those elements of the language which must be used in the test have already been tested.

Make sure that each new test is self contained. Initialize all values within the new segment itself. Use the same comment line structure to separate the new test unit, and intersperse comments to describe the test. Update the directory, specification section and the comment cards at the beginning of the Part in Version 3 to reflect any new program test units added. The listing of the program is supposed to contain enough comments to permit the programs to be used if additional documentation is not available.

F. DIFFICULTIES ENCOUNTERED DURING THE TEST PROGRAM DEVELOPMENT

During the implementation of the program design, a number of difficulties other than the normal program debugging arose which required resolution. These difficulties have been classified under the following five categories.

F1. Interpreting the FORTRAN Standard

In interpreting the FORTRAN Standard document X3.9-1966, there was a conscious effort to glean from the document only that which was stated, and not to be influenced by earlier implementations of the FORTRAN language. This lead to a long list of questions which needed resolution. The ASA FORTRAN technical committee, X3J3, reconvened to address these and other questions of interpretation of the Standard. The committee published two clarification reports [2, 3] concerning the interpretation of the standard. Those questions which could not be resolved without actually revising the standard have been deferred and will be handled in the future revision and extension to the FORTRAN standard. Some of the questions did not arise until some initial test units were run on different processors and the different interpretations of the standard could be asserted and appeared to be justified by the wording in the standard.

F2. Precision, Conversion and Maximum Value of Numeric Data

The choice of the actual values used in arithmetic expressions presented considerable difficulty. The range of the exponent, which is not covered by the FORTRAN standard was kept small so that the variation on different processors would not be reflected in the test results. To overcome some of the precision problems, small fractional powers of two were used in the hope that the conversion of these values would be exact. Recognizing that the FORTRAN standard defines a real constant to be an "approximation to the digit string interpreted as a decimal numeral" the equation 1.3+1.3=2.6 may not be true if the result were compared to the constant 2.6 because the constant when converted and when doubled may not have the same internal representation as the constant 2.6. Rather than attempt to apply an error tolerance to the results, it was decided to subtract the expression result from the expected result and rely upon the rounding under the Fw.d format field descriptor on output to compensate for a small difference in values. Because the Fw.d format field descriptor cannot be applied to results derived from a double precision operation, it was necessary to stipulate in the test results a reasonable error factor to be applied to the value if the result was not zero.

F3. Meaningful Tests and Comprehensible Results

The development of meaningful test programs of the FORTRAN Standard language cannot be separated from the presentation of the results of the test. If it can be considered that any test result value printed from a specific application of the test programs on a FORTRAN processor could be in error, the means to determine the statements involved in the test result must be readily discernible. This lead to examining, on a case basis, how to present the results. Where ever possible the results obtained from

arithmetic operations were subtracted from the expected result and the expected value of zero printed, so that the user could quickly scan a page of results and determine any errors. When this was not possible, Hollerith information is printed directly above the expected value so that the eye can quickly scan the results for discrepancies, or some appropriate means such as the test number for the value in error, so that reference back to the program listing could be made.

Various elements of the FORTRAN language presented some difficulties in displaying the results.

The effect of the scale factor both on READ and WRITE is such an example. If the FORTRAN processor does not perform this conversion properly, and only the expected result is printed with the processor result, it is tedious to determine from the program listing what actual data and format field descriptor is associated with a value. Because of this, the information which a user would need to determine the operation being performed is presented in a tabular form with the expected result and the actual result.

The Intrinsic Functions SNGL and DBLE presented the problem of storage unit size and how can it be determined whether these functions are actually performed when the maximum real and double precision constant length established for the programs is 7 and 14 digits respectively. The FORTRAN Standard does not define these functions to operate under the same rules as the corresponding assignment statement operation identified in Table 1 of the FORTRAN Standard. The FORTRAN Standard does not address the precision of a value, so that it cannot be determined from the document if a standard conforming program may READ or WRITE values which express a precision in excess of the processor capability. Because of these factors, for FORTRAN processors which can express a REAL value of 14 or more digits in a single storage unit, the printed results may not display the value to a precision large enough to encompass the actual function result. Increasing the number of decimal digits expressed in the format field descriptor should eliminate the difficulty.

The Basic External Functions presented a significant problem for devising test programs because the units of the arguments are not specified in the FORTRAN Standard and there was to be no attempt to address the unspecified range of arguments, precision or accuracy of the function results. This lead to using the "defacto standard" practice for the units of arguments and to select arguments which reduced the probability of variation due to conversion and for which there were also published table values. It is hoped that the arguments selected with their expected results, although not necessarily representative of normal usage, would constitute a basis for the user determining whether the function referenced is, in fact, the function obtained. Table values were not readily available for the complex functions so that a different method had to be employed.

F4. FORTRAN Compilers with Language Extensions

The difficulty of assuring that a FORTRAN program is confined to that which is defined in the FORTRAN Standard X3.9-1966 is substantial. Because a program produces the same correct results on many FORTRAN processors does not in itself substantiate the program to be standard conforming. Even though the test programs were desk checked, not all non-standard usage was picked up by this method. Moving from one processor to another brought to light the differences in the extensions or relaxations permitted on various FORTRAN processors. Those programming errors which persisted undetected through many FORTRAN processors where they were treated as extensions are:

- Missing type declarations for dummy arguments of statement functions
- Missing commas after an nH format field description in FORMAT statements
- Non agreement between format field description and the type of the list element
- Missing decimal point in a real constant in a real expression
- Lack of agreement of type between actual and dummy arguments of a subprogram where the dummy argument is not referenced.

F5. Performing the Tests

The initial running of the completed test programs on various FORTRAN processors was performed from punched cards. The punch card code used was the BCD-H set which is identified in Appendix D of the FORTRAN Standard X3.9-1966. It was assumed that any computer installation would have a conversion routine for this code to its own, if it were not an option of the compiler. For the most part the testing was performed on the consolidated test set which reduced the number of executable programs from 116 to 14. This was done to minimize the number of control cards needed to be inserted around the programs. In spite of assistance from systems personnel at the test site in every initial running on a different processor one or more programs had to be resubmitted to the computer because of operating systems control card errors. The kinds of errors were:

- Failure to identify the FORTRAN Programs as BCD card code producing errors in scanning the FORTRAN statements.
- Failure to identify the data as BCD H set causing the execution to be aborted on improper symbols on input cards.
- Missing or mispunched control cards.
- Inproper sequencing of control cards.

At no time was the alloted time on the computer or the maximum number of pages of printing exceeded. Because many of the test programs may require the same set of control cards, special care must be taken for those programs requiring data, an auxiliary tape unit and subprograms.

The differences in capability of operating systems did not present a difficulty but the lack of standard terminology and definition of functional capability presented barriers in human communications.

When a compiler had an option to check the programs for conformance to the FORTRAN standard and no diagnostic messages resulted, the test program writers were lulled into the belief that the programs met the standard, which later running on a different compiler proved not to be the case. Not all non-standard usage even within a single FORTRAN program unit were detected.

G. REFERENCES

1. American Standard FORTRAN X3.9-1966 - since the original publication of the FORTRAN Standard, the standardizing organization has changed its name from American Standards Association to United States of America Standards Institute and recently to American National Standards Institute. Therefore, documents identified as ASA X3.9-1966, USASI X3.9-1966 and ANS X3.9-1966 all refer to the same document.

2. Clarification of FORTRAN Standards - Initial Report. Communications of the ACM Vol. 12, No. 5, May 1969.

3. Clarification of FORTRAN Standards - Second Report. Communications of the ACM Vol. 14, No. 10, October 1971.

4. Handbook of Mathematical Functions with Formulas, Graphs, and Mathematical Tables. NBS. M. Abramowitz and Irene A. Stegun, editors, Applied Mathematical Series 55, 1966.

A. OPERATING PROCEDURES

The NBS FORTRAN Test Programs are designed to test the acceptance of the ASA FORTRAN Standard X3.9-1966 language definition by a FORTRAN processor.

The Test Programs are comprised of 116 test units and approximately 14,500 card images.

A1. Organization of Tests and Facilities Requirements

The FORTRAN Test Programs are presented in two forms, one for execution on small FORTRAN processors identified as Version 1, and the other for large FORTRAN processors identified as Version 3.

The tests make use of a maximum of 3 I/O units. These I/O units are identified as integer variable names which are assigned values in the first executable statements in each executable program and the statements may be altered by the user. No subprogram directly references these variable names or values.

The variable names and their current values are:

IRVI - for input, usually a card reader, is defined as unit 5.
NUVI - for test results, usually a line printer is defined as unit 6.
INVI - for intermediate input/output data, usually a magnetic tape, is defined as unit 9.

The test programs should be run in numeric order. Test sequences contained in later test units may depend upon the successful execution of earlier test units.

a) Program Order

The FORTRAN Standard does not define the order of presentation of a main program, BLOCK DATA subprograms, FUNCTION or SUBROUTINE subprograms to a FORTRAN processor. This order is prescribed by the implementor and may vary from system to system. Systems also vary on the need for systems control cards or special cards preceding each subprogram. The test programs have been arranged with no intervening control cards but contain the necessary STOP and END cards as follows:

Main program
Subprograms (if required)
Data (if required)

Some systems may require a specific order for BLOCK DATA subprograms distinct from FUNCTION or SUBROUTINE subprograms.

The subprograms appear after the corresponding main program unit and before the data in the order listed in Section II-A3 for Version 1 and Section II-A4 for Version 3.

Each program is set up (except for the system control cards) for a FORTRAN compile-load-and-go execution.

The user is assumed to be familiar with the operating system control requirements necessary to perform a FORTRAN compilation.

These steps should be followed:

- Choose the appropriate control cards for a FORTRAN compile.
- Check the format and ordering of control cards carefully.
- In particular, check if any control cards are necessary for FUNCTION, BLOCK DATA, and SUBROUTINE subprograms.
- Check the particular FORTRAN system documentation for any special requirements for ordering of subprograms which may differ from the order of the test program.
- Check if the test program requires input data. Version 1 requires data for test segments 008, 009, 310 and 312; Version 3, for all parts. Cards 1, 3 and 5 of segment 008 for Version 1 and all parts for Version 3 may be prepared by the user and replace the sample cards supplied with the programs. Section II-A2.

Sections II-A3 contains the list of test programs for Version 1. The accompanying table identifies the I/O facilities requirements and other related information.

Sections II-A4 contains the list of test programs for each of the 14 Parts for Version 3 and identifies the I/O facilities requirements as well as a summary sheet related to all Parts.

b) Memory Requirements to Execute the Test Programs

During the development of the test systems ten different computing systems were used and the current set of tests were run on five major systems. Although no requirements for memory can be determined without experimentation, the largest test unit in Version 1 required less than 3,000 words of memory. When structured into 14 executable programs as Version 3, the largest program required less than 6,000 words of memory.

c) Time

The time to compile and execute the test programs varies with the power of the computer and the compiler. The test units, for the most part are straight line programs. During the debugging of the test program set of Version 3 on different large scale systems less than 30 seconds was required to compile and execute any one of the 14 Parts excluding card read and print time.

A2. Input Data Preparation

All data card images associated with the FORTRAN Test Programs are included with the program distribution. It is not essential to the performance of the test programs to prepare any input data, however, provisions have been made to facilitate the identification of the test program results for a given FORTRAN processor.

In Version 1, test units 008, 009, 310, and 312 require input data which is supplied with the programs. The first six (6) cards associated with test unit 008 cause a heading page to be produced for the program set.

In Version 3, all test Parts 1 to 14 include six (6) input cards as the total input data to that part, except Parts 1 and 13 which include additional input data cards supplied with the test programs.

These six cards permit information to be introduced by the user to identify: the computer, FORTRAN compiler identification, operating system level, date, etc., which describe the environment in which the test is performed. Cards 1, 3 and 5 must be replaced and prepared to introduce three (3) lines of print which precedes test unit 008 in Version 1 or is appended to the initial output page of each test part in Version 3.

The first 40 characters from each of three cards (cards 1, 3 and 5) are read and replace the Hollerith information supplied in each of three FORMAT statements. The first character of each card must be blank (for print carriage control) and the other 39 characters must be from the FORTRAN character set. Cards 2, 4, and 6 must remain as prepunched. These six cards are part of the first test unit (008) in Part 1, testing the replacement of Hollerith information in a FORMAT statement by a formatted READ, and the symmetry of interpretation of a terminal slash (/) in a FORMAT statement used for READ and WRITE, causing cards 1, 3, and 5 to be read and written, and cards 2, 4 and 6 to be skipped on input and blank lines to be produced on output.

These six cards are not part of the test in parts other than Part 1 but are included for user output documentation only.

WARNING: The following four characters should be avoided in preparation of the three cards, because these characters differ in the punch card code for input preparation devices:

(
)
+
=

A3. List of Test Programs for Version 1

The I/O Unit numbers used in the Test Programs are:

Input (card reader)	5
Output (printer)	6
Intermediate	9

The following table identifies each of the 116 Test Programs for Version 1 and the associated subprograms.

Codes Used to Describe the Information in the Table

Column			Column		
1	M	Main Program	4	X	Intermediate Tape Required
	F	External Function			
	S	Subroutine	5	C	Blank Common Block
	B	BLOCK DATA		/	Special Blank Common
2	I	Input Required	6	D	DATA Statement Defined
3		No. of Pages of Output	7		No. of Cards per Segment

Seg.	Name	Test	Table
000		Directory of Test Programs	- - - - - - - 342
008	FMTRW	Formatted Input/Output	M I 8 - - - 529
		6 Identification Cards and 40 Data Cards	- - - - - - - 46
009	AFRMT	A-Conversion	M I 1 - - - 115
		3 Data Cards	- - - - - - - 3
010	DATA2	DATA Statement Use	M - 3 - - - 74
003	DATA1	Test Format of DATA Statement	M - - - - D 84
011	AASGN	Real and Integer Arith Assignmt. Stmnts.	M - 3 - - - 268
013	DASGN	Simple D.P. Assignment Statements	M - 8 - - - 420
015	CASGN	Simple Complex Assignment Statements	M - 9 - - - 469
016	LASGN	Logical Assignment Statements	M - 1 - - - 106
017	INTRL	Arithmetic Assignment Statements	M - 4 - - - 185
020	UGOTO	Unconditional GO TO Statements	M - 1 - - - 69

021 - AGOTO	GO TO Assignment Statements	M - 1 - - -	149
022 - CGOTO	Computed GO TO Statements	M - 1 - - -	146
030 - ARBAD	Basic Addition	M - 1 - - -	115
031 - ARFAD	Double Precision Addition	M - 1 - - -	57
032 - ARBSB	Basic Subtraction	M - 1 - - -	67
033 - ARFSB	Double Precision Subtraction	M - 1 - - -	72
034 - ARBAS	Basic Addition and Subtraction	M - 1 - - -	79
035 - ARFAS	Addition and Subtraction of D.P. Values	M - 1 - - -	60
036 - ARBMI	Multiplication of Integer Values	M - 1 - - -	66
037 - ARBMR	Multiplication of Real Values	M - 1 - - -	64
038 - ARFMD	Multiplication of D.P. Values	M - 1 - - -	71
039 - ARBDV	Division of Integer and Real Values	M - 1 - - -	78
040 - ARFDV	Division of D.P. Values	M - 1 - - -	66
041 - ARBEX	Exponentiation of Integer and Real Values	M - 1 - - -	90
042 - ARFEX	Exponentiation of D.P. Values	M - 1 - - -	74
043 - ARBHI	Hierarchy of Operators and Parentheses	M - 1 - - -	177
050 - SBB67	Subscripts of Integer, Real Arrays v, k	M - 1 - - -	79
051 - SBB45	Subscripts of Int., Real Arrays v+k, v-k	M - 1 - - -	87
052 - SBB13	Subscripts of Int., Real Arrays c*v, c*v+k, c*v-k	M - 1 - - -	112
053 - SBF17	Subscripts of D.P. Arrays v, k, c*v, c*v+k, c*v-k, v+k, v-k	M - 1 - - -	79
054 - SIMIF	Arith. IF, Logical IF followed by GO TO	M - 1 - - -	77
055 - IFABS	Intrinsic Functions ABS, IABS	M - 1 - - -	64
056 - IFFLT	Intrinsic Function FLOAT	M - 1 - - -	49
057 - IFFIX	Intrinsic Function IFIX	M - 1 - - -	59
058 - IFSGN	Intrinsic Functions SIGN, ISIGN	M - 1 - - -	82
059 - IFDAB	Intrinsic Function DABS	M - 1 - - -	65

060 - IFTRN	Intrinsic Functions AINT, INT, IDINT	M - 1 - - -	107
061 - IFMOD	Intrinsic Functions AMOD, MOD	M - 1 - - -	84
062 - IFMAX	Intr. Funct. AMAX0, AMAX1, MAX0, MAX1, DMAX1	M - 2 - - -	248
063 - IFMIN	Intr. Funct. AMIN0, AMIN1, MIN0, MIN1, DMIN1	M - 2 - - -	225
064 - IFDSG	Intrinsic Function DSIGN	M - 1 - - -	58
065 - IFDIM	Intrinsic Functions DIM, IDIM	M - 1 - - -	69
066 - IFSGL	Intrinsic Function SNGL	M - 1 - - -	80
067 - IFREL	Intrinsic Function REAL	M - 1 - - -	102
068 - IFIMG	Intrinsic Function AIMAG	M - 1 - - -	129
069 - IFDBL	Intrinsic Function DBLE	M - 1 - - -	57
070 - IFCPX	Intrinsic Function CMPLX	M - 1 - - -	61
071 - IFCJG	Intrinsic Function CONJG	M - 1 - - -	66
072 - IFBMS	Integer and Real Intrinsic Functions	M - 1 - - -	129
073 - IFFMS	Int., Real and D.P. Intrinsic Functions	M - 2 - - -	181
080 - EXPON	Basic External Function EXP	M - 1 - - -	60
081 - DEXPO	Basic External Function DEXP	M - 1 - - -	68
082 - CEXPO	Basic External Function CEXP	M - 3 - - -	98
083 - LOGTM	Basic External Function ALOG	M - 1 - - -	57
084 - DPLOG	Basic External Function DLOG	M - 1 - - -	67
085 - CXLOG	Basic External Function CLOG	M - 3 - - -	106
086 - COLOG	Basic External Function ALOG10	M - 1 - - -	56
087 - DCLOG	Basic External Function DLOG10	M - 1 - - -	66
088 - SINUS	Basic External Function SIN	M - 1 - - -	81
089 - DPSIN	Basic External Function DSIN	M - 1 - - -	82
090 - CSICO	Basic External Functions CSIN, CCOS	M - 1 - - -	65
091 - COSNS	Basic External Function COS	M - 1 - - -	82
092 - DPCOS	Basic External Function DCOS	M - 1 - - -	81

094 - TANGH	Basic External Function TANH	M - 1 - - -	57
095 - SQROT	Basic External Function SQRT	M - 1 - - -	55
096 - DSQRO	Basic External Function DSQRT	M - 1 - - -	63
097 - CSQRO	Basic External Function CSQRT	M - 1 - - -	74
098 - ARCTG	Basic External Function ATAN	M - 1 - - -	58
099 - DACTG	Basic External Function DATAN	M - 1 - - -	66
100 - ACTG2	Basic External Function ATAN2	M - 1 - - -	56
101 - DATN2	Basic External Function DATAN2	M - 1 - - -	66
102 - DMODA	Basic External Function DMOD	M - 1 - - -	63
103 - CABSA	Basic External Function CABS	M - 1 - - -	84
110 - BSFTS	Statement Functions - Integer and Real	M - 1 - - -	74
005 - BSFDF	Statement Function Definition	M - - - - -	35
111 - FSFTS	Statement Funct. - D.P., Complex, Logical	M - 1 - - -	108
006 - FSFDF	Statement Function Definitions	M - - - - -	58
140 - CPXAD	Addition and Subtraction of Complex	M - 1 - - -	76
141 - CPXMU	Multiplication of Complex Numbers	M - 1 - - -	141
142 - CPXDV	Division of Complex Numbers	M - 1 - - -	83
143 - CPXEX	Exponentiation of Complex Numbers	M - 1 - - -	125
144 - CPXOP	Arithmetic Operations on Complex	M - 1 - - -	63
145 - CREAD	Add and Subtract Complex and Real Numbers	M - 1 - - -	67
146 - CREMU	Multiply Complex by Real Numbers	M - 1 - - -	62
147 - CREDV	Divide Complex by Real and the Reverse	M - 1 - - -	58
148 - CREOP	Combined Operations on Complex and Real	M - 1 - - -	66
149 - MISC3	Blanks in, Cont. of Statement to Max Lines	M - 1 - - -	97
150 - MISC4	Special Characters for Continuations	M - 1 - - -	105

160 - BRFCP	Real External Functions	M - 1 - - -	82
400 - AFS	Real Argument	F - - - - -	010
420 - BFS	Real Arguments	F - - - - -	10
430 - CFS	Integer Argument	F - - - - -	10
440 - DFS	Integer Arguments	F - - - - -	11
450 - EFS	Array Name as Argument	F - - - - -	11
460 - FFS	Different Types of Arguments	F - - - - -	15
161 - BIFCP	Integer External Functions	M - 1 - - -	87
401 - IAFI	Real Argument	F - - - - -	10
421 - IBFI	Real Arguments	F - - - - -	10
431 - ICFI	Integer Argument	F - - - - -	10
441 - IDFI	Integer Arguments	F - - - - D	13
451 - IEFI	Array Name as Argument	F - - - - -	11
461 - IFFI	Different Types of Arguments	F - - - - -	15
162 - FRFCP	Real External Functions	M - 1 - C -	132
402 - GFS	D.P. Argument	F - - - - -	11
422 - HFS	Complex Arguments	F - - - - -	12
432 - IRFS	Logical Argument	F - - - - -	16
442 - JRFS	External Procedure	F - - - - -	11
452 - RFS	Different Types of Arguments	F - - - C -	29
163 - FIFCP	Integer External Functions	M - 1 - C -	123
403 - IFI	D.P. Argument	F - - - - -	11
423 - JFI	Complex Arguments	F - - - - -	12
433 - KFI	Logical Argument	F - - - - -	16
443 - LFI	External Procedure	F - - - - -	11
453 - MFI	Different Types of Arguments	F - - - C -	29
164 - CFCCP	Complex External Functions	M - 1 - C -	132
404 - AFC	Real Argument	F - - - - -	10
414 - BFC	Integer Argument	F - - - - -	10
424 - CFC	Array Name as Argument	F - - - - -	11
434 - DFC	D.P. Argument	F - - - - -	12
444 - EFC	Complex Argument	F - - - - -	11
454 - FFC	Logical Argument	F - - - - -	15
464 - HFC	Different Types of Arguments	F - - - C -	28
165 - DPFCP	Double Precision External Functions	M - 1 - C -	135
405 - AFD	Real Argument	F - - - - -	10
415 - BFD	Integer Argument	F - - - - -	10
425 - CFD	D.P. Arguments	F - - - - -	11
435 - DFD	Complex Argument	F - - - - -	12
445 - EFD	Logical Argument	F - - - - -	16
455 - FFD	External Procedure	F - - - - -	11
465 - GFD	Array Name as Argument	F - - - - -	12
475 - HFD	Different Types of Arguments	F - - - C -	32

166 - BFCCP	Logical External Functions	M - 1 - C -	144
406 - AFB	Real Argument	F - - - - -	10
416 - BFB	Integer Argument	F - - - - -	10
426 - CFB	D.P. Argument	F - - - - -	11
436 - DFB	Logical Argument	F - - - - -	11
446 - EFB	Complex Argument	F - - - - -	12
456 - FFB	Array Name as Argument	F - - - - -	12
466 - GFB	External Procedure	F - - - - -	11
476 - HFB	Different Types of Arguments	F - - - C -	25
167 - SBRTN	Subroutine Subprogram	M - 1 - C -	103
407 - AAQ	Integer, Real Variables, Array Elements	S - - - - -	23
417 - ABQ	Array Elements	S - - - - -	13
427 - ACQ	No Argument List	S - - - C -	21
168 - FSBRT	Subroutine Subprogram	M - 1 - C -	153
408 - ADQ	Different Types of Arguments	S - - - - -	39
418 - AEQ	Array Names and Integer Arguments	S - - - - -	23
428 - AFQ	No Argument List	S - - - C -	41
169 - BLKDT	BLOCK DATA Test	M - 1 - - -	71
409 - BLOKD	BLOCK DATA Subprogram	B - - - - D	36
179 - BLKDA	BLOCK DATA Test	M - 1 - - -	70
419 - BLAKD	BLOCK DATA Subprogram	B - - - - D	24
429 - BLBKD	BLOCK DATA Subprogram	B - - - - D	17
439 - BLCKD	BLOCK DATA Subprogram	B - - - - D	20
180 - UNFRW	Unformatted WRITE and READ	M - 1 X - -	133
182 - BACUP	BACKSPACE Tape	M - 1 X - -	74
190 - DOTRM	DO Loops - Terminal Statements	M - 1 - - -	135
191 - DOLMT	DO Loops - Parameters as Variable Names	M - 1 - - -	62
192 - DONSC	DO Loops - Completely Nested Nest	M - 1 - - -	166
193 - DONSI	DO Loops - Incomplete DO, Exit by GO TO	M - 1 - - -	60
194 - DONSX	DO Loops - Extended Range	M - 1 - - -	130
195 - DONML	DO Loops - Nested Nest	M - 1 - - -	65
196 - DONIO	DO Loops - I/O Terminal Statements	M - 1 X - -	91
197 - MORDO	DO Loops - I/O, Statmt. Ft., Intr Ft., CALL	M - 1 X - -	143
005 - BSFDF	Statement Functions	M - - - - -	35
412 - MDQ	Subroutine Subprogram	S - - - - -	13
200 - SUBR1	Subroutine - Operations Done at Sub Level	M - 1 X C -	52
410 - SUBRQ	Subroutine Subprogram - No Arg. List	S - - X C -	101

300 - LOGIF	Logical IF Statements	M - 1 - - -	275
411 - SMCQ	Subroutine Subprogram	S - - - - -	12
301 - BARIF	Arithmetic IF Statements - Integer, Real	M - 1 - - -	175
302 - FARIF	Arithmetic IF Statements - D.P.	M - 1 - - -	99
310 - IOFMT	Formatted READ/WRITE - Additional Features	M I 5 - - -	310
	38 Data Cards	- - - - - -	38
312 - RDFMT	Formats in Arrays	M I 1 - - D	201
462 - FMTQ	Subroutine Subprogram	S - - - - -	33
	13 Data Cards	- - - - - -	13
350 - MISC5	Specifications for Program Form	M - 1 - - -	156
351 - FUNMX	Basic External Functions - Trig Formulae	M - 1 - - -	58
352 - NAMES	Names Resemble FORTRAN Verbs, Functions	M - 1 - - -	79
413 - MAQQ	Subroutine (Intrinsic Function Names	S - - - - -	15
463 - MBQQ	Subroutine used as Variable Names in	S - - - - -	15
473 - AMQQ	Subroutine some Subrts. and as	S - - - - D	21
483 - BMQQ	Subroutine Functions in others)	S - - - - -	16
360 - SPEC2	COMMON, DIMENSION, EQUIVALENCE	M - 1 - / -	169

Total Cards 14360

A4. List of Test Units by Parts for Version 3

FORTRAN TEST PROGRAMS SUMMARY INFORMATION FOR VERSION 3

Part #	# of TEST UNITS	# of SUBPROGRAMS	INPUT DATA*	INTERMEDIATE TAPE REQUIRED	Pgs of OUTPUT	# of CARDS
1	4		X		16	1123
2	2				18	932
3	10				14	1076
4	13				14	1123
5	11				14	1153
6	9				11	912
7	13				18	997
8	12				13	951
9	11				12	971
10	5	29			6	1031
11	5	23			6	1090
12	12	5		X	13	1433
13	5	2	X		10	1190
14	4	4			5	579
TOTAL	116	63			170	14561

*Input data other than the 6 cards which are appended to each Part for user output documentation

input unit #5 = card reader
output unit #6 = printer
intermediate unit #9

VERSION 3 PART 1 MAIN PROGRAM

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 1
	003 DATA1	Test Format of DATA Statement
1.	007 IODEF	I/O Unit Assignment Statements
2.	008 FMTRW*	Formatted Input/Output
3.	009 AFRMT*	A-Conversion
	010 DATA2*	DATA Statement Test
	011 AASGN*	Real and Integer Arithmetic Assignment Statements

Input 49 cards - prepare 3 cards (cards 1, 3, and 5) Unit #5
Output - Print 16 pages Unit #6
*Produce Output

Note 1 The first 6 input cards (user prepared cards 1, 3, and 5) are associated with seg. 007 program element, however, performing tests under segment 008. See Data Preparation Section II-A-2. These 6 cards are part of the test for this part only. Inclusion of these cards in later Part tests is for user output documentation only.

Note 2 40 input cards - for test of seg. 008

Note 3 03 input cards - for test of seg. 009

VERSION 3 PART 2 MAIN PROGRAM

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 2
1.	007 IODEF	I/O Unit Assignment Statements
	013 DASGN*	Simple Double Precision Assignment Statements
	015 CASGN*	Simple Complex Assignment Statements

Input 6 cards - prepare 3 cards (1, 3, and 5) Unit #5
Output Print 18 pages Unit #6
*Produce Output

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 2 are not part of the test, but are included for user output documentation only.

VERSION 3 PART 3 MAIN PROGRAM

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 3
1.	007 IODEF	I/O Unit Assignment Statements
	016 LASGN*	Logical Assignment Statements
	017 INTRL*	Arithmetic Assignment Statements
	020 UGOTO*	Unconditional GO TO Statements
	021 AGOTO*	GO TO Assignment Statements
	022 CGOTO*	Computed GO TO Statements
	030 ARBAD*	Basic Addition-Integer and Real
	031 ARFAD*	Double Precision Addition
	032 ARBSB*	Basic Subtraction-Integer and Real
	033 ARFSB*	Double Precision Subtraction
	034 ARBAS*	Basic Addition and Subtraction-Integer and Real

Input 6 cards Unit #5
Output Print 14 pages Unit #6
*Produce Output

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 3 are not part of the test, but are included for user output documentation only.

VERSION 3 PART 4 MAIN PROGRAM

	Segment#	and Name	Test
	000		Special Documentation
	001	SPECS	Specifications needed for Part 4
1.	007	IODEF	I/O Unit Assignment Statements
	035	ARFAS*	Addition and Subtraction of Double Precision Values
	036	ARBMI*	Multiplication of Integer Values
	037	ARBMR*	Multiplication of Real Values
	038	ARFMD*	Multiplication of Double Precision Values
	039	ARBDV*	Division of Integer and Real Values
	040	ARFDV*	Division of Double Precision Values
	041	ARBEX*	Exponentiation of Integer and Real Values
	042	ARFEX*	Exponentiation of Double Precision Values
	043	ARBHI*	Hierarchy of Operations and Parentheses
	050	SBB67*	Subscripts of Integer and Real Arrays v, k
	051	SBB45*	Subscripts of Integer and Real Arrays v+k, v-k
	052	SBB13*	Subscripts of Integer and Real Arrays c+v, c*v+k, c*v-k
	053	SBF17*	Subscripts of Double Precision Arrays v,k, c*k, c*v+k, c*v-k, v+k, v-k

Input 6 cards	Unit #5
Output Print 14 pages	Unit #6
*Produce Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 4 are not part of the test, but are included for user output documentation only.

VERSION 3 PART 5 MAIN PROGRAM
(Intrinsic Function Tests)

	Segment#	and Name	Test
	000		Special Documentation
	001	SPECS	Specification needed for Part 5
1.	007	IODEF	I/O Unit Assignment Statements
	054	SIMIF*	Arithmetic IF, logical IF followed by GO TO
	055	IFABS*	ABS, IABS (Absolute Value Functions)
	056	IFFLT*	FLOAT (Convert from Integer to Real)
	057	IFFIX*	IFIX (Convert from Real to Integer)
	058	IFSGN*	SIGN, ISIGN (Transfer of Sign)
	059	IFDAB*	DABS (Absolute Value)
	060	IFTRN*	AINT, INT, IDINT (Truncation)
	061	IFMOD*	AMOD, MOD (Remaindering)
	062	IFMAX*	AMAX0, AMAX1, MAX0, MAX1, DMAX1 (Choose Largest Value)
	063	IFMIN*	AMIN0, AMIN1, MIN0, MIN1, DMIN1 (Choose Smallest Value)
	064	IFDSG*	DSIGN (Transfer of Sign)

Input 6 cards	Unit #5
Output Print 14 pages	Unit #6
*Produce Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 5 are not part of the test, but are included for user output documentation only.

VERSION 3 PART 6 MAIN PROGRAM
(Intrinsic Functions)

	Segment #	and Name	Test
	000		Special Documentation
	001	SPECS	Specifications needed for Part 6
1.	007	IODEF	I/O Unit Assignment Statements
	065	IFDIM*	DIM, IDIM (Positive Differences)
	066	IFSGL*	SNGL (Obtain most Significant part)
	067	IFREL*	REAL (Obtain Real Part of Complex Argument)
	068	IFIMG*	AIMAG (Obtain Imaginary Part of Complex Number)
	069	IFDBL*	DBLE (Express Real Argument in D.P. Form)
	070	IFCPX*	CMPLX (Express Two Real Arg. in Complex Form)
	071	IFCJG*	CONJG (Obtain Conjugate of a Complex Number)
	072	IFBMS*	All Intrinsic Functions-Real and Integer
	073	IFFMS*	All Intrinsic Functions-Real, Integer and D.P

Input 6 cards	Unit #5
Output Print 11 pages	Unit #6
*Produces Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 6 are not part of the test, but are included for user output documentation only.

VERSION 3 PART 7 MAIN PROGRAM

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 7
1.	007 IODEF	I/O Unit Assignment Statements
	080 EXPON*	Basic External Function - EXP
	081 DEXPO*	Basic External Function - DEXP
	082 CEXPO*	Basic External Function - CEXP
	083 LOGTM*	Basic External Function - ALOG
	084 DPLOG*	Basic External Function - DLOG
	085 CXLOG*	Basic External Function - CLOG
	086 COLOG*	Basic External Function - ALOG10
	087 DCLOG*	Basic External Function - DLOG10
	088 SINUS*	Basic External Function - SIN
	089 DPSIN*	Basic External Function - DSIN
	090 CSICO*	Basic External Function - CSIN and CCSIN
	091 COSNS*	Basic External Function - COS
	092 DPCOS*	Basic External Function - DCOS

Input 6 cards	Unit #5
Output Print 18 pages	Unit #6
*Produces Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 7 are not part of the test, but are included for user output documentation only.

VERSION 3 PART 8 MAIN PROGRAM

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 8
	005 BSFDF	Statement Function Definitions for Segment 110
	006 FSFDF	Statement Function Definitions for Segment 111
1.	007 IODEF	I/O Unit Assignment Statements
	094 TANGH*	Basic External Function - TANH
	095 SQROT*	Basic External Function - SQRT
	096 DSQRO*	Basic External Function - DSQRT
	097 CSQRO*	Basic External Function - CSQRT
	098 ARCTG*	Basic External Function - ATAN
	099 DACTG*	Basic External Function - DATAN
	100 ACTG2*	Basic External Function - ATAN2
	101 DATN2*	Basic External Function - DATAN2
	102 DMODA*	Basic External Function - DMOD
	103 CABSA*	Basic External Function - CABS
	110 BSFTS*	Statement Functions (Real and Integer)
	111 FSFTS*	Statement Functions (D.P., Logical and Complex)

Input 6 cards	Unit #5
Output Print 13 pages	Unit #6
*Produce Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 8 are not part of the test, but are included for user output documentation only.

VERSION 3 PART 9 MAIN PROGRAM

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed by Part 9
1.	007 IODEF	I/O Unit Assignment Statements
	140 CPXAD*	Addition and Subtraction of Complex Numbers
	141 CPXMU*	Multiplication of Complex Numbers
	142 CPXDV*	Division of Complex Numbers
	143 CPXEX*	Exponentiation of Complex Numbers
	144 CPXOP*	Arithmetic Operations on Complex Numbers
	145 CREAD*	Addition, Subtraction of Complex, Real Numbers
	146 CREMU*	Multiplication of Complex by Real Numbers
	147 CREDV*	Division of Real, Complex by Complex, Real Numbers
	148 CREOP*	Combined Operations on Complex and Real Numbers
	149 MISC3*	Blanks in, and Continuation of Statements to Maximum Lines
	150 MISC4*	Special Characters for Continuation Lines

Input 6 cards	Unit #5
Output Print 12 pages	Unit #6
*Produce Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 9 are not part of the test, but are included for user output documentation only.

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 10
1.	007 IODEF	I/O Unit Assignment Statements
	160 BRFCP*	External Function Test - Real
	161 BIFCP*	External Function Test - Integer
	162 FRFCP*	External Function Test - Real - All Argument Types
	163 FIFCP*	External Function Test - Integer - All Argument Types
	164 CFCCP*	External Function Test - Complex
Subprograms		Used with Segment 160 - Real Function
	400 AFS	Real Argument
	420 BFS	Real Arguments
	430 CFS	Integer Argument
	440 DFS	Integer Arguments
	450 EFS	Array Name
	460 FFS	Integer and Real Arguments
Subprograms		Used with Segment 161 - Integer Function
	401 IAFI	Real Argument
	421 IBFI	Real Arguments
	431 ICFI	Integer Argument
	441 IDFI	Integer Arguments
	451 IEFI	Array Name
	461 IFFI	Integer and Real Arguments
Subprograms		Used with Segment 162 - Real Function
	402 GFS	Double Precision Arguments
	422 HFS	Complex Arguments
	432 IRFS	Logical Argument
	442 JRFS	Argument - External Procedure
	452 RFS	Different Types of Arguments
Subprograms		Used with Segment 163 - Integer Function
	403 IFI	Double Precision Arguments
	423 JFI	Complex Arguments
	433 KFI	Logical Arguments
	443 LFI	Argument - External Procedure
	453 MFI	Different Types of Arguments
Subprograms		Used with Segment 164 - Complex Function
	404 AFC	Real Argument
	414 BFC	Integer Argument
	424 CFC	Array Name
	434 DFC	Double Precision Argument
	444 EFC	Complex Argument
	454 FFC	Logical Arguments
	464 HFC	Different Types of Arguments

Input 6 cards	Unit #5
Output Print 6 pages	Unit #6
*Produces Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 10 are not part of the test, but are included for user output documentation only.

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 11
1.	007 IODEF	I/O Unit Assignment Statements
	165 DPFCP*	External Function Test - Double Precision
	166 BFCCP*	External Function Test - Logical
	167 SBRTN*	Subroutine Subprogram Test
	168 FSBRT*	Subroutine Subprogram Test
	169 BLKDT*	Block Data Subprogram Test
Subprograms		Used with Segment 165 - D.P. Function
	405 AFD	Real Argument
	415 BFD	Integer Argument
	425 CFD	Double Precision Argument
	435 DFD	Complex Argument
	445 EFD	Logical Argument
	455 FFD	Argument - External Procedure
	465 GFD	Array Name
	475 HFD	Different Types of Arguments
Subprograms		Used with Segment 166 - Logical Function
	406 AFB	Real Arguments
	416 BFB	Integer Arguments
	426 CFB	Double Precision Argument
	436 DFB	Logical Argument
	446 EFB	Complex Argument
	456 FFB	Array Name
	466 GFB	Argument - External Procedure
	476 HFB	Different Types of Arguments
Subprograms		Used with Segment 167 - Subroutine Subprogram
	407 AAQ	Integer and Real variables and Array Elements
	417 ABQ	Array Elements
	427 ACQ	No Argument List - Arguments passed thru Common
Subprograms		Used with Segment 168 - Subroutine Subprogram
	408 ADQ	Different Types of Arguments
	418 AEQ	Array Names and Integer Arguments
	428 AFQ	No Argument List - Arguments Passed through Common
Subprogram		Used with Segment 169 - Block Data Test
	409 BLOKD	Block Data Subprogram

Input 6 cards — Unit #5
Output Print 6 pages — Unit #6
*Produces Output

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation II-A-2. These cards in Part 11 are not part of the list, but are included for user output documentation only.

VERSION 3 PART 12 MAIN PROGRAM AND 5 SUBPROGRAMS

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 12
	005 BSFDF	Statement Function Definitions used with Segment 197
1.	007 IODEF	I/O Unit Assignment Statements
	179 BLKDA*	Block Data Test
	180 UNFRW*	Unformatted Read and Write
	182 BACUP*	Backspace Tape
	190 DOTRM*	DoLoops - Terminal Statements
	191 DOLMT*	DoLoops - Parameters integer variable names
	192 DONSC*	DoLoops - Completely Nested Nest
	193 DONSI*	DoLoops - Incomplete Looping
	194 DONSX*	DoLoops - Extended Range
	195 DONML*	DoLoops - Nested Nests
	196 DONIO*	DoLoops - I/O Terminal Statements
	197 MORDO*	DoLoops - I/O, Intrinsic Functions, CALL included
	200 SUBR1*	Subroutine Called
Subprogram		Used with Segment 200
	410 SUBRQ	
Subprogram		Used with Segment 197
	412 MDQ	Subroutine Subprogram
Subprograms		Used with Segment 179 - Block Data Test
	419 BLAKD	Block Data Subprogram
	429 BLBKD	Block Data Subprogram
	439 BLCKD	Block Data Subprogram

Input 6 cards	Unit #5
Output Print 13 pages	Unit #6
Intermediate tape	Unit #9
*Produces Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 12 are not part of the test, but are included for user documentation only.

VERSION 3 PART 13 MAIN PROGRAM AND 2 SUBPROGRAMS

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 13
1.	007 IODEF	I/O Unit Assignment Statements
	300 LOGIF*	Logical If Statements
	301 BARIF*	Arithmetic If Statements (Integer and Real Expressions)
	302 FARIF*	Arithmetic If Statements
2.	310 IOFMT*	Formatted Read and Write, additional properties of
3.	312 RDFMT*	Formats in Arrays
Subprogram		Used with Segment 300
	411 SMCQ	Subroutine
Subprogram		Used with Segment 312
	462 FMTQ	Subroutine

Input 57 cards - prepare 3 cards (cards 1, 3, and 5) Unit #5
Output Print 10 pages Unit #6
*Produce Output

Note 1 The first 6 input cards in Part 13 (user prepared cards 1, 3, and 5) are not part of the test, but are included for output documentation only. See Data Preparation Section II-A-2.

Note 2 38 input cards - for test of seg. 310

Note 3 13 input cards - for test of seg. 312

VERSION 3 PART 14 MAIN PROGRAM AND 4 SUBPROGRAMS

	Segment # and Name	Test
	000	Special Documentation
	001 SPECS	Specifications needed for Part 14
1.	007 IODEF	I/O Unit Assignment Statements
	350 MISC5*	Specifications for Program Form (Test)
	351 FUNMX*	Basic External Functions using Trig Formula
2.	352 NAMES*	Names resembling FORTRAN Verbs and Function Names
	360 SPEC2*	Common, Dimension and Equivalence
Subprogram		Used with Segment 352
	413 MAQQ	Subroutine Called from NAMES
	463 MBQQ	Subroutine Called from NAMES
	473 AMQQ	Subroutine Called from NAMES
	483 BMQQ	Subroutine Called from NAMES

Input 6 cards	Unit #5
Output Print 5 pages	Unit #6
*Produce Output	

Note 1 Prepare replacement cards for cards 1, 3, and 5 as described in Data Preparation Section II-A-2. These cards in Part 14 are not part of the test, but are included for user output documentation only.

Note 2 This test may cause difficulties in some compilers and may have to be run independently of other tests.

B. PROCEDURES FOR ISOLATING TEST UNIT FAILURES FROM VERSION 3

The following procedures assume the NBS FORTRAN Test Programs, Version 3, are being used with the programs on interpreted punch cards rather than from magnetic tape.

B1. Deleting a Test Unit

If any part fails to complete the execution of all the test units within the part, the printed results will probably contain at least the heading of the segment which failed and no test unit beyond this point will have been completed. If the test which failed is not the last one in a part, remove the cards which define the particular test and proceed with the test with this test unit deleted. Parts 10-14 contain subprograms which may have to be removed if a test failure occurs in these parts.

B2. Creating a Single Test from a Deleted Unit

Each test unit may be run independently by either of the following two methods.

a) Append the FORTRAN specification statements which appear at the beginning of the appropriate part to the beginning of the test unit to be retested. Include the one (or two) Input-Output assignment statements appearing as a segment 007 card within the first test unit of the part. This statement should be inserted into the test unit to be retested as the first executable statement, which can be located by the corresponding statement appearing in the test unit as a comment card with C = in the first two locations. Supply a STOP statement and an END card at the end of the test unit main program. Although specifications not used within this test unit may cause diagnostics to appear as warning messages to non referenced data names, the program test unit is still a standard conforming FORTRAN program.

b) Isolate the test unit. Check the initial comment lines in the listing related to the part containing the test unit. If any additional segments are required to run this test unit, they are identified. For every card in the isolated test unit containing a "C =" in columns 1 and 2, duplicate the cards with the "C =" changed to blanks and omit punching columns 73-80 of the card. Return the comment cards to their original locations in the deck with the corresponding FORTRAN created statements immediately below the comment card. These "C = " comment indicators have been appended to what otherwise would be FORTRAN specification statements, I/O assignment, STOP statements and END lines. Omitting the duplication of columns 73-80 will make it easier to remove these cards when the test unit is returned to its original state for reinsertion into its appropriate location in the test part.

Test units numbered 008, 009, 310 and 312 are the only units which require input data cards to perform the test.

C. SAMPLE TEST RESULTS

C1. Interpreting the Test Results

An attempt was made in the design of these tests to produce test results which were as much as possible self explanatory. Wherever a value of zero could not be created by the addition or subtraction of a constant from the calculated result, a Hollerith equivalent precedes the test result for comparison purposes.

The effects of conversion, precision, and exponent range are minimized by the use of values which are integer and fractional powers of 2 where the choice of values affected the test results. Other results are truncated to minimize the effects of differences in systems precision.

The ASA FORTRAN Standard does not prescribe the external output form for a Real or Double Precision zero. Systems implementors have used a wide variety of forms with and without + or - signs. Some implementations employ a + or - sign with the Fw.d format field descriptor when the printed value is zero to denote a truncated value whose sign corresponds to the sign of the original value. Expect variations in the form of zero.

The ASA FORTRAN Standard permits the implementor a choice of form for output.

A positive sign is not required.

A leading zero before the decimal point for E and D conversion is not required.

The following exponent forms are equivalent and correct for E conversion:

```
E+02
E 02
+002
```

The following exponent forms are equivalent and correct for D conversion:

```
D+13
D 13
E+13
E 13
+013
```

In the test program results where D conversion is used on output and the expected output value is stipulated to be zero, any value containing a negative exponent of D-13 or mathematically less is considered to be zero. The test units containing the Basic External Functions do not attempt to test either the range or the precision of these functions. A selected set of arguments to these functions is presented for the purpose of determining only whether the function name referenced is actually the function delivered.

The following limits have been set for constants in this test program set:

Integer 5 digits
Real 7 digits
Double Precision 14 digits
Complex 7 digits (each half)
Hollerith 2 characters except in segment 009 which tests A-conversion for 1 to 4 characters and 26 characters for the truncation test.

Where the precision of a FORTRAN processor for a REAL datum approaches the limit established for a Double Precision datum (14 digits) it will be necessary to increase the number of digits printed out for the test of the intrinsic function SNGL (test unit 066) to obtain meaningful test results.

C2. Test Results

The following test results were obtained from actual execution of Version 1 or Version 3 of the NBS FORTRAN Test Program set. These results are a composite set of output pages derived from five FORTRAN processors showing various forms for zero and differences in exponent form.

FORTRAN TEST PROGRAMS
PREPARED BY NATIONAL BUREAU OF STANDARDS
FOR USE ON FORTRAN PROCESSORS
IN ACCORDANCE WITH ASA FORTRAN X3.9-1966
VERSION 1

PREPARED BY USER
PREPARED BY USER
PREPARED BY USER

FORTRAN TEST PROGRAMS
PREPARED BY NATIONAL BUREAU OF STANDARDS
FOR USE ON LARGE FORTRAN PROCESSORS
IN ACCORDANCE WITH ASA FORTRAN X3.9-1966
VERSION 3 PART 1

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL
OPERATING SYSTEM VERSION
DATE, INSTALLATION NAME

FMTRW - (008) FORMATTED I/O

ASA REFS - 7.1.3.2.2 7.1.3.2.3 7.2.3

RESULTS

10101010101010101010999999999888888888
77777776666665555544443332 21

```
AAA           BBB           CCC
 DDD          EEE          FFF
  GGG         HHH         III
   JJJ        KKK        LLL
    MMM       NNN       OOO
     PPP      QQQ      RRR
      SSS     TTT     UUU
       VVV    WWW    XXX
          YYY   ZZZ
```

= + - * / ( ) , . $

BEGIN VERTICAL SPACING

FORMAT(14H SKIP 1 LINE /)

FORMAT(15H SKIP 2 LINES //)

FORMAT(16H SKIP 3 LINES ///)

IMBEDDED SLASHES - SKIP 1 LINE

SKIP 2 LINES

SKIP 3 LINES

SKIP TO NEXT LINE
SKIP 1 LINE

TEST NO /1H+,7HADVANCE
SKIP TO NEW PAGE

```
END OF VERTICAL SPACING TEST


BEGIN I CONVERSION TEST
EACH PAIR OF LINES SHOULD BE IDENTICAL
LINE 1 OF EACH GROUP IS HOLLERITH INFORMATION

999
999

5555 4444
5555 4444

666  777777  8
666  777777  8

33333311111222222255555444444444444
33333311111222222255555444444444444

BEGIN F CONVERSION TEST
EACH PAIR OF LINES SHOULD BE IDENTICAL

7.7123456.7
7.7123456.7

8.889.9997.123456
8.889.9997.123456

5.44446.5555533.133.133.133.1444.1
5.44446.5555533.133.133.133.1444.1

5555.15555.1  66666.166666.1  44.22
5555.15555.1  66666.166666.1  44.22

2.12.12.12.12.1666.3334.3334.3334.333
2.12.12.12.12.1666.3334.3334.3334.333


BEGIN E CONVERSION TEST
EACH PAIR OF LINES SHOULD BE IDENTICAL

-0.1E+01   0.22E-01
 -.1E+01    .22E-01

 0.333E+02   0.4444E+03
  .333E+02    .4444E+03

-0.55555E-03   0.666666E+00
 -.55555E-03    .666666E+00

 0.9876543E+12
  .9876543E+12
```

```
BEGIN COMPLEX CONVERSION TEST
EACH GROUP SHOULD BE IDENTICAL

1.0  5.5
1.0  5.5

22.0  66.6
22.0  66.6

33.1234  55.0789
33.1234  55.0789

123.00  456.88
123.00  456.88

 0.123E+01   0.987E+01
  .123E+01    .987E+01

-0.2345E+02  -0.6879E+02
 -.2345E+02   -.6879E+02

 0.7E+03   0.4E+03
  .7E+03    .4E+03

 0.9876543E-04   0.1357913E-04
  .9876543E-04    .1357913E-04

19.34   0.2468E+02
19.34    .2468E+02

 0.765E+02  87.6
  .765E+02  87.6

43.96 0.5407E+02
43.96  .5407E+02
43.96  .5407E+02
43.96  .5407E+02


BEGIN D CONVERSION TEST
EACH GROUP SHOULD BE IDENTICAL

 0.1D+06
  .1D+06

-0.334D-04
 -.334D-04
 -.334D-04

 0.7657654D+00
  .7657654D+00
```

```
 0.12345678901D+10
  .12345678901D+10

 0.987654321098760-01
  .987654321098760-01
  .987654321098760-01
  .987654321098760-01

-0.555555542D+03
 -.555555542D+03
 -.555555542D+03


BEGIN L CONVERSION TEST
LINES BELOW SHOULD BE IDENTICAL

   T   F   F  T T  FTF
   T   F   F  T T  FTF


TEST UNSUBSCRIPTED ARRAY NAMES
IN I/O LISTS. EACH GROUP OF LINES
SHOULD BE IDENTICAL.

9.91.19.92.29.93.39.94.4
9.91.19.92.29.93.39.94.4
9.91.19.92.29.93.39.94.4

-9.9-9.9-9.9-9.9
-9.9-9.9-9.9-9.9

-0.99D+01-0.99D+01-0.99D+01-0.99D+01
 -.99D+01 -.99D+01 -.99D+01 -.99D+01
 -.99D+01 -.99D+01 -.99D+01 -.99D+01

9999999999
9999999999

 0.99D+01 0.99D+01 0.99D+01 0.99D+01
  .99D+01  .99D+01  .99D+01  .99D+01

0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9
 .9  .9  .9  .9  .9  .9  .9  .9  .9
 .9  .9  .9  .9  .9  .9  .9  .9  .9
 .9  .9  .9  .9  .9  .9  .9  .9  .9

TF
TF

TFTFTFTF
TFTFTFTF

99999999
99999999

 0.99D+01
  .99+001
  .99+001
  .99+001
  .99+001
  .99+001

9.95.59.96.69.97.79.98.8
9.95.59.96.69.97.79.98.8
9.95.59.96.69.97.79.98.8
9.95.59.96.69.97.79.98.8

9999999999999999
9999999999999999

TFFT
TFFT

9.99.99.99.99.9
9.99.99.99.99.9

LEADING BLANK INSERTION TEST
EACH PAIR OF LINES SHOULD BE IDENTICAL

8
8

22
22

 22
 22

  22
  22

   22
   22

7.7
7.7

 8.88
 8.88
```

```
   9.999
   9.999

    5.4444
    5.4444

     6.55555
     6.55555

      7.123456
      7.123456

0.21E+01
 .21E+01

 0.331E+02
  .331E+02

  0.4441E+03
   .4441E+03

   0.55551E+04
    .55551E+04

    0.666661E+05
     .666661E+05

      0.1234567E+06
       .1234567E+06

0.1D+00
 .1D+00

 0.1D+00
  .1D+00

  0.1D+00
   .1D+00

   0.1D+00
    .1D+00

1.0  5.5
1.0  5.5

 9.9   5.5
 9.9   5.5

  9.9    5.5
  9.9    5.5

   1.0     5.5
   1.0     5.5
```

```
TEST LOGICAL FIELDS WITH BLANKS
LINES BELOW SHOULD BE IDENTICAL

     T   F         T    F
     T   F         T    F


TEST D = 0, W=D+1  (PAIRS OF LINES
BELOW SHOULD BE IDENTICAL)


4444.
4444.

 .55555
 .55555

BEGIN G CONVERSION
EACH PAIR OF LINES SHOULD BE IDENTICAL

   .1235E+05      1235.      123.5
   .1235E+05      1235.      123.5


   12.35          1.235      .1235
   12.35          1.235      .1235
```

```
SCALE FACTOR ON READ
IN ORDER OF FORMAT OCCURRENCE

CARD    9876.54    98.7654E2      9876.54
DESC     2PF8.3      -2PE9.4        F9.4
TO BE   98.7654    .9877E+04    987654.00
IS      98.7654    .9877E+04    987654.00

CARD    987.654    864786D-4    86.4786E2
DESC     0PG9.4        D9.4      -2PE9.4
TO BE   987.654    .8648D-02    .8648E+04
IS      987.654    .8648D-02    .8648E+04

CARD    86.4786    8657.87D0      9876.54
DESC       F9.4         D9.4       2PG9.4
TO BE 8647.860    .8658D+04        98.77
IS    8647.860    .8658D+04        98.77

SCALE FACTOR ON WRITE
IN ORDER OF FORMAT OCCURRENCE

CARD    9.87655    98.7654E2      9876.54
DESC    2PF12.2     -2PE12.4        F12.4
TO BE    987.65    .0099E+06      98.7654
IS       987.66    .0099E+06      98.7654

CARD    987.654    864786D-3    86.4786E2
DESC    1PG12.2        D12.4     -2PE12.4
TO BE 9.88E+02  8.6479D+02    .0086E+06
IS    9.88E+02  8.6479D+02    .0086E+06

CARD    86.4786    8657.86D0      9876.54
DESC    2PF12.2      1PD12.4      2PG16.4
TO BE   8647.86  8.6579D+03        9877.
IS      8647.86  8.6579D+03        9877.

THE LAST TWO LINES OF EACH
SET SHOULD BE THE SAME

FORMAT RESCAN - THE SECOND GROUP OF
EACH SET SHOULD AGREE WITH THE FIRST

 1   22   333
 4   55   666
 7   88   999

 1   22   333
 4   55   666
 7   88   999

 2 **   4 $$   6 ((
 8 $$

 2 **   4 $$   6 ((
 8 $$
```

```
AFRMT = (009) A-CONVERSION

ASA REF = 7,2,3,8

EACH PAIR OF LINES SHOULD BE IDENTICAL
      FOR COMPUTERS STORING FOUR
      OR MORE CHARACTERS PER WORD

ABCDEFGHIJKLMNOPQRSTUVWX YZ
ABCDEFGHIJKLMNOPQRSTUVWX YZ

*=*/()+,.$
*=*/()+,.$

0123456789+AB2$(C)
0123456789+AB2$(C)

TEST A CONVERSION - ADDING BLANKS
EACH PAIR OF LINES SHOULD BE IDENTICAL

 A
 A

 *
 *

 Q
 Q

 1
 1

 Z
 Z

TEST A FIELD TRUNCATION
2ND LINE SHOULD PARTIALLY MATCH 1ST

ABCDEFGHIJKLMNOPQRSTUVWXYZ
                        VWXYZ
```

DATA2 = (010) DATA STATEMENT USE

ASA REFS, = 7,2,2

RESULTS

LINE 1 OF EACH GROUP IS HOLLERITH INFORMATION, TEST IS SUCCESSFUL IF EACH GROUP CONTAINS THE SAME VALUES

		=750,05
		=750,05
		=750,05
		=750,05
		=750,05
	11,1	22,22
	11,1	22,22
	11,1	22,22
0	11,1	22,22
0	11,1	22,22
0		
0		
0	=34,50	=6,78
	=34,50	=6,78
	=34,50	=6,78
10	=34,50	=6,78
10	=34,50	=6,78
10		
10		
10	10,00	=20,00
	10,00	=20,00
	10,00	=20,00
246	10,00	=20,00
246	10,00	=20,00
246		
246		
246	=200,00	4000,00
	=200,00	4000,00
	=200,00	4000,00
=750	=200,00	4000,00
=750	=200,00	4000,00
=750		
=750		
=750		=0,295D+05
		=0,295D+05
		=0,295D+05
0,00		=0,295D+05
0,00		=0,295D+05
0,00		
0,00		
0,00		0,345678901D+05
		0,345678901D+05
		0,345678901D+05
246,15		0,345678901D+05
246,15		0,345678901D+05
246,15		
246,15		
246,15		0,1122335D=02
		0,1122335D=02
	6	0,1122335D=02
3546,74		0,1122335D=02
3546,74	5	0,1122335D=02
3546,74		
3546,74		
3546,74		

0.34D+13	
0.34D+13	
0.34D+13	
0.34D+13	
0.34D+13	
T	
T	
T	
T	
T	
F	
F	
F	
F	
F	
AD	
AD	
AD	
NO	
NO	
BC	
BC	
**	
**	
P	
P	

AASGN - (011) SIMPLE REAL AND INTEGER
ARITHMETIC ASSIGNMENT STATEMENTS
ASA REF. - 7.1.1

LINE 1 OF EACH PAIR IS HOLLERITH
INFORMATION

INTEGER RESULTS

1	12345	0
1	12345	0
2	-3	-8765
2	-3	-8765
6912	0	-23
6912	0	-23
4444	4321	45
4444	4321	45
2468	-3123	0
2468	-3123	0

REAL RESULTS

1.0	358.6724	-2.0
1.0	358.6724	-2.0
3.0	-2714.250	29.30542
3.0	-2714.250	29.30542
86.27	1034.2	0.0
86.27	1034.2	.0
0.0	345.678	-2.5
.0	345.678	-2.5
-5.66	1.111111	1.0
-5.66	1.111111	1.0
-2.0	3.0	4.0
-2.0	3.0	4.0
5.0	-6.0	0.0
5.0	-6.0	.0
0.23	-0.716	-0.7
.23	-.716	-.7
0.81	0.9	
.81	.9	

```
 0.105E+03   -0.76E+02      0.3324E+03
  .105E+03    -.76E+02       .3324E+03

 0.5132E+01   0.534E-02    -0.1419E+00
  .5132E+01    .534E-02     -.1419E+00

-0.99E+03     0.105210E+05 0.456E+02
 -.99E+03      .105210E+05  .456E+02

 0.6652E+03  -0.529E+03     0.78564E+04
  .6652E+03   -.529E+03      .78564E+04

-0.34567E+04  0.6162E+04    0.23E+00
 -.34567E+04   .6162E+04     .23E+00

 0.94333E+01  0.3524E-02   -0.7432E+00
  .94333E+01   .3524E-02    -.7432E+00

 0.1E+01      0.123E+05    -0.11E+05
  .1E+01       .123E+05     -.11E+05

 0.144E+02   -0.12E+00      0.3645E+01
  .144E+02    -.12E+00       .3645E+01

-0.200E+04    0.99E+04     0.0E+00
 -.200E+04     .99E+04     0.

-0.1512E+06   0.214E+06     0.34E+01
 -.1512E+06    .214E+06      .34E+01

-0.4E-01      0.53214E+01  0.6E+04
 -.4E-01       .53214E+01   .6E+04

 0.72E+06    -0.813E+04     0.234E+00
  .72E+06     -.813E+04      .234E+00

-0.3E+02      0.44E+01     0.1E+05
 -.3E+02       .44E+01      .1E+05

 0.36E-03     0.9E-04     -0.10E-02
  .36E-03      .9E-04      -.10E-02

 0.777E+01   -0.29E+03     0.4E+01
  .777E+01    -.29E+03      .4E+01

 0.90E+01     0.810E+00   -0.7E+03
  .90E+01      .810E+00    -.7E+03

 0.62E+03     0.5310E+01  -0.442E+02
  .62E+03      .5310E+01   -.442E+02

 0.3E-04      0.25E-03    -0.163E-02
  .3E-04       .25E-03     -.163E-02
```

```
 0.709E+06    0.81842E+05 -0.9E+06
  .709E+06     .81842E+05  -.9E+06

 0.627E+05    0.53E+05    -0.4E+05
  .627E+05     .53E+05     -.4E+05

 0.1463E+02   0.2E-02      -0.355E+02
  .1463E+02    .2E-02       -.355E+02

 0.29E+07     0.4072E+07  -0.61835E+07
  .29E+07      .4072E+07   -.61835E+07

 0.829E+04    0.3E+03     -0.1E+04
  .829E+04     .3E+03      -.1E+04

 0.3404E+00   0.55E-03    -0.761E+02
  .3404E+00    .55E-03     -.761E+02
```

F O R T R A N T E S T P R O G R A M S

PREPARED BY NATIONAL BUREAU OF STANDARDS

FOR USE ON LARGE FORTRAN PROCESSORS

IN ACCORDANCE WITH ASA FORTRAN X3.9-1966

VERSION 3 PART 2

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME

```
DASGN - (013) SIMPLE D.P. ARITHMETIC
                ASSIGNMENT STMNTS.
ASA REFS. - 7.1.1.1  5.1.1.3

RESULTS

LINE 1 OF EACH GROUP IS
HOLLERITH INFORMATION

     0.34D+02
     0.34D+02
     0.34D+02
     0.34D+02
     0.34D+02

     0.1234567891011D+08
     0.1234567891011D+08
     0.1234567891011D+08
     0.1234567891011D+08
     0.1234567891011D+08

     0.2987652340-01
     0.2987652340-01
     0.2987652340-01
     0.2987652340-01
     0.2987652340-01

     0.34510000555D+07
     0.34510000555D+07
     0.34510000555D+07
     0.34510000555D+07
     0.34510000555D+07

     0.22232425D+08
     0.22232425D+08
     0.22232425D+08
     0.22232425D+08
     0.22232425D+08

     0.281420D+05
     0.281420D+05
     0.281420D+05
     0.281420D+05
     0.281420D+05

     0.4455667788D+16
     0.4455667788D+16
     0.4455667788D+16
     0.4455667788D+16
     0.4455667788D+16

     0.3569248356924800+12
     0.3569248356924800+12
     0.3569248356924800+12
     0.3569248356924800+12
     0.3569248356924800+12

     0.6549876D-03
     0.6549876D-03
     0.6549876D-03
     0.6549876D-03
     0.6549876D-03

     0.78D+10
     0.78D+10
     0.78D+10
     0.78D+10
     0.78D+10

     0.0D+00
     0.0D+00
     0.0D+00
     0.0D+00
     0.0D+00

    -0.172635445D+11
    -0.172635445D+11
    -0.172635445D+11
    -0.172635445D+11
    -0.172635445D+11

     0.198762D+05
     0.198762D+05
     0.198762D+05
     0.198762D+05
     0.198762D+05

    -0.254396621D+03
    -0.254396621D+03
    -0.254396621D+03
    -0.254396621D+03
    -0.254396621D+03

     0.3478652991023400-05
     0.3478652991023400-05
     0.3478652991023400-05
     0.3478652991023400-05
     0.3478652991023400-05

    -0.444D-08
    -0.444D-08
    -0.444D-08
    -0.444D-08
    -0.444D-08
```

0,0D+00	-0,9694929090+13
0,0D+00	-0,9694929090+13
0,0D+00	-0,9694929090+13
0,0D+00	-0,9694929090+13
0,0D+00	-0,9694929090+13
-0,123D+20	0,1246085D+01
-0,123D+20	0,1246085D+01
-0,123D+20	0,1246085D+01
-0,123D+20	0,1246085D+01
-0,123D+20	0,1246085D+01
0,3692468D-01	-0,59D+02
0,3692468D-01	-0,59D+02
0,3692468D-01	-0,59D+02
0,3692468D-01	-0,59D+02
0,3692468D-01	-0,59D+02
-0,1479378249670+07	0,798281392253D+12
-0,1479378249670+07	0,798281392253D+12
-0,1479378249670+07	0,798281392253D+12
-0,1479378249670+07	0,798281392253D+12
-0,1479378249670+07	0,798281392253D+12
0,927786174985D+02	0,42921D+11
0,927786174985D+02	0,42921D+11
0,927786174985D+02	0,42921D+11
0,927786174985D+02	0,42921D+11
0,927786174985D+02	0,42921D+11
-0,59354914223619D+00	0,793685443D+05
-0,59354914223619D+00	0,793685443D+05
-0,59354914223619D+00	0,793685443D+05
-0,59354914223619D+00	0,793685443D+05
-0,59354914223619D+00	0,793685443D+05
0,986632710-03	0,33344455566D+13
0,986632710-03	0,33344455566D+13
0,986632710-03	0,33344455566D+13
0,986632710-03	0,33344455566D+13
0,986632710-03	0,33344455566D+13
-0,1D-15	-0,222333444D+10
-0,1D-15	-0,222333444D+10
-0,1D-15	-0,222333444D+10
-0,1D-15	-0,222333444D+10
-0,1D-15	-0,222333444D+10
0,32612946750+22	0,1D+02
0,32612946750+22	0,1D+02
0,32612946750+22	0,1D+02
0,32612946750+22	0,1D+02
0,32612946750+22	0,1D+02

-0.2D+03	0.00000000000000D+00
-0.2D+03	0.00000000000000D+00
-0.2D+03	0.00000000000000D+00
-0.2D+03	0.00000000000000D+00
-0.2D+03	0.00000000000000D+00
	0.00000000000000D+00
0.33333333333333D+11	
0.33333333333333D+11	0.29876523400000D-01
0.33333333333333D+11	0.29876523400000D-01
0.33333333333333D+11	0.29876523400000D-01
0.33333333333333D+11	0.29876523400000D-01
	0.29876523400000D-01
-0.444444444D+05	0.29876523400000D-01
-0.444444444D+05	
-0.444444444D+05	-0.25439662100000D+03
-0.444444444D+05	-0.25439662100000D+03
-0.444444444D+05	-0.25439662100000D+03
	-0.25439662100000D+03
0.34000000000000D+02	-0.25439662100000D+03
0.34000000000000D+02	-0.25439662100000D+03
0.34000000000000D+02	
0.34000000000000D+02	
0.34000000000000D+02	
0.34000000000000D+02	
-0.17263544500000D+11	
-0.17263544500000D+11	
-0.17263544500000D+11	
-0.17263544500000D+11	
-0.17263544500000D+11	
-0.17263544500000D+11	
0.00000000000000D+00	
0.00000000000000D+00	
0.00000000000000D+00	
0.00000000000000D+00	
0.00000000000000D+00	
0.00000000000000D+00	
-0.17263544500000D+11	
-0.17263544500000D+11	
-0.17263544500000D+11	
-0.17263544500000D+11	
-0.17263544500000D+11	
-0.17263544500000D+11	
0.65498760000000D-03	
0.65498760000000D-03	
0.65498760000000D-03	
0.65498760000000D-03	
0.65498760000000D-03	
0.65498760000000D-03	

```
EACH GROUP SHOULD BE IDENTICAL EXCEPT
FOR THE SIGNS OF THE FIRST TWO LINES

 0,34786529910234D-05
 0,34786529910234D-05
-0,34786529910234D-05
-0,34786529910234D-05
-0,34786529910234D-05
-0,34786529910234D-05

-0,14793782496700D+07
-0,14793782496700D+07
 0,14793782496700D+07
 0,14793782496700D+07
 0,14793782496700D+07
 0,14793782496700D+07

 0,29876523400000D-01
 0,29876523400000D-01
-0,29876523400000D-01
-0,29876523400000D-01
-0,29876523400000D-01
-0,29876523400000D-01

-0,14793782496700D+07
-0,14793782496700D+07
 0,14793782496700D+07
 0,14793782496700D+07
 0,14793782496700D+07
 0,14793782496700D+07

 0,29876523400000D-01
 0,29876523400000D-01
-0,29876523400000D-01
-0,29876523400000D-01
-0,29876523400000D-01
-0,29876523400000D-01

 0,98663271000000D-03
 0,98663271000000D-03
-0,98663271000000D-03
-0,98663271000000D-03
-0,98663271000000D-03
-0,98663271000000D-03

 0,12345678910110D+08
 0,12345678910110D+08
-0,12345678910110D+08
-0,12345678910110D+08
-0,12345678910110D+08
-0,12345678910110D+08

-0,44400000000000D-08
-0,44400000000000D-08
 0,44400000000000D-08
 0,44400000000000D-08
 0,44400000000000D-08
 0,44400000000000D-08
```

```
CASGN - (015) COMPLEX ASSIGNMENT
              STATEMENTS
ASA REFS. - 5.1.1.4  7.1.1.1

RESULTS

LINE 1 OF EACH GROUP IS
HOLLERITH INFORMATION

VALUES IN A GROUP SHOULD BE THE SAME

     0.222E+02          0.3333E+02
      .222E+02           .3333E+02
      .222E+02           .3333E+02
      .222E+02           .3333E+02
      .222E+02           .3333E+02

     0.3956E+03         0.41067E+04
      .3956E+03          .41067E+04
      .3956E+03          .41067E+04
      .3956E+03          .41067E+04
      .3956E+03          .41067E+04

    -0.1234567E+05     -0.1234567E+04
     -.1234567E+05      -.1234567E+04
     -.1234567E+05      -.1234567E+04
     -.1234567E+05      -.1234567E+04
     -.1234567E+05      -.1234567E+04

     0.89E+01           -0.91E+01
      .89E+01            -.91E+01
      .89E+01            -.91E+01
      .89E+01            -.91E+01
      .89E+01            -.91E+01

    -0.263512E+04       0.4621E+02
     -.263512E+04        .4621E+02
     -.263512E+04        .4621E+02
     -.263512E+04        .4621E+02
     -.263512E+04        .4621E+02

     0.1E+02            0.2E+02
      .1E+02             .2E+02
      .1E+02             .2E+02

     0.3E+03            0.4E+04
      .3E+03             .4E+04
      .3E+03             .4E+04

    -0.5E+02           -0.6E+03
     -.5E+02            -.6E+03
     -.5E+02            -.6E+03

     0.71E+02           -0.92E+02
      .71E+02            -.92E+02
      .71E+02            -.92E+02

    -0.883E+03          0.1414E+04
     -.883E+03           .1414E+04
     -.883E+03           .1414E+04

     0.1E+02            0.562E+03
      .1E+02             .562E+03
      .1E+02             .562E+03

     0.2002E+04         -0.983E+03
      .2002E+04          -.983E+03
      .2002E+04          -.983E+03

     0.461E+03          -0.165E+03
      .461E+03           -.165E+03
      .461E+03           -.165E+03

    -0.21E+02           0.122E+03
     -.21E+02            .122E+03
     -.21E+02            .122E+03

     0.1E-02            0.2E-02
      .1E-02             .2E-02
      .1E-02             .2E-02

     0.562E+00          0.562E+00
      .562E+00           .562E+00
      .562E+00           .562E+00

    -0.3E+00           -0.3333333E+00
     -.3E+00            -.3333333E+00
     -.3E+00            -.3333333E+00

     0.4E+00           -0.445E+00
      .4E+00            -.445E+00
      .4E+00            -.445E+00

    -0.95E+00           0.95E+00
     -.95E+00            .95E+00
     -.95E+00            .95E+00

     0.164239E-01       0.36E+00
      .164239E-01        .36E+00
      .164239E-01        .36E+00

     0.21E+00          -0.3963E+00
      .21E+00           -.3963E+00
      .21E+00           -.3963E+00

     0.3398E+00         0.3398E+00
      .3398E+00          .3398E+00
      .3398E+00          .3398E+00

    -0.6E+00            0.6E+00
     -.6E+00             .6E+00
     -.6E+00             .6E+00
```

0.0E+00	0.1E+01
0.	.1E+01
0.4562311E+07	0.789453E+06
.4562311E+07	.789453E+06
0.449E+06	0.25E+04
.449E+06	.25E+04
0.22223E+07	0.3332E+05
.22223E+07	.3332E+05
0.3E+01	0.3E+01
.3E+01	.3E+01
.3E+01	.3E+01
0.9876543E+05	0.8765432E+04
.9876543E+05	.8765432E+04
.9876543E+05	.8765432E+04
0.4444E+04	0.55555E-02
.4444E+04	.55555E-02
.4444E+04	.55555E-02
0.6E-04	0.77E+07
.6E-04	.77E+07
.6E-04	.77E+07
0.142E+03	0.2667E+02
.142E+03	.2667E+02
.142E+03	.2667E+02
-0.36923E+06	-0.234E+03
-.36923E+06	-.234E+03
-.36923E+06	-.234E+03
0.21E+03	-0.21E+03
.21E+03	-.21E+03
.21E+03	-.21E+03
-0.5959E+03	0.4967E+03
-.5959E+03	.4967E+03
-.5959E+03	.4967E+03
0.1E+01	0.1E+01
.1E+01	.1E+01
.1E+01	.1E+01
-0.2E+01	-0.2E+01
-.2E+01	-.2E+01
-.2E+01	-.2E+01
0.492E+01	-0.6527E+04
.492E+01	-.6527E+04
.492E+01	-.6527E+04

-0.7371E+06	0.998E-01
-.7371E+06	.998E-01
-.7371E+06	.998E-01
0.477447E+07	-0.93624E+00
.477447E+07	-.93624E+00
.477447E+07	-.93624E+00
-0.846200E-02	0.13330E+03
-.846200E-02	.13330E+03
-.846200E-02	.13330E+03
0.770000E+09	0.81625E+08
.770000E+09	.81625E+08
.770000E+09	.81625E+08
0.133400E+05	0.37900E+06
.133400E+05	.37900E+06
.133400E+05	.37900E+06
0.300000E+06	0.30000E+06
.300000E+06	.30000E+06
.300000E+06	.30000E+06
0.299E-01	0.299E+02
.299E-01	.299E+02
.299E-01	.299E+02
0.1419E+06	0.1419E+02
.1419E+06	.1419E+02
.1419E+06	.1419E+02
0.76E-01	0.987E+03
.76E-01	.987E+03
.76E-01	.987E+03
0.31E+02	0.4659E+05
.31E+02	.4659E+05
.31E+02	.4659E+05
-0.728E+05	-0.93296E+08
-.728E+05	-.93296E+08
-.728E+05	-.93296E+08
0.6E+07	-0.6E+07
.6E+07	-.6E+07
.6E+07	-.6E+07
-0.7914E+07	0.16E+07
-.7914E+07	.16E+07
-.7914E+07	.16E+07
0.1E+02	0.1E+02
.1E+02	.1E+02
.1E+02	.1E+02

-0.2E-01	-0.2E-01
-.2E-01	-.2E-01
-.2E-01	-.2E-01
0.3E-02	-0.3E+04
.3E-02	-.3E+04
.3E-02	-.3E+04
-0.4E+05	0.4E-03
-.4E+05	.4E-03
-.4E+05	.4E-03
0.5E+06	-0.5E-04
.5E+06	-.5E-04
.5E+06	-.5E-04
-0.6E-05	0.6E+07
-.6E-05	.6E+07
-.6E-05	.6E+07
0.39393E+01	0.62E+04
.39393E+01	.62E+04
.39393E+01	.62E+04
0.9E+00	0.765765E+03
.9E+00	.765765E+03
.9E+00	.765765E+03
0.352E+09	0.35E+03
.352E+09	.35E+03
.352E+09	.35E+03
0.147626E+00	0.891E-14
.147626E+00	.891E-14
.147626E+00	.891E-14
0.9E-07	0.9999E+08
.9E-07	.9999E+08
.9E-07	.9999E+08
0.13E-04	0.13E-04
.13E-04	.13E-04
.13E-04	.13E-04
0.77E+00	0.77E+00
.77E+00	.77E+00
.77E+00	.77E+00
0.878E+01	-0.878E+01
.878E+01	-.878E+01
.878E+01	-.878E+01
-0.9797E+02	0.9797E+02
-.9797E+02	.9797E+02
-.9797E+02	.9797E+02

-0.10101E+15	-0.10101E+15
-.10101E+15	-.10101E+15
-.10101E+15	-.10101E+15
0.68E+12	0.357628E+00
.68E+12	.357628E+00
.68E+12	.357628E+00
0.798E-03	0.76444E+00
.798E-03	.76444E+00
.798E-03	.76444E+00
-0.3247E+20	-0.2594E+05
-.3247E+20	-.2594E+05
-.3247E+20	-.2594E+05
-0.43599E-19	-0.12E-04
-.43599E-19	-.12E-04
-.43599E-19	-.12E-04
-0.6E-09	-0.6E+09
-.6E-09	-.6E+09
-.6E-09	-.6E+09
-0.9119E+06	0.9119E-06
-.9119E+06	.9119E-06
-.9119E+06	.9119E-06
0.39426E+02	-0.39426E-02
.39426E+02	-.39426E-02
.39426E+02	-.39426E-02
0.45E-12	0.45E+12
.45E-12	.45E+12
.45E-12	.45E+12
0.4793E+06	0.3479E+06
.4793E+06	.3479E+06
.4793E+06	.3479E+06
.4793E+06	.3479E+06
0.3682E+01	0.8236E+02
.3682E+01	.8236E+02
.3682E+01	.8236E+02
.3682E+01	.8236E+02
-0.2571E+09	0.1752E+09
-.2571E+09	.1752E+09
-.2571E+09	.1752E+09
-.2571E+09	.1752E+09
0.1460E+00	-0.1064E+05
.1460E+00	-.1064E+05
.1460E+00	-.1064E+05
.1460E+00	-.1064E+05

0.1642390E-01	0.3600000E+00
.1642390E-01	.3600000E+00
.1642390E-01	.3600000E+00
.1642390E-01	.3600000E+00
.1642390E-01	.3600000E+00
.1642390E-01	.3600000E+00
0.4562311E+07	0.7894530E+06
.4562311E+07	.7894530E+06
.4562311E+07	.7894530E+06
.4562311E+07	.7894530E+06
.4562311E+07	.7894530E+06
.4562311E+07	.7894530E+06
-0.6000000E-05	0.6000000E+07
-.6000000E-05	.6000000E+07
-.6000000E-05	.6000000E+07
-.6000000E-05	.6000000E+07
-.6000000E-05	.6000000E+07
-.6000000E-05	.6000000E+07
-0.9119000E+06	0.9119000E-06
-.9119000E+06	.9119000E-06
-.9119000E+06	.9119000E-06
-.9119000E+06	.9119000E-06
-.9119000E+06	.9119000E-06
-.9119000E+06	.9119000E-06

EACH GROUP SHOULD BE IDENTICAL EXCEPT FOR THE SIGN OF THE FIRST TWO LINES

0.3000000E+03	0.4000000E+04
.3000000E+03	.4000000E+04
-.3000000E+03	-.4000000E+04
-.3000000E+03	-.4000000E+04
-.3000000E+03	-.4000000E+04
-.3000000E+03	-.4000000E+04
-0.5000000E+02	-0.6000000E+03
-.5000000E+02	-.6000000E+03
.5000000E+02	.6000000E+03
.5000000E+02	.6000000E+03
.5000000E+02	.6000000E+03
.5000000E+02	.6000000E+03
0.7700000E+00	0.7700000E+00
.7700000E+00	.7700000E+00
-.7700000E+00	-.7700000E+00
-.7700000E+00	-.7700000E+00
-.7700000E+00	-.7700000E+00
-.7700000E+00	-.7700000E+00
0.5000000E+06	-0.5000000E-04
.5000000E+06	-.5000000E-04
-.5000000E+06	.5000000E-04
-.5000000E+06	.5000000E-04
-.5000000E+06	.5000000E-04
-.5000000E+06	.5000000E-04
0.4920000E+01	-0.6527000E+04
.4920000E+01	-.6527000E+04
-.4920000E+01	.6527000E+04
-.4920000E+01	.6527000E+04
-.4920000E+01	.6527000E+04
-.4920000E+01	.6527000E+04
-0.6000000E-05	0.6000000E+07
-.6000000E-05	.6000000E+07
.6000000E-05	-.6000000E+07
.6000000E-05	-.6000000E+07
.6000000E-05	-.6000000E+07
.6000000E-05	-.6000000E+07
0.4444000E+04	0.5555500E-02
.4444000E+04	.5555500E-02
-.4444000E+04	-.5555500E-02
-.4444000E+04	-.5555500E-02
-.4444000E+04	-.5555500E-02
-.4444000E+04	-.5555500E-02

-0.3692300E+06	-0.2340000E+03
-.3692300E+06	-.2340000E+03
.3692300E+06	.2340000E+03
.3692300E+06	.2340000E+03
.3692300E+06	.2340000E+03
.3692300E+06	.2340000E+03

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VERSION 3 PART 3

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME

LASGN - (016) ASSIGNMENT OF LOGIGAL VARIABLES

ASA REFS. - 7.1.1.2

RESULTS

ALL ANSWERS BELOW MUST BE TRUE

T
T
T
T
T
T
T
T
T
T
T
T
T
T
T
T
T
T
T
T

ALL ANSWERS BELOW MUST BE FALSE

F
F
F
F
F
F
F
F
F
F
F
F
F
F
F
F

```
INTRL - (017) ASSIGN INTEGER, REAL, AND
                DOUBLE PRECISION VALUES
ASA REFS. - 7.1.1.1.  5.1.1.2
RESULTS


ASSIGN INTEGER VARIABLES

 1 - TO REAL VARIABLES

       111.0 *
       111.0

      -1111.0 *
      -1111.0

     -11111.0 *
     -11111.0

         1.0 *
         1.0

 2 - TO DOUBLE PRECISION VARIABLES

    -0.11111D 05 *
     -.11111D+05

         0.1D 01 *
          .1D+01

        0.111D 03 *
         .111D+03

     -0.1111D 04 *
      -.1111D+04


ASSIGN INTEGER CONSTANTS

 1 - TO REAL VARIABLES

    -2222.0 *
    -2222.0

      222.0 *
      222.0

   -22222.0 *
   -22222.0

        2.0 *
        2.0

 2 - TO DOUBLE PRECISION VARIABLES

          0.2D 01 *
           .2D+01

     -0.22222D 05 *
      -.22222D+05

       -0.2222D 04 *
        -.2222D+04

         0.222D 03 *
          .222D+03


ASSIGN BASIC REAL CONSTANTS

 1 - TO INTEGER VARIABLES

        3 *
        3
        3
        3

       -3 *
       -3

 2 - TO DOUBLE PRECISION VARIABLES

       0.33333D 01 *
        .33333D+01

     0.3333333D 01 *
      .3333333D+01

    -0.3333333D 01 *
     -.3333333D+01

     -0.333333D 01 *
      -.333333D+01


ASSIGN REAL VARIABLES

 1 - TO INTEGER VARIABLES

      -44 *
      -44
      -44

       44 *
       44
       44
```

```
2 - TO DOUBLE PRECISION VARIABLES

    -0.444D 02 *
     -.444D+02

   -0.4444D 02 *
    -.4444D+02

   0.44444D 02 *
    .44444D+02

   0.44444D 02 *
    .44444D+02


ASSIGN DOUBLE PRECISION VARIABLES

 1 - TO INTEGER VARIABLES

    5555 *
    5555

       5 *
       5

      -5 *
      -5
      -5

 2 - TO REAL VARIABLES

-0.5555556E 01 *
 -.5555556E+01

-0.5555556E 01 *
 -.5555556E+01

 0.5555556E 01 *
  .5555556E+01

  0.555555E 04 *
   .555555E+04
```

```
ASSIGN DOUBLE PRECISION CONSTANTS

 1 - TO INTEGER VARIABLES

       6 *
       6

      -6 *
      -6
      -6

    6666 *
    6666

 2 - TO REAL VARIABLES

 0.6666667E 14 *
  .6666667E+14

    0.66666E 01 *
     .66666E+01

-0.6666666E 01 *
 -.6666666E+01

-0.6666667E 01 *
 -.6666667E+01


ALL TEST OUTPUT SHOULD BE CHECKED
AGAINST THE ASTERISKED (*) FIGURE
WHICH PRECEDES IT
```

UGOTO - (020) UNCONDITIONAL GO TO STATEMENT

ASA REFS. - 7.1.2.1.1

RESULTS

1

2

3

4

5

6

7

8

THIS TEST IS SUCCESSFUL ONLY IF THE NUMBERS LISTED ABOVE ARE SEQUENTIALLY IN ORDER FROM 1 TO 8

AGOTO - (021) ASSIGN AND ASSIGNED GO TO

ASA REFS. - 7.1.1.3 AND 7.1.2.1

RESULTS

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

THIS TEST IS SUCCESSFUL ONLY IF THE NUMBERS LISTED ABOVE ARE SEQUENTIALLY IN ORDER FROM 1 TO 20

CGOTO - (022) COMPUTED GO TO

ASA REF. - 7.1.2.1.3

RESULTS

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

THIS TEST IS SUCCESSFUL ONLY IF THE NUMBERS LISTED ABOVE ARE SEQUENTIALLY IN ORDER FROM 1 TO 20

ARBAD - (030) BASIC ADDITION

ASA REF. - 6.1

RESULTS

INTEGER ADDITION

TEST 1 0
TEST 2 0
TEST 3 0
TEST 4 0
TEST 5 0
TEST 6 0

REAL ADDITION

TEST 7 0.0
TEST 8 0.0
TEST 9 0.0
TEST 10 0.0
TEST 11 0.0
TEST 12 0.0

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

ARFAD - (031) D.P. ADDITION

ASA REF. - 6.1

RESULTS

0.

0.

0.

0.

0.

THE 5 ANSWERS ABOVE SHOULD BE 0 PLUS OR MINUS AN ERROR FACTOR OF 0.1D-13

ARBSB - (032) BASIC SUBTRACTION

ASA REFS. - 6.1

RESULTS

TEST1 INTEGER SUBTRACTION

0
0
0
0
0

TEST2 REAL SUBTRACTION

0.0
0.0
0.0
0.0

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

ARFSB - (033) D.P. SUBTRACTION

ASA REF. - 6.1

RESULTS

0.0000000000D+00
0.0000000000D+00
0.0000000000D+00

0.0000000000D+00
0.0000000000D+00
0.0000000000D+00

0.0000000000D+00
0.0000000000D+00
0.0000000000D+00

THE ANSWERS ABOVE SHOULD BE 0 PLUS OR MINUS AN ERROR FACTOR OF 0.1D-13

ARBAS - (034) BASIC ADDITION AND SUBTRACTION

ASA REF. - 6.4

RESULTS

TEST1 INTEGER ADD AND SUBT

0
0
0
0

TEST2 REAL ADD AND SUBTR

0.0
0.0
0.0
0.0

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

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VERSION 3 PART 4

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME

ARFAS - (035) D.P. ADD AND SUBTR

ASA REF. - 6.1

RESULTS

0.
0.
0.
0.
-.2067951531D-24

THE ANSWERS ABOVE SHOULD BE 0 FOR
THIS SEGMENT TO BE SUCCESSFUL.
VALUES WITH EXPONENTS LESS THAN
10**(-14) ARE CONSIDERED ZERO

ARBMI - (036) INTEGER MULTIPLICATION

ASA REF. - 6.1

RESULTS

0
0
0
0
0
0
0

ALL ABOVE ANSWERS SHOULD BE 0 FOR
THIS SEGMENT TO BE SUCCESSFUL

ARBMR - (037) REAL MULTIPLICATION

ASA REF. - 6.1

RESULTS

0.0
0.0
0.0
0.0
0.0
0.0
0.0

ALL ABOVE ANSWERS SHOULD BE 0 FOR
THIS SEGMENT TO BE SUCCESSFUL

ARFMD - (038) D.P. MULTIPLICATION

ASA REF. - 6.1

RESULTS

0.0000000000D+00
0.0000000000D+00
0.0000000000D+00
0.0000000000D+00
0.0000000000D+00
0.0000000000D+00
0.0000000000D+00
0.0000000000D+00

THE ANSWERS ABOVE SHOULD BE 0 FOR
THIS SEGMENT TO BE SUCCESSFUL

ARBDV = (039) INTEGER AND REAL DIVISION

ASA REF. = 6.1

RESULTS

TEST1 INTEGER DIVISION

0
0
0
0
0

TEST2 REAL DIVISION

0.0
0.0
0.0
0.0
0.0

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

ARBEX = (041) BASIC EXPONENTIATION

ASA REFS. = 6.1

RESULTS

INTEGER BY INTEGER

0
0
0
0
0

REAL BY INT, REAL BY REAL

0.0
0.0
0.0
0.0
0.0
0.0
0.0

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

ARFDV - (040) D.P. DIVISION

ASA REF. - 6.1

RESULTS

0.
0.
0.
0.
0.
0.

THE ANSWERS ABOVE SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

ARFEX - (042) EXPONENTIATION

ASA REF. - 6.1

RESULTS

.0000000000
.0000000000
.0000000000
.0000000000
.0000000000

THE ANSWERS ABOVE SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL. VALUES WITH EXPONENTS LESS THAN 10**(-14) ARE CONSIDERED ZERO

ARGHI - (043) HIERARCHY, PARENTHESES

ASA REFS. - 6.1 AND 6.4

RESULTS

TEST 1 0

TEST 2 0

TEST 3 0

TEST 4 0

TEST 5 0

TEST 6 0

TEST 7 0
0
0

TEST 8 0

TEST 9 0
0
0

TEST 10 0
0
0

TEST 11 0
0
0

TEST 12 0
0
0
0
0
0
0
0

TEST 13 0
0

THE ANSWERS ABOVE SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

SBB67 - (050) SUBSCRIPTS FOR INTEGER AND REAL ARRAYS, V, K

ASA REF. 5.1.3

RESULTS

0

0.0

0
0

0.0
0.0

THE ANSWERS ABOVE SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

SBB45 - (051) SUBSCRIPTS FOR INTEGER AND REAL ARRAYS,V+K, V-K

ASA REF. 5.1.3.3

RESULTS

0
0
0

0.0
0.0
0.0

THE ANSWERS ABOVE SHOULD BE 0 FOR THIS SEGMENT TO BE SUCCESSFUL

```
SB813 - (052) SUBSCRIPTS INTEGER AND
                REAL, C*V, C*V-K, C*V+K

ASA REF. 5.1.3.3

RESULTS

        0
        0

        0.0
        0.0


        0
        0

        0.0
        0.0


        0

        0.0

THE ANSWERS ABOVE SHOULD BE 0 FOR
THIS SEGMENT TO BE SUCCESSFUL
```

```
SBF17 - (053) SUBSCRIPTS FOR D.P.
                ARRAYS, ALL FORMS

ASA REF. - 5.1.3.3

RESULTS

     0.00000D+00
     0.00000D+00
     0.00000D+00
     0.00000D+00

THE ANSWERS ABOVE SHOULD BE 0 FOR
THIS SEGMENT TO BE SUCCESSFUL
```

```
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VERSION 3      PART 5


SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME
```

```
SIMIF - (054) SIMPLE ARITH. IF
                AND LOGICAL IF

ASA REF. - 7.1.2.2
           7.1.2.3

RESULTS

 T

 T

 T

 T

 T

 T

 T

 T

 T

 T

THE TEN ANSWERS ABOVE MUST BE TRUE
```

IFABS - (055) INTRINSIC FUNCTIONS--
ABS, IABS (ABSOLUTE VALUE)

ASA REFS. - 8.2

RESULTS

0.0

0.0

0.0

0.0

0

0

0

THE ABOVE ANSWERS SHOULD ALL BE 0 FOR THIS TEST SEGMENT TO BE SUCCESSFUL.

IFFLT - (056) INTRINSIC FUNCTION--
FLOAT

ASA REF. - 8.2

RESULTS

0.0

0.0

0.0

THE ABOVE ANSWERS SHOULD ALL BE 0 FOR THIS TEST SEGMENT TO BE SUCCESSFUL.

IFFIX - (057) INTRINSIC FUNCTION--
IFIX

ASA REF. - 8.2

RESULTS

0

0

0

0

0

0

THE ABOVE ANSWERS SHOULD ALL BE 0 FOR THIS TEST SEGMENT TO BE SUCCESSFUL.

IFSGN - (058) INTRINSIC FUNCTIONS--
SIGN, ISIGN (TRANSFER OF ARGUMENT SIGN)

ASA REF. - 8.2

RESULTS

0.0

0.0

0.0

0.0

0.0

0

0

0

0

0

THE ABOVE ANSWERS SHOULD ALL BE 0 FOR THIS TEST SEGMENT TO BE SUCCESSFUL.

IFDAB - (059) INTRINSIC FUNCTION--
DABS (ABSOLUTE VALUE OF A D.P. ARGUMENT)

ASA REF. - 8.2

RESULTS

.0000000000

.0000000000

.0000000000

.0000000000

THE ABOVE ANSWERS SHOULD ALL BE 0 FOR THIS TEST SEGMENT TO BE SUCCESSFUL

```
IFTRN = (060) INTRINSIC FUNCTION--
        AINT, INT, IDINT (TRUNCATION)

ASA REF. = 8.2

RESULTS

      0.0

      0.0

      0.0

      0.0
END OF AINT TEST

       0

       0

       0

       0
END OF INT TEST

       0

       0

       0

       0
END OF IDINT TEST
ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS
TEST SEGMENT TO BE SUCCESSFUL
```

```
IFMOD - (061) INTRINSIC FUNCTION--
                AMOD, MOD (REMAINDERING)

ASA REF. - 8.2

RESULTS

      0.0

      0.0

      0.0

      0.0

END OF AMOD TEST.

       0

       0

       0

       0

END OF MOD TEST.

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS
TEST SEGMENT TO BE SUCCESSFUL.
```

```
IFMAX - (062) INTRINSIC FUNCTIONS--
           AMAXO,AMAX1,MAXO, MAX1,DMAX1
ASA REF. - 8.2

RESULTS

TEST OF AMAXO--
        .0
        .0
        .0
        .0
        .0
                END OF  2-ARGUMENT TEST.
        .0
        .0
        .0
                END OF  3-ARGUMENT TEST.
        .0
        .0
                END OF 4- OR 5-ARGUMENT TEST.

TEST OF AMAX1--
        .0
        .0
        .0
                END OF  2-ARGUMENT TEST.
        .0
        .0
        .0
                END OF  3-ARGUMENT TEST.
        .0
        .0
                END OF 4- OR 5-ARGUMENT TEST.

TEST OF MAXO--
        0
        0
        0
        0
                END OF  2-ARGUMENT TEST.
        0
        0
                END OF  3-ARGUMENT TEST.
        0
        0
                END OF 4- OR 5-ARGUMENT TEST.

TEST OF MAX1--
        0
        0
        0
                END OF  2-ARGUMENT TEST.
        0
        0
                END OF  3-ARGUMENT TEST.
        0
        0
                END OF 4- OR 5-ARGUMENT TEST.

TEST OF DMAX1--
      .0000000000
      .0000000000
      .0000000000
      .0000000000
                END OF  2-ARGUMENT TEST.
      .0000000000
      .0000000000
      .0000000000
                END OF  3-ARGUMENT TEST.
      .0000000000
      .0000000000
                END OF 4- OR 5-ARGUMENT TEST.

THE ABOVE ANSWERS SHOULD ALL BE 0 FOR
THIS TEST SEGMENT TO BE SUCCESSFUL.
```

```
IFMIN - (063) INTRINSIC FUNCTIONS--
          AMINO,AMIN1,MINO,MIN1,DMIN1
ASA REF. - 8,2

RESULTS

TEST OF AMINO
      0.0
      0.0
      0.0
                END OF 2-ARGUMENT TEST.
      0.0
      0.0
                END OF 3-ARGUMENT TEST.
      0.0
      0.0
                END OF 4 OR 5-ARGUMENT TEST.

TEST OF AMIN1
      0.0
      0.0
      0.0
      0.0
                END OF 2-ARGUMENT TEST.
      0.0
      0.0
      0.0
                END OF 3-ARGUMENT TEST.
      0.0
      0.0
                END OF 4 OR 5-ARGUMENT TEST.

TEST OF MINO
        0
        0
        0
        0
                END OF 2-ARGUMENT TEST.
        0
        0
                END OF 3-ARGUMENT TEST.
        0
        0
                END OF 4 OR 5-ARGUMENT TEST.

TEST OF MIN1
        0
        0
        0
                END OF 2-ARGUMENT TEST.
        0
        0
                END OF 3-ARGUMENT TEST.
        0
        0
                END OF 4 OR 5-ARGUMENT TEST.

TEST OF DMIN1
    0.0000000000D+00
    0.0000000000D+00
    0.0000000000D+00
                END OF 2-ARGUMENT TEST.
    0.0000000000D+00
    0.0000000000D+00
                END OF 3-ARGUMENT TEST.
    0.0000000000D+00
    0.0000000000D+00
                END OF 4 OR 5-ARGUMENT TEST.

THE ABOVE ANSWERS SHOULD ALL BE 0 FOR
THIS TEST SEGMENT TO BE SUCCESSFUL.
```

```
IFDSG - (064) INTRINSIC FUNCTION--
                DSIGN (TRANSFER OF SIGN)
ASA REF. - 8,2

RESULTS

      0.00000000000000000D+00

      0.00000000000000000D+00

      0.00000000000000000D+00

      0.00000000000000000D+00

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS
TEST SEGMENT TO BE SUCCESSFUL.
```

```
F O R T R A N  T E S T  P R O G R A M S

PREPARED BY NATIONAL BUREAU OF STANDARDS

FOR USE ON LARGE FORTRAN PROCESSORS

IN ACCORDANCE WITH ASA FORTRAN X3.9-1966

VERSION 3      PART 6


SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME
```

```
IFDIM - (065) INTRINSIC FUNCTIONS - DIM
        AND IDIM (POSITIVE DIFFERENCE)
ASA REF. - 8.2

RESULTS

            0.00

            0.00

            0.00

            0.00

             0

             0

             0

             0

             0

 ALL ABOVE ANSWERS SHOULD BE 0 FOR
THIS TEST SEGMENT TO BE SUCCESSFUL.
```

```
IFSGL - (066) INTRINSIC FUNCTION SNGL--
                OBTAIN MOST SIGNIFICANT PT
                 OF D.P. ARGUMENT.

ASA REFS. - 8.2

RESULTS

LINE A       .4874874937797 3+003
LINE B       .4874874916076 7+003

LINE A      -.3968954023876 4+003
LINE B      -.3968954010009 8+003

LINE A       .3333396255843 4+000
LINE B       .3333396241068 8+000

LINE A       .7937908047752 8+003
LINE B       .7937908020019 5+003

LINE A       .4444513395671 9+000
LINE B       .4444513395428 7+000

LINE A      -.6666718379886 7+000
LINE B      -.6666718348860 7+000

LINE A      -.3968953960953 9+003
LINE B      -.3968953933715 8+003

LINE A       .4874874937797 3+003
LINE B       .4874874916076 7+003

LINE B SHOULD AGREE WITH LINE A
ONLY TO THE PRECISION OF A REAL DATUM.
REMAINING DIGITS RESULT FROM OUTPUT
CONVERSION WHEN A REAL VALUE IS
ASSIGNED TO D.P. FOR PRINTING.
```

IFREL - (067) INTRINSIC FUNCTION--
REAL
ASA REF. - 8.2

RESULTS

0.0000
0.0000
0.0000
0.0000
0.0000
0.0000

0.0000
0.0000
0.0000
0.0000
0.0000
0.0000

0.0000
0.0000
0.0000
0.0000
0.0000
0.0000

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS TEST SEGMENT TO BE SUCCESSFUL.

IFIMG - (068) INTRINSIC FUNCTION - AIMAG
OBTAIN IMAGINARY PT
OF COMPLEX ARGUMENT
ASA REF.- 8.2

RESULTS

0.00000
0.00000
0.00000
0.00000

0.00000
0.00000
0.00000
0.00000

0.00000
0.00000
0.00000
0.00000

0.00000
0.00000
0.00000
0.00000

0.00000
0.00000
0.00000
0.00000

0.00000
0.00000
0.00000
0.00000

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS TEST SEGMENT TO BE SUCCESSFUL.

```
IFDBL - (069) INTRINSIC FUNCTION - DBLE
                S,P, ARGUMENT IN D,P, FORM
ASA REF,- 8,2

RESULTS

LINE A      0,9765625E-03
LINE B      0,97656250000000D-03

LINE A     -0,1953125E-02
LINE B     -0,19531250000000D-02

LINE A      0,5859375E-02
LINE B      0,58593750000000D-02

LINE A     -0,1048576E+07
LINE B     -0,10485760000000D+07

LINE A      0,1146880E+06
LINE B      0,11468800000000D+06

A COMPARISON OF LINE A AGAINST LINE B
IS NEEDED TO CHECK THE VALIDITY OF TEST
```

```
IFCPX - (070) INTRINSIC FUNCTION - CMPLX
                EXPRESS TWO REAL ARGUMENTS
                IN COMPLEX FORM
ASA REF.- 8.2

RESULTS

      0.0000000          0.0000000
      0.0000000          0.0000000
      0.0000000          0.0000000
      0.0000000          0.0000000
      0.0000000          0.0000000
      0.0000000          0.0000000

THE ABOVE ANSWERS SHOULD ALL BE 0 FOR
THIS TEST SEGMENT TO BE SUCCESSFUL.
```

```
IFCJG - (071) INTRINSIC FUNCTION - CONJG
                OBTAIN CONJUGATE OF
                A COMPLEX NUMBER
ASA REFS. - 8.2

RESULTS

      0.0000000 0.0000000
      0.0000000 0.0000000

      0.0000000 0.0000000
      0.0000000 0.0000000

      0.0000000 0.0000000
      0.0000000 0.0000000

      0.0000000 0.0000000
      0.0000000 0.0000000

ALL ABOVE ANSWERS MUST BE 0 FOR THIS
TEST SEGMENT TO BE SUCCESSFUL.
```

```
IFBMS - (072) BASIC FORTRAN INTRINSIC
        FUNCTIONS ACCEPT EXPRESSIONS
        OF TYPE SPECIFIED IN I.F.TABLE

ASA REF.- 8.2

RESULTS

TEST OF ABS IN EXPRESSIONS -
             0.0
             0.0
             0.0
             0.0

TEST OF IABS IN EXPRESSIONS -
             0
             0
             0
             0

TEST OF FLOAT IN EXPRESSIONS -
             0.0
             0.0
             0.0
             0.0

TEST OF IFIX IN EXPRESSIONS -
             0
             0
             0
             0

TEST OF SIGN IN EXPPESSIONS -
             0.0
             0.0
             0.0
             0.0

TEST OF ISIGN IN EXPRESSIONS -
             0
             0
             0
             0

COMBINATION OF ALL INTRINSIC FUNCTIONS
             0.0
             0.0
             0
             0
             0.0
             0.0
             0
             0

ALL ABOVE ANSWERS SHOULD BE 0 FOR
THIS TEST SEGMENT TO BE SUCCESSFUL.
```

```
IFFMS - (073) FORTRAN INTRINSIC FUNCTIONS
        ACCEPT EXPRESSIONS OF TYPE
        SPECIFIED IN I.F.TABLE
ASA REF.- 8.2/TABLE 3

RESULTS

TEST OF DABS IN EXPRESSIONS

        0.
        0.
        0.
        0.

TEST OF AINT IN EXPRESSIONS

      0.
      0.
      0.
      0.

TEST OF INT IN EXPRESSIONS

        0
        0
        0
        0

TEST OF IDINT IN EXPRESSIONS

        0
        0
        0
        0

TEST OF AMOD, MOD IN EXPRESSIONS

      0.
      0.
        0
        0

TEST OF AMAX0,AMAX1,MAX0,MAX1 AND DMAX

      0.
      0.
        0
        0.
```

```
TEST OF AMIN0,AMIN1,MIN0,MIN1 AND DMIN

     0.
       0
       0
       0.

TEST OF DSIGN AND DBLE IN EXPRESSIONS

       0.
       0.
       0.
       0.


TEST OF DIM AND IDIM IN EXPRESSIONS
     0.
     0.
       0
       0

TEST OF SNGL,REAL,AIMAG,CMPLX AND
CONJG IN EXPRESSIONS

     0.
     0.
     0.

TEST OF SOME COMBINATIONS OF ABOVE
INTRINSIC FUNCTIONS

     0.
     0.

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS
SEGMENT TO BE SUCCESSFUL.
```

```
F O R T R A N  T E S T  P R O G R A M S

PREPARED BY NATIONAL BUREAU OF STANDARDS

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IN ACCORDANCE WITH ASA FORTRAN X3.9-1966

VERSION 3     PART 7


SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME
```

```
EXPON - (080)

BASIC EXTERNAL FUNCTION -EXP-

(EXPONENTIAL -TYPE REAL)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X=-16.0      0.11253517471925911145E-06
              .1125352E-06

X= -8.0      0.33546262790251183888E-03
              .3354626E-03

X= -4.0      0.18315638888734180029E-01
              .1831564E-01

X=  0.0      0.10000000000000000000E+01
              .1000000E+01

X=  4.0      0.54598150033144239088E+02
              .5459815E+02

X=  8.0      0.29809579870417282750E+04
              .2980958E+04

X= 16.0      0.88861105205078726370E+07
              .8886111E+07


LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 7 DIGITS
```

DEXPO - (081)

BASIC EXTERNAL FUNCTION -DEXP-

(EXPONENTIAL -TYPE DOUBLE PRECISION)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

```
X=-16.0      0.11253517471925911450-06
              .1125351747192601)-06

X= -8.0      0.33546262790251183880-03
              .3354626279025100-03

X= -4.0      0.18315638888734180290-01
              .1831563888873400-01

X=  0.0      0.10000000000000000000+01
              .1000000000000000+01

X=  4.0      0.54598150033144239080+02
              .5459815003314400+02

X=  8.0      0.29809579870417282750+04
              .2980957987041700+04

X= 16.0      0.88861105205078726370+07
              .8886110520507900+07
```

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 14 DIGITS

CEXPO - (082)

BASIC EXTERNAL FUNCTION -CEXP-

(EXPONENTIAL -TYPE COMPLEX)

ASA REF.- 8.3.3 (TABLE 4)

(COMPLEX ARGUMENT)
EXPECTED RESULT
FUNCTION RESULT

```
(-0.1611810E+02,-0.7330383E+01)
          0.5000000E-07  -0.8660254E-07
          0.5000000E-07  -0.8660254E-07

(-0.1450866E+02,-0.7330383E+01)
          0.2500000E-06  -0.4330127E-06
          0.2500000E-06  -0.4330127E-06

(-0.1381551E+02,-0.6283185E+01)
          0.1000000E-05   0.0000000E+00
          0.1000000E-05   0.0000000E+00

(-0.1220607E+02,-0.6283185E+01)
          0.5000000E-05   0.0000000E+00
          0.5000000E-05   0.0000000E+00

(-0.1151293E+02,-0.5235988E+01)
          0.5000000E-05   0.8660254E-05
          0.5000000E-05   0.8660254E-05

(-0.9903488E+01,-0.5235988E+01)
          0.2500000E-04   0.4330127E-04
          0.2500000E-04   0.4330127E-04

(-0.9210340E+01,-0.4188790E+01)
         -0.5000000E-04   0.8660254E-04
         -0.5000000E-04   0.8660254E-04

(-0.7600902E+01,-0.4188790E+01)
         -0.2500000E-03   0.4330127E-03
         -0.2500000E-03   0.4330127E-03

(-0.6907755E+01,-0.3141593E+01)
         -0.1000000E-02   0.0000000E+00
         -0.1000000E-02   0.0000000E+00

(-0.5298317E+01,-0.3141593E+01)
         -0.5000000E-02   0.0000000E+00
         -0.5000000E-02   0.0000000E+00
```

```
CEXPO = (082) =CEXP=

(=0,4605170E+01,=0,2094395E+01)
        =0,5000000E=02  =0,8660254E=02
        =0,5000000E=02  =0,8660254E=02

(=0,2995732E+01,=0,2094395E+01)
        =0,2500000E=01  =0,4330127E=01
        =0,2500000E=01  =0,4330127E=01

(=0,2302585E+01,=0,1047198E+01)
         0,5000000E=01  =0,8660254E=01
         0,5000000E=01  =0,8660254E=01

(=0,6931472E+00,=0,1047198E+01)
         0,2500000E+00  =0,4330127E+00
         0,2500000E+00  =0,4330127E+00

( 0,0000000E+00, 0,0000000E+00)
         0,1000000E+01   0,0000000E+00
         0,1000000E+01   0,0000000E+00

( 0,1609438E+01, 0,0000000E+00)
         0,5000000E+01   0,0000000E+00
         0,5000000E+01   0,0000000E+00

( 0,2302585E+01, 0,1047198E+01)
         0,5000000E+01   0,8660254E+01
         0,5000000E+01   0,8660254E+01

( 0,3912023E+01, 0,1047198E+01)
         0,2500000E+02   0,4330127E+02
         0,2500000E+02   0,4330127E+02

( 0,4605170E+01, 0,2094395E+01)
        =0,5000000E+02   0,8660254E+02
        =0,5000000E+02   0,8660254E+02

( 0,6214608E+01, 0,2094395E+01)
        =0,2500000E+03   0,4330127E+03
        =0,2500000E+03   0,4330127E+03
```

```
CEXPO = (082) =CEXP=

( 0,6907755E+01, 0,3141593E+01)
                =0,1000000E+04   0,0000000E+00
                =0,1000000E+04   0,0000000E+00

( 0,8517193E+01, 0,3141593E+01)
                =0,5000000E+04   0,0000000E+00
                =0,5000000E+04   0,0000000E+00

( 0,9210340E+01, 0,4188790E+01)
                =0,5000000E+04  =0,8660254E+04
                =0,5000000E+04  =0,8660254E+04

( 0,1081978E+02, 0,4188790E+01)
                =0,2500000E+05  =0,4330127E+05
                =0,2500000E+05  =0,4330127E+05

( 0,1151293E+02, 0,5235988E+01)
                 0,5000000E+05  =0,8660254E+05
                 0,5000000E+05  =0,8660254E+05

( 0,1312236E+02, 0,5235988E+01)
                 0,2500000E+06  =0,4330127E+06
                 0,2500000E+06  =0,4330127E+06

( 0,1381551E+02, 0,6283185E+01)
                 0,1000000E+07   0,0000000E+00
                 0,9999999E+06   0,0000000E+00

( 0,1542495E+02, 0,6283185E+01)
                 0,5000000E+07   0,0000000E+00
                 0,5000000E+07   0,0000000E+00

( 0,1611810E+02, 0,7330383E+01)
                 0,5000000E+07   0,8660254E+07
                 0,5000000E+07   0,8660254E+07

( 0,1772753E+02, 0,7330383E+01)
                 0,2500000E+08   0,4330127E+08
                 0,2500000E+08   0,4330127E+08
```

LOGTM - (083)

BASIC EXTERNAL FUNCTION -ALOG-

(NATURAL LOG -TYPE REAL)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X=0.125	-2.0794415416798359
	-2.079442
X=0.25	-1.3862943611198906
	-1.386294
X=0.5	-0.6931471805599453
	-.6931472
X=1.0	0.0000000000000000
	0.0000000
X=1.5	0.4054651081081644
	.4054651
X=2.0	0.6931471805599453
	.6931472

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 7 DIGITS

DPLOG - (084)

BASIC EXTERNAL FUNCTION -DLOG-

(NATURAL LOG -TYPE DOUBLE PRECISION)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X=0.125	-2.0794415416798359D+00
	-2.079441541679880+00
X=0.25	-1.3862943611198906D+00
	-1.386294361119900+00
X=0.5	-0.6931471805599453D+00
	-.693147180559950+00
X=1.0	0.0000000000000000
	0.
X=1.5	0.4054651081081644D+00
	.405465108108160+00
X=2.0	0.6931471805599453D+00
	.693147180559950+00

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 14 DIGITS

CXLOG - (085)

BASIC EXTERNAL FUNCTION -CLOG-

(NATURAL LOG -TYPE COMPLEX)

ASA REF.- 8.3.3 (TABLE 4)

(COMPLEX ARGUMENT)
~~EXPECTED RESULT~~
FUNCTION RESULT

(0.5000000E-07,-0.8660254E-07)
~~-0.1611810E 02 -0.1047198E 01~~
-0.1611810E 02 -0.1047198E 01

(0.2500000E-06,-0.4330127E-06)
~~-0.1450866E 02 -0.1047198E 01~~
-0.1450866E 02 -0.1047198E 01

(0.1000000E-05, 0.0000000E 00)
~~-0.1381551E 02 0.0000000E 00~~
-0.1381551E 02 0.0000000E 00

(0.5000000E-05, 0.0000000E 00)
~~-0.1220607E 02 0.0000000E 00~~
-0.1220607E 02 0.0000000E 00

(0.5000000E-05, 0.8660254E-05)
~~-0.1151293E 02 0.1047198E 01~~
-0.1151293E 02 0.1047198E 01

(0.2500000E-04, 0.4330127E-04)
~~-0.9903468E 01 0.1047198E 01~~
-0.9903468E 01 0.1047198E 01

(-0.5000000E-04, 0.8660254E-04)
~~-0.9210340E 01 0.2094395E 01~~
-0.9210340E 01 0.2094395E 01

(-0.2500000E-03, 0.4330127E-03)
~~-0.7600902E 01 0.2094395E 01~~
-0.7600902E 01 0.2094395E 01

(-0.1000000E-02, 0.0000000E 00)
~~-0.6907755E 01 0.3141593E 01~~
-0.6907755E 01 0.3141593E 01

(-0.5000000E-02, 0.0000000E 00)
~~-0.5298317E 01 0.3141593E 01~~
-0.5298317E 01 0.3141593E 01

CXLOG - (085) -CLOG-

(-0.5000000E-02,-0.8660254E-02)
~~-0.4605170E 01 -0.2094395E 01~~
-0.4605170E 01 -0.2094395E 01

(-0.2500000E-01,-0.4330127E-01)
~~-0.2995732E 01 0.2094395E 01~~
-0.2995732E 01 -0.2094395E 01

(0.5000000E-01,-0.8660254E-01)
~~-0.2302585E 01 -0.1047198E 01~~
-0.2302585E 01 -0.1047198E 01

(0.2500000E 00,-0.4330127E 00)
~~-0.6931472E 00 -0.1047198E 01~~
-0.6931472E 00 -0.1047198E 01

(0.1000000E 01, 0.0000000E 00)
~~0.0000000E 00 0.0000000E 00~~
0.0000000E 00 0.0000000E 00

(0.5000000E 01, 0.0000000E 00)
~~0.1609438E 01 0.0000000E 00~~
0.1609438E 01 0.0000000E 00

(0.5000000E 01, 0.8660254E 01)
~~0.2302585E 01 0.1047198E 01~~
0.2302585E 01 0.1047198E 01

(0.2500000E 02, 0.4330127E 02)
~~0.3912023E 01 0.1047198E 01~~
0.3912023E 01 0.1047198E 01

(-0.5000000E 02, 0.8660254E 02)
~~0.4605170E 01 0.2094395E 01~~
0.4605170E 01 0.2094395E 01

(-0.2500000E 03, 0.4330127E 03)
~~0.6214608E 01 0.2094395E 01~~
0.6214608E 01 0.2094395E 01

```
CXLOG - (085) -CLOG-

(-0.1000000E 04, 0.0000000E 00)
          0.6907755E 01   0.3141593E 01
          0.6907755E 01   0.3141593E 01

(-0.5000000E 04, 0.0000000E 00)
          0.8517193E 01   0.3141593E 01
          0.8517193E 01   0.3141593E 01

(-0.5000000E 04,-0.8660254E 04)
          0.9210340E 01  -0.2094395E 01
          0.9210340E 01  -0.2094395E 01

(-0.2500000E 05,-0.4330127E 05)
          0.1061978E 02  -0.2094395E 01
          0.1061978E 02  -0.2094395E 01

( 0.5000000E 05,-0.8660254E 05)
          0.1151293E 02  -0.1047198E 01
          0.1151293E 02  -0.1047198E 01

( 0.2500000E 06,-0.4330127E 06)
          0.1312286E 02  -0.1047198E 01
          0.1312286E 02  -0.1047198E 01

( 0.1000000E 07, 0.0000000E 00)
          0.1381551E 02   0.0000000E 00
          0.1381551E 02   0.0000000E 00

( 0.5000000E 07, 0.0000000E 00)
          0.1542495E 02   0.0000000E 00
          0.1542495E 02   0.0000000E 00

( 0.5000000E 07, 0.8660254E 07)
          0.1611810E 02   0.1047198E 01
          0.1611810E 02   0.1047198E 01

( 0.2500000E 08, 0.4330127E 08)
          0.1772753E 02   0.1047198E 01
          0.1772753E 02   0.1047198E 01
```

```
COLOG - (086)

BASIC EXTERNAL FUNCTION -ALOG10-

(COMMON LOG -TYPE REAL)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 0.5      -0.30102999566398119521373
             -.3010300

X= 1.0       0.00000000000000000000000
             0.0000000

X= 2.0       0.30102999566398119521373
              .3010300

X= 4.0       0.60205999132796239042750
              .6020600

X= 8.0       0.90308998699194358564120
              .9030900

X=16.0       1.20411998265592478085500
             1.2041200

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 7 DIGITS
```

```
DCLOG = (087)

BASIC EXTERNAL FUNCTION =DLOG10=

(COMMON LOG =TYPE DOUBLE PRECISION)

ASA REF.= 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 0.5      =0.30102999566398119521373D+00
            =0.30102999566398D+00

X= 1.0       0.00000000000000000000
             0.00000000000000D+00

X= 2.0       0.30102999566398119521373D+00
             0.30102999566398D+00

X= 4.0       0.60205999132796239042750D+00
             0.60205999132796D+00

X= 8.0       0.90308998699194358564120D+00
             0.90308998699194D+00

X=16.0       1.20411998265592478086500D+00
             1.20411998265590+00

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 14 DIGITS
```

```
SINUS - (088)

BASIC EXTERNAL FUNCTION -SIN-

(TRIGONOMETRIC SINE -TYPE REAL)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 0.0       0.000000000000
             0.0000000

X= 1.0      +0.841470984808
              .8414710

X= 2.0      +0.909297426826
              .9092974

X= 3.0      +0.141120008060
              .1411200

X= (PI)      0.000000000000
              .0000000

X= 4.0      -0.756802495308
             -.7568025

X= 5.0      -0.958924274663
             -.9589243

X= 6.0      -0.279415498198
             -.2794155

X=(2PI)      0.000000000000
             -.0000000

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 7 DIGITS
```

DPSIN - (089)

BASIC EXTERNAL FUNCTION -DSIN-

(TRIGONOMETRIC SINE -TYPE D.P.)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

```
X= 0.0    0.000000000000000000000000
          0.

X= 1.0   +0.84147098480789650665250D+00
           .84147098480790D+00

X= 2.0   +0.90929742682568169539602D+00
           .90929742682568D+00

X= 3.0   +0.14112000805986722210074D+00
           .14112000805987D+00

X= (PI)   0.000000000000000000000000
           .543383291778630-21

X= 4.0   -0.75680249530792825137264D+00
          -.75680249530793D+00

X= 5.0   -0.95892427466313846889315D+00
          -.95892427466314D+00

X= 6.0   -0.27941549819892587281156D+00
          -.27941549819893D+00

X=(2PI)   0.000000000000000000000000
          -.128676658355730-20
```

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 14 DIGITS

CSICO - (090)

BASIC EXTERNAL FUNCTIONS -CSIN , CCOS-

(TRIG. SINE AND COSINE -TYPE COMPLEX)

ASA REF 8.3.3 (TABLE 4)

```
FUNCTION            RESULTS


TABLE VALUE      1.2984576   0.6349639
CSIN(1.,1.) =    1.2984576    .6349639

TABLE VALUE      0.8337300  -0.9888977
CCOS(1.,1.) =     .8337300   -.9888977
```

CSIN(X)**2 + CCOS(X)**2 = 1.0,0.0

ARGUMENT	RESULTS SHOULD BE 1.0,0.0	
(1 , 1/1)	1.0000000	-.0000000
(2 , 1/2)	1.0000000	0.0000000
(3 , 1/3)	1.0000000	.0000000
(4 , 1/4)	1.0000000	0.0000000
(5 , 1/5)	1.0000000	-.0000000
(6 , 1/6)	1.0000000	-.0000000
(7 , 1/7)	1.0000000	.0000000
(8 , 1/8)	1.0000000	-.0000000
(9 , 1/9)	1.0000000	0.0000000
(10, 1/10)	1.0000000	-.0000000

COSNS = (091)

BASIC EXTERNAL FUNCTION =COS=

(TRIGONOMETRIC COSINE =TYPE REAL)

ASA REF.= 8,3,3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 0.0	+1.000000000000
	1.0000000
X= 1.0	+0.540302305868
	0.5403023
X= 2.0	-0.416146836547
	-0.4161468
X= 3.0	-0.989992496600
	-0.9899925
X= (PI)	-1.000000000000
	-1.0000000
X= 4.0	-0.653643620864
	-0.6536436
X= 5.0	+0.283662185463
	0.2836622
X= 6.0	+0.960170286650
	0.9601703
X=(2PI)	+1.000000000000
	1.0000000

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 7 DIGITS

DPCOS = (092)

BASIC EXTERNAL FUNCTION =DCOS=

(TRIGONOMETRIC COSINE =TYPE D.P.)

ASA REF.= 8,3,3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 0.0	+0.10000000000000000000000D+01
	0.10000000000000D+01
X= 1.0	+0.54030230586813971740094D+00
	0.54030230586814D+00
X= 2.0	-0.41614683654714238699757D+00
	-0.41614683654714D+00
X= 3.0	-0.98999249660044545727157D+00
	-0.98999249660045D+00
X= (PI)	-0.10000000000000000000000D+01
	-0.10000000000000D+01
X= 4.0	-0.65364362086361191463917D+00
	-0.65364362086361D+00
X= 5.0	+0.28366218546322626446664D+00
	0.28366218546323D+00
X= 6.0	+0.96017028665036602054565D+00
	0.96017028665037D+00
X=(2PI)	+0.10000000000000000000000D+01
	0.10000000000000D+01

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 14 DIGITS

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FOR USE ON LARGE FORTRAN PROCESSORS

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VERSION 3 PART 8

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME

TANGH - (094)

BASIC EXTERNAL FUNCTION -TANH-

(HYPERBOLIC TANGENT -TYPE REAL)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X=0.0	0.0000000000
	0.0000000
X=2.0	0.9640275801
	0.9640276
X=2.5	0.9866142982
	0.9866143
X=4.0	0.9993292997
	0.9993293
X=6.0	0.9999877117
	0.9999877
X=8.0	0.9999997749
	0.9999998

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 7 DIGITS

SQROT - (095)

BASIC EXTERNAL FUNCTION -SQRT-

(SQUARE ROOT -TYPE REAL)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 2.0	1.41421356237310
	1.4142136
X= 3.0	1.73205080756888
	1.7320508
X=17.0	4.12310562561766
	4.1231056
X=31.0	5.56776436283002
	5.5677644
X=89.0	9.43398113205660
	9.4339811

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 7 DIGITS

DSQRO - (096)

BASIC EXTERNAL FUNCTION -DSQRT-

(SQUARE ROOT -TYPE D.P.)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 2.0	1.41421356237309504880+00
	1.4142135623731+000
X= 3.0	1.73205080756887729350+00
	1.7320508075689+000
X=17.0	4.12310562561766054980+00
	4.1231056256177+000
X=31.0	5.56776436283002192210+00
	5.5677643628300+000
X=89.0	9.43398113205660381130+00
	9.4339811320566+000

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 14 DIGITS

CSQRO - (097)

BASIC EXTERNAL FUNCTION -CSQRT-

(SQUARE ROOT -TYPE COMPLEX)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
THE EXPECTED VALUE

RESULT

.9950042E-02	.9983340E-03
.9950042E-02	.9983340E-03
.9800666E-01	.1986693E-01
.9800666E-01	.1986693E-01
.9553365E+00	.2955202E+00
.9553365E+00	.2955202E+00
.9210610E+01	.3894183E+01
.9210610E+01	.3894183E+01
.8775826E+02	.4794255E+02
.8775826E+02	.4794255E+02
.8253356E-02	.5646425E-02
.8253356E-02	.5646425E-02
.7648422E-01	.6442177E-01
.7648422E-01	.6442177E-01
.6967067E+00	.7173561E+00
.6967067E+00	.7173561E+00
.5403023E+01	.8414710E+01
.5403023E+01	.8414710E+01
.4161468E+02	-.9092974E+02
.4161468E+02	-.9092974E+02

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION

ARCTG = (098)		DACTG = (099)	
BASIC EXTERNAL FUNCTION =ATAN=		BASIC EXTERNAL FUNCTION =DATAN=	
(ARCTANGENT =TYPE REAL)		(ARCTANGENT =TYPE D.P.)	
ASA REF.= 8.3.3 (TABLE 4)		ASA REF.= 8.3.3 (TABLE 4)	
LINE 1 OF EACH PAIR IS HOLLERITH INFORMATION		LINE 1 OF EACH PAIR IS HOLLERITH INFORMATION	
RESULTS		RESULTS	
X= 0.125	0.124354994547	X= 0.125	0.124354994547D+00
	0.1243550		0.124354994547D+00
X= 0.250	0.244978663127	X= 0.250	0.244978663127D+00
	0.2449787		0.244978663127D+00
X= 0.375	0.358770670271	X= 0.375	0.358770670271D+00
	0.3587707		0.358770670271D+00
X= 0.500	0.463647609001	X= 0.500	0.463647609001D+00
	0.4636476		0.463647609001D+00
X=-0.750	-0.643501108793	X=-0.750	-0.643501108793D+00
	-0.6435011		-0.643501108793D+00
X= 1.000	0.785398163397	X= 1.000	0.785398163397D+00
	0.7853982		0.785398163397D+00
LINE 2 OF EACH PAIR IS THE FUNCTION CALCULATION PRINTED TO 7 DIGITS		LINE 2 OF EACH PAIR IS THE FUNCTION CALCULATION PRINTED TO 12 DIGITS	

ACTG2 - (100)

BASIC EXTERNAL FUNCTION -ATAN2-

(ARCTANGENT, 2 ARGUMENT -TYPE REAL)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 0.125	0.124354994547
	.1243550
X= 0.250	0.244978663127
	.2449787
X= 0.375	0.358770670271
	.3587707
X= 0.500	0.463647609001
	.4636476
X=-0.750	-0.643501108793
	-.6435011
X= 1.000	0.785398163397
	.7853982

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 7 DIGITS

DATN2 - (101)

BASIC EXTERNAL FUNCTION -DATAN2-

(ARCTANGENT, 2 ARGUMENT -TYPE D.P.)

ASA REF.- 8.3.3 (TABLE 4)

LINE 1 OF EACH PAIR IS
HOLLERITH INFORMATION

RESULTS

X= 0.125	0.124354994547D+00
	.124354994547+000
X= 0.250	0.244978663127D+00
	.244978663127+000
X= 0.375	0.358770670271D+00
	.358770670271+000
X= 0.500	0.463647609001D+00
	.463647609001+000
X=-0.750	-0.643501108793D+00
	-.643501108793+000
X= 1.000	0.785398163397D+00
	.785398163397+000

LINE 2 OF EACH PAIR IS THE FUNCTION
CALCULATION PRINTED TO 12 DIGITS

DMUDA = (102)

BASIC EXTERNAL FUNCTION =DMOD=

(REMAINDERING =TYPE DOUBLE PRECISION)

ASA REF.= 8.3.3 (TABLE 4)

RESULTS

0.00000000000000D+00

0.00000000000000D+00

0.00000000000000D+00

0.00000000000000D+00

END OF DMOD TEST

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS TEST SEGMENT TO BE SUCCESSFUL.

CABSA - (103)

BASIC EXTERNAL FUNCTION -CABS-

(MODULUS OF A COMPLEX NUMBER)

ASA REF.- 8.3.3 (TABLE 4)

RESULTS

SET 1	SET 2
.100000E-06	.500000E-06
.100000E-05	.500000E-05
.100000E-04	.500000E-04
.100000E-03	.500000E-03
.100000E-02	.500000E-02
.100000E-01	.500000E-01
.100000E+00	.500000E+00
.100000E+01	.500000E+01
.100000E+02	.500000E+02
.100000E+03	.500000E+03
.100000E+04	.500000E+04
.100000E+05	.500000E+05
.100000E+06	.500000E+06
.100000E+07	.500000E+07
.100000E+08	.500000E+08

VALUES IN EACH SET SHOULD BE POSITIVE .1 FOR SET 1 (.5 FOR SET 2), EXPONENT RANGE FROM -06 TO +08 IN SEQUENCE

```
BSFTS - (110) STATEMENT FUNCTION TEST
                    INTEGER AND REAL

ASA REF. - 8,1,2

RESULTS

      0.0000000000
      0.0000000000
                 0
                 0


      0.0000000000
      0.0000000000
                 0
                 0


      0.0000000000
      0.0000000000
                 0
                 0


      0.0000000000
      0.0000000000
                 0
                 0

ALL ABOVE ANSWERS SHOULD BE 0 FOR
THIS TEST SEGMENT TO BE SUCCESSFUL.
```

```
FSFTS - (111) STATEMENT FUNCTION TEST

DOUBLE PRECISION, COMPLEX AND LOGICAL

ASA REF. - 8,1,2

RESULTS

      0.00000000000000000000D+00
      0.00000000000000000000D+00
      0.00000000000000000000D+00
      0.00000000000000000000D+00


      0.00000000000000000000D+00
      0.00000000000000000000D+00
      0.00000000000000000000D+00
      0.00000000000000000000D+00


        0.0000000      0.0000000
        0.0000000      0.0000000
        0.0000000      0.0000000
        0.0000000      0.0000000

ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS
TEST SEGMENT TO BE SUCCESSFUL, VALUES
WITH EXPONENTS LESS THAN    10**(-14)
ARE CONSIDERED ZERO

 T   T   T   T

THE FOUR ABOVE ANSWERS SHOULD BE TRUE
FOR THIS SEGMENT TO BE SUCCESSFUL
```

```
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VERSION 3      PART 9


SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME
```

```
CPXAD - (140) COMPLEX ADDITION AND
                SUBTRACTION

ASA REF. - 6.1

RESULTS


    .0000    .0000
    .0000    .0000
    .0000    .0000
    .0000    .0000
    .0000    .0000
    .0000    .0000
    .0000    .0000
    .0000    .0000
    .0000    .0000
    .0000    .0000
    .0000    .0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 0.0,0.0
```

```
CPXMU - (141) COMPLEX MULTIPLICATION

ASA REF. - 6.1

RESULTS


    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000   -0.000
    1.000    0.000
    1.000    0.000
    1.000   -0.000
    1.000   -0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000
    1.000    0.000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 1.0,0.0

ERROR SHOULD NOT EXCEED + OR - .001
```

```
CPXDV - (142) DIVISION OF
                COMPLEX NUMBERS

ASA REF.- 6.1

RESULTS

   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000
   1.0000   1.0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 1.0,1.0

ERROR SHOULD NOT EXCEED + OR - .0001
```

```
CPXEX - (143) COMPLEX EXPONENTIATION

ASA.REF.6.1

RESULTS BASED ON THE FUNCTION

1.0 = SIN**2(X)+COS**2(X)

   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000   -.0000
   1.0000   -.0000
   1.0000   -.0000
   1.0000   -.0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000    .0000
   1.0000   -.0000
   1.0000   -.0000
   1.0000   -.0000
   1.0000   -.0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE CLOSE TO 1.0,0.0

ERROR SHOULD NOT EXCEED + OR - .0001
```

```
CPXOP - (144) COMPLEX OPERATIONS

ASA REF 6,1

RESULTS


  1,0000  0,0000
  1,0000 -0,0000
  1,0000 -0,0000
  1,0000 -0,0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 1,0,0,0

ERROR SHOULD NOT EXCEED + OR - ,0001
```

```
CREAD - (145) ADDITION AND SUBTRACTION
        OF COMPLEX AND REAL NUMBERS

ASA REF. 6.1

RESULTS


   .0000    .0000
   .0000    .0000
   .0000    .0000
   .0000    .0000
   .0000    .0000
   .0000    .0000
   .0000    .0000
   .0000    .0000
   .0000    .0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 0.0,0.0
```

```
CREMU - (146) MULTIPLICATION OF COMPLEX
                BY REAL

ASA.REF.6.1

RESULTS


  1.0000  2.0000
  1.0000  2.0000
  1.0000  2.0000
  1.0000  2.0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 1.0,2.0


  1.0000  1.0000
  1.0000  1.0000
  1.0000  1.0000
  1.0000  1.0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 1.0,1.0

ERROR SHOULD NOT EXCEED + OR - .0001
```

```
CREDV - (147) DIVISION OF COMPLEX
                AND REAL NUMBERS

ASA REF 6.1

RESULTS


  1.0000  1.0000
  1.0000  1.0000
  1.0000  1.0000
  1.0000  1.0000
  1.0000  1.0000
  1.0000  1.0000
  1.0000  1.0000
  1.0000  1.0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 1.0,1.0

ERROR SHOULD NOT EXCEED + OR - .0001
```

CREOP - (148) OPERATIONS ON REAL AND
COMPLEX NUMBERS

ASA REF. 6.1

RESULTS

2.0000 -1.0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 2.0,-1.0

1.0000 .0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 1.0,0.0

ERROR SHOULD NOT EXCEED + OR - .0001

MISC3 - (149) EFFECT OF BLANKS WITHIN
STMNT AND CONTINUATION
OF STMNT TO 20 LINES

ASA REFS. - 3.1.4.1 3.2.4.3.3 3.2.4

RESULTS

0

.0

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 0

MISC4 - (150) EFFECT OF BLANKS WITHIN
STMNT AND CONTINUATION
OF STMNT TO 20 LINES

ASA REFS. - 3.1.4.1 3.2.4.3.3 3.2.4

RESULTS

0.0000 0.0000

.0000 .0000

TEST IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 0.0,0.0

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VERSION 3 PART 10

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME

BRFCP - (160) REAL EXTERNAL FUNCTIONS

ASA REF. - 8.3.1

RESULTS SHOULD BE POSITIVE

TEST 1 IS POSITIVE

TEST 2 IS POSITIVE

TEST 3 IS POSITIVE

TEST 4 IS POSITIVE

TEST 5 IS POSITIVE

TEST 6 IS POSITIVE

BIFCP - (161) INTEGER EXTERNAL FUNCTIONS
WITH INTEGER AND REAL ARGS

ASA REF. - 8.3.1

RESULTS SHOULD BE POSITIVE

TEST 1 IS POSITIVE

TEST 2 IS POSITIVE

TEST 3 IS POSITIVE

TEST 4 IS POSITIVE

TEST 5 IS POSITIVE

TEST 6 IS POSITIVE

FIFCP - (163) INTEGER FUNCTION IN
FULL FORTRAN

ASA REF. 8.3.1

RESULTS SHOULD BE POSITIVE

TEST 1 IS POSITIVE

TEST 2 IS POSITIVE

TEST 3 IS POSITIVE

TEST 4 IS POSITIVE

TEST 5 IS POSITIVE

TEST 6 IS POSITIVE

TEST 7 IS POSITIVE

FRFCP - (162) REAL FUNCTIONS WITH
LOGICAL, D.P., AND COMPLEX ARGS

ASA REF. 8.3.1

RESULTS SHOULD BE POSITIVE

TEST 1 IS POSITIVE.

TEST 2 IS POSITIVE.

TEST 3 IS POSITIVE.

TEST 4 IS POSITIVE.

TEST 5 IS POSITIVE.

TEST 6 IS POSITIVE.

TEST 7 IS POSITIVE.

CFCCP - (164) COMPLEX FUNCTIONS

ASA REFS. 8.3.1,8.3.2

RESULTS

.0 .0 -- TEST 1 POSITIVE IF 0.0,0.0

.0 .0 -- TEST 2 POSITIVE IF 0.0,0.0

.0 .0 -- TEST 3 POSITIVE IF 0.0,0.0

.0 .0 -- TEST 4 POSITIVE IF 0.0,0.0

.0 .0 -- TEST 5 POSITIVE IF 0.0,0.0

.0 .0 -- TEST 6 POSITIVE IF 0.0,0.0

.0 .0 -- TEST 7 POSITIVE IF 0.0,0.0

.0 .0 -- TEST 8 POSITIVE IF 0.0,0.0

TEST 9 IS POSITIVE

TEST 10 IS POSITIVE

```
F O R T R A N  T E S T  P R O G R A M S

PREPARED BY NATIONAL BUREAU OF STANDARDS
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IN ACCORDANCE WITH ASA FORTRAN X3.9-1966
VERSION 3      PART 11

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL
OPERATING SYSTEM VERSION
DATE, INSTALLATION NAME
```

```
DPFCP - (165) DOUBLE PRECISION
                FUNCTIONS

ASA REFS. 8.3.1,8.3.2

RESULTS

TEST  1 IS POSITIVE
TEST  2 IS POSITIVE
TEST  3 IS POSITIVE
TEST  4 IS POSITIVE
TEST  5 IS POSITIVE
TEST  6 IS POSITIVE
TEST  7 IS POSITIVE
TEST  8 IS POSITIVE
TEST  9 IS POSITIVE
TEST 10 IS POSITIVE

0.0  0.0

TEST 11 IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 0.0,0.0

TEST 12 IS POSITIVE
```

```
BFCCP - (166) LOGICAL FUNCTIONS

ASA REF 8.3.1

RESULTS

TEST  1 IS POSITIVE
TEST  2 IS POSITIVE
TEST  3 IS POSITIVE
TEST  4 IS POSITIVE
TEST  5 IS POSITIVE
TEST  6 IS POSITIVE
TEST  7 IS POSITIVE
TEST  8 IS POSITIVE
TEST  9 IS POSITIVE
TEST 10 IS POSITIVE

0.0000  0.0000

TEST 11 IS POSITIVE IF NUMBERS PRINTED
ABOVE ARE 0.0,0.0

END OF (166)
```

```
SBRTN - (167) SUBROUTINE SUBPROGRAM

ASA REF. - 8.4.1

RESULTS

          1
        1.0
          1
          1
          1
          1
        1.0
        1.0
        1.0
        1.0
          1
        1.0
          1
          1
          1
        1.0
        1.0

TEST SUCCESSFUL IF ALL RESULTS EQUAL 1
```

FSBRT - (168) SUBROUTINE SUBPROGRAMS

ASA REF. - 8.4.1

RESULTS

TEST IS SUCCESSFUL IF EACH
GROUP CONTAINS SAME VALUES

```
       1
       1
       1
       1
       1
       1
       1
       1
       1
       1

     2.0
     2.0
     2.0
     2.0
     2.0
     2.0
     2.0
     2.0
     2.0
     2.0

     4.0D+00
     4.0D+00
     4.0D+00
     4.0D+00
     4.0D+00
     4.0D+00
     4.0D+00
     4.0D+00

6.0  6.0
6.0  6.0
6.0  6.0
6.0  6.0
6.0  6.0
6.0  6.0
6.0  6.0
6.0  6.0

       T
       T
       T
       T
       T
       T
       T
       T
```

BLKDT - (169) BLOCK DATA SUBPROGRAM

ASA REF. - 8.5

RESULTS

TEST IS SUCCESSFUL IF EACH
GROUP CONTAINS SAME VALUES

```
       2
       2
       2
       2

     3.0
     3.0
     3.0
     3.0

     4.0D+00
     4.0D+00
     4.0D+00
     4.0D+00

 4.0  5.0
 4.0  5.0
 4.0  5.0
 4.0  5.0

       T
       T
       T
       T

AB
AB
AB
```

F O R T R A N T E S T P R O G R A M S

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VERSION 3 PART 12

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME

BLKDA - (179) SEVERAL BLOCK DATA SUBPROGRAMS

ASA REF. - 8.5

RESULTS

TEST IS SUCCESSFUL IF EACH GROUP CONTAINS SAME VALUES

```
        1
        1
        1
        1

        2.0
        2.0
        2.0
        2.0

        4.0D+00
        4.0D+00
        4.0D+00
        4.0D+00

 3.0    4.0
 3.0    4.0
 3.0    4.0
 3.0    4.0

        F
        F
        F
        F

HP
HP
HP
```

UNFRW - (180) UNFORMATTED READ AND WRITE STATEMENTS

ASA REFS - 7.1.3.2.4 AND 7.1.3.2.5

RESULTS

```
        .0000000000
        .0000000000
                  0
                  0
        .0000000000
        .0000000000
        .0000000000
        .0000000000
        .0000000000
        .0000000000
        .0000000000

        .0000000000
        .0000000000
        .0000000000
        .0000000000
        .0000000000



        .0000000000
        .0000000000
                  0
                  0
        .0000000000
        .0000000000
        .0000000000
        .0000000000
        .0000000000
        .0000000000
        .0000000000



        .0000000000
        .0000000000
                  0
                  0
```

ALL ABOVE ANSWERS SHOULD BE ZERO IF THE READ AND WRITE RECORDS COMPARE.

```
BACUP - (182) BACKSPACE TAPE

ASA REF. 7.1.3.3.2

RESULTS


GROUP  1
     1      2      3
     4      5      6
     7      8      9
  1016   1017   1018
  1019   1020   1021
  1022   1023   1024


GROUP  2
     5     10     15
    20     25     30
    35     40     45
  5080   5085   5090
  5095   5100   5105
  5110   5115   5120


GROUP  3
     1      2      3
     4      5      6
     7      8      9
  1016   1017   1018
  1019   1020   1021
  1022   1023   1024


GROUPS 1 AND 3 SHOULD BE THE SAME
AND GROUP 2, 5 TIMES GROUP 1
```

```
DOTRM - (190) DO TERMINAL

ASA REF - 7.1.2.8

RESULTS


TEST1 CONTINUE EXPLICIT

**TEST1 SUCCESSFUL**


TEST2 CONTINUE IMPLIED

**TEST2 SUCCESSFUL**


TEST3 ASSIGN

**TEST3 SUCCESSFUL**


TEST4 LOGICAL IF

**TEST4 SUCCESSFUL**
```

```
DOLMT - (191) DO SET LIMITS

ASA REF. - 7.1.2.8

RESULTS

**TEST SUCCESSFUL**
```

```
DONSC - (192) NESTED LOOPS

ASA REF. - 7.1.2.8

RESULTS


2 LEVELS OF NESTING
**TEST SUCCESSFUL**


3 LEVELS OF NESTING
**TEST SUCCESSFUL**


4 LEVELS OF NESTING
**TEST SUCCESSFUL**


5 LEVELS OF NESTING
**TEST SUCCESSFUL**


CONTROL VARIABLE USED IN SUBSCRIPT
**TEST SUCCESSFUL**
```

```
DONS1 - (193) INCOMPLETE DO

ASA REF. - 7.1.2.8

RESULTS

**INCOMPLETE LOOP SUCCESSFUL**
```

```
DONSX - (194) EXTENDED DO RANGE

ASA REF. - 7.1.2.8.2

RESULTS

EXTENDED RANGE FROM LEVEL 1

**TEST SUCCESSFUL**

EXTENDED RANGE FROM LEVEL 2

**TEST SUCCESSFUL**

EXTENDED RANGE CONTAINING A DO STATEMENT

 8
 7
 6
 5
 4
 3
 2
 1
THE ABOVE 8 VALUES SHOULD BE
IN DESCENDING ORDER FROM 8 TO 1
```

```
DONIO - (196) DO LOOPS WITH I/O
                TERMINAL STATEMENTS

ASA REF. - 7.1.2.8
RESULTS

           1
           1
         1.0
         1.0
       0.1D+01
       0.1D+01
 1.0   1.0
 1.0   1.0
           T
           T

           1
           1
         1.0
         1.0
       0.1D+01
       0.1D+01
 1.0   1.0
 1.0   1.0
           T
           T
```

```
DONML - (195) MULT-LEVEL LOOPS

ASA REF. - 7.1.2.8

RESULTS

**TEST SUCCESSFUL**
```

```
THIS TEST IS SUCCESSFUL IF 3
IDENTICAL GROUPS OF OUTPUT HAVE BEEN
GENERATED.
```

MORDO - (197) A MORE COMPLICATED SEG. OF DO STATEMENTS

ASA REFS - 7.1.2.8 AND 7.1.2.8.1

RESULTS

THIS SEGMENT SUCCESSFULLY TESTED
IF NO ERROR MESSAGES

SUBR1 - (200) SUBROUTINE SUBPROGRAM WITHOUT AN ARGUMENT LIST

ASA REF. - 8.4.1

RESULTS

THIS SEGMENT SUCCESSFULLY TESTED
IF NO ERROR MESSAGES.

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IN ACCORDANCE WITH ASA FORTRAN X3.9-1966

VERSION 3 PART 13

SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME

LOGIF - (300) LOGICAL IF STATEMENT

ASA REF. - 7.1.2.3

RESULTS

TEST EXPLICITLY WRITTEN SIGNED ZERO

+0 EQUALS -0
+0.0 EQUALS -0.0
+0.000 EQUALS -0.000

TEST COMPUTATIONAL SIGN OF ZERO

+0 EQUALS -0
+0.0 EQUALS -0.0
+0.000 EQUALS -0.000

TEST -LOGICAL IF- FOLLOWED BY DIFFERENT KINDS OF STATEMENTS

0
0
0
0
0
0
0
0
0
0

THERE SHOULD BE 10 VALUES ABOVE,
IF ONLY 9, TEST 9 HAS FAILED.

0
0
0
0
0
0
0
0
0
0

ALL VALUES SHOULD BE ZERO.
A VALUE OTHER THAN ZERO WILL BE THE NUMBER OF THE TEST WHICH FAILED.

```
 BARIF - (301) BASIC FORTRAN
                ARITHMETIC IF STATEMENT
 ASA REF. - 7.1.2.2
 RESULTS

 TEST FOR SIGN OF ZERO - TYPE INTEGER

PATH   * FORM OF EXPRESSION *
OF IF  *  -0   *   0   *  +0  *
*******************************
       *       *       *      *
 NEG.  *   0   *   0   *   0  *
       *       *       *      *
 ZERO  *  11   *  11   *  11  *
       *       *       *      *
 POS.  *   0   *   0   *   0  *
       *       *       *      *

 TEST FOR SIGN OF ZERO - TYPE REAL

PATH   * FORM OF EXPRESSION *
OF IF  * -0.0  *  0.0  * +0.0 *
*******************************
       *       *       *      *
 NEG.  *   0   *   0   *   0  *
       *       *       *      *
 ZERO  *  11   *  11   *  11  *
       *       *       *      *
 POS.  *   0   *   0   *   0  *
       *       *       *      *

 ALL ENTRIES SHOULD BE  0  EXCEPT
 THE ZERO PATH, WHICH SHOULD BE  11
 IN EACH COLUMN. OTHER TESTS MAY
 FAIL  IF THESE RESULTS DIFFER.

 TEST EXPRESSIONS IN  IF  STATEMENTS

 TESTS SUCCESSFUL
```

```
 FARIF - (302) FULL FORTRAN
                ARITHMETIC IF STATEMENTS
 ASA REF. - 7.1.2.2
 RESULTS

 SEGMENT 302 TESTED SUCCESSFULLY.
```

```
 IOFMT - (310) ADDITIONAL FORMATTED I/O

 ASA REFS - 7.1.3.2.2  7.1.3.2.3  7.2.3

 RESULTS

 TEST BLANK INPUT
 EACH ANSWER SHOULD BE ZERO
    0
    0
    0
    0

    0.0
    0.0
    0.0
    0.0

    0.0E+00
    0.0E+00
    0.0E+00
    0.0E+00

    0.0D+00
    0.0D+00
    0.0D+00
    0.0D+00

 TEST DEC. PT. SPECIFIED BY INPUT
 3 LINES IN EACH GROUP SHOULD MATCH
 * LINE IS HOLLERITH DATA

 *  1.23456
    1.23456
    1.23456

 *  987654.0
    987654.0
    987654.0

 *  0.1234E+01
    0.1234E+01
    0.1234E+01

 * -0.987654E+02
   -0.987654E+02
   -0.987654E+02

 *  0.2345678910110+06
    0.2345678910110+06
    0.2345678910110+06

 * -0.109876D-04
   -0.109876D-04
   -0.109876D-04
```

```
TEST FORMAT DESCRIPTOR REPETITION
ALL LINES IN EACH GROUP SHOULD
BE IDENTICAL

*  12345                                                    *  5.555
   12345                                                       5.555
   12345                                                       5.555
   12345
   12345                                                    *  0.4545E-04
   12345                                                       .4545E-04
   12345                                                       .4545E-04

*  1,1                                                      * -6.666
   1,1                                                        -6.666
   1,1                                                        -6.666
   1,1
   1,1                                                      *  0.9989E+12
   1,1                                                        .9989E+12
   1,1                                                        .9989E+12

*  0,339567E+02                                             *  7.77
   0,339567E+02                                               7.77
   0,339567E+02                                               7.77
   0,339567E+02
   0,339567E+02                                             * -0.747E-02
   0,339567E+02                                               -.747E-02
   0,339567E+02                                               -.747E-02

*  0,96295134244D+04                                        *  0.549E+00
   0,96295134244D+04                                          .549E+00
   0,96295134244D+04                                          .549E+00
   0,96295134244D+04
   0,96295134244D+04                                        *  22
   0,96295134244D+04                                          22
                                                              22
*  3  1,23  0,14E+04  0,2D+02                               *  0.662E+00
   3  1,23  0,14E+04  0,2D+02                                  .662E+00
   3  1,23  0,14E+04  0,2D+02                                  .662E+00
   3  1,23  0,14E+04  0,2D+02
                                                            *  0.468E-10
* =0,13579E+05                                                .468E-10
  =0,13579E+05                                                .468E-10
  =0,13579E+05
                                                            *  11
*  4444                                                        11
   4444                                                       11
   4444
   4444                                                     *  0.59542D+04
   4444                                                        .59542D+04
   4444                                                        .59542D+04
   4444
                                                            * -44.6666
* =333                                                        -44.6666
  =333                                                        -44.6666
  =333

                                                            * -0.12345678900-03
                                                               -.12345678900-03
                                                               -.12345678900-03
```

```
*  54,9327
   54,9327
   54,9327

*  =0,13956245340+00
   =0,13956245340+00
   =0,13956245340+00

*  65432,1
   65432,1
   65432,1

*  0,848E+03
   0,848E+03
   0,848E+03
   0,848E+03

*  0,129D+07
   0,129D+07
   0,129D+07
   0,129D+07

*  0,412D+21
   0,412D+21
   0,412D+21

*  =0,987E+00
   =0,987E+00
   =0,987E+00
   =0,987E+00

*  0,6D+00
   0,6D+00
   0,6D+00
   0,6D+00

*  0,368D=05
   0,368D=05
   0,368D=05

*  0,777E+01
   0,777E+01
   0,777E+01

*  =333    0,59542D+04
   =333    0,59542D+04

*  =333    0,59542D+04
   =333    0,59542D+04
```

```
SCALE FACTOR ON READ
IN ORDER OF FORMAT OCCURRENCE
NO EXPONENT ON INPUT DATA

CARD     987654      8647,86      987,654
DESC    1PE10,3     =1PE10,2        D10,3
TO BE .988E+02    .8648E+05    .9877D+04
IS    0.988E+02   0.8648E+05   0.9877D+04
```

```
RDFMT - (312) FORMATS IN ARRAYS

ASA REFS. - 7.2.3.10

EACH GROUP OF LINES SHOULD MATCH

 4756 -867 224 39 -6
 4756 -867 224 39 -6
 4756 -867 224 39 -6

0.234 98. -77.27 547.18
 .234 98. -77.27 547.18
 .234 98. -77.27 547.18

-0.76E+09
 -.76E+09
 -.76E+09

0.893421E-12
 .893421E-12
 .893421E-12
 .893421E-12
 .893421E-12


-0.357901246D+00 0.52D-02
 -.357901246D+00  .52D-02
 -.357901246D+00  .52D-02

T T F  F
T T F  F
T T F  F

ABCDE+*=123
ABCDE+*=123

 +.10E+01
  .10E+01

HOLLERITH CONSTANTS AS CALL ARGUMENTS
HOLLERITH CONSTANTS AS CALL ARGUMENTS


TEST EMPTY FORMAT STATEMENT
THE FOLLOWING LINE SHOULD BE BLANK

END EMPTY FORMAT TEST

END SEGMENT 312 TEST
```

```
F O R T R A N  T E S T  P R O G R A M S

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VERSION 3     PART 14


SAMPLE COMPUTER, FORTRAN COMPILER LEVEL

OPERATING SYSTEM VERSION

DATE, INSTALLATION NAME
```

```
MISC5 - (350) SPECIFICATIONS FOR
                PROGRAM FORM

ASA REFS. - 3.2  3.2.1  3.4  3.5

TEST THAT COMMENTS ARE NOT EXECUTED
TEST SUCCESSFUL IF NO ERROR MESSAGE


TEST 72 CHARACTER LINE

123456789101112131415161718 19
123456789101112131415161718 19

TEST SUCCESSFUL IF 2 LINES ABOVE ARE
DIGITS 1 THROUGH 19


TEST 1,2,3,4,5 CHARACTER STMNT. LABEL

1 CHARACTER LABEL ACCEPTED
2 CHARACTER LABEL ACCEPTED
3 CHARACTER LABEL ACCEPTED
4 CHARACTER LABEL ACCEPTED
5 CHARACTER LABEL ACCEPTED


TEST 1,2,3,4,5,6 CHARACTER VARIABLES
AND ARRAY NAMES

**TEST SUCCESSFUL-ALL NAMES ACCEPTED**


TEST PLACEMENT OF STATEMENT LABELS
AND LABELS WITH LEADING ZEROS

      1
      2
      3
      4
      5
      6
      7
      8
      9


TEST SUCCESSFUL IF 9 NUMBERS
IN SEQUENTIAL ORDER FROM 1 TO 9
ARE WRITTEN ABOVE


END OF SEGMENT 350
```

FUNMX - (351)

THIS SEGMENT FURTHER TESTS
SOME BASIC EXTERNAL FUNCTIONS
BY USING TRIGONOMETRIC FORMULAE

ASA REFS. - 8.3.3

RESULTS

```
 0.00000
-.00000
-.00000
 .00000


-.00000
-.00000
 .00000
0.00000


 .00000
0.00000
-.00000
```

ALL ABOVE ANSWERS SHOULD BE 0 PLUS OR
MINUS AN ERROR FACTOR OF NOT MORE THAN
10 ** (-4)

NAMES - (352)

TEST OF THE COMPILERS CAPABILITY OF
IDENTIFYING DATA NAMES THAT RESEMBLE
FORTRAN VERBS AND/OR PREDEFINED
FUNCTION NAMES

ASA REFS. - 10.1.7/4

RESULTS

```
0.00000
0.00000
0.00000
0.00000
0.00000
0.00000
0.00000
0.00000
0.00000
0.00000


   0
   0


0.00000
0.00000
```

ALL ABOVE ANSWERS SHOULD BE 0 FOR
THIS TEST SEGMENT TO BE SUCCESSFUL

SPEC2 - (360) COMMON AND EQUIVALENCE

ASA REFS - 7.2.1.2 7.2.1.3 7.2.1.4

RESULTS

LINE 1 BELOW IS HOLLERITH

```
 2  2.0
 2  2.0
```

ANSWERS BELOW SHOULD BE 0 OR 0.0

```
 0
 0
 0
 0.0
 0
 0
 0
 0.0
```

ARITHMETIC IF SUCCESSFUL

ANSWER BELOW SHOULD BE 13.0

```
 13.0
```

COMPUTED GO TO SUCCESSFUL

TEST EQUIVALENCE EXTENDS COMMON

TEST SUCCESSFUL

SECTION III DISTRIBUTION TAPE ORGANIZATION

A. GENERAL DESCRIPTION

This section of the document describes the organization of the NBS FORTRAN Test Programs and data as recorded on magnetic tape for distribution. When the programs have been retrieved and stored in a form more appropriate to utilization, this section of the manual is of no significance.

The distribution tape containing both Version 1 (116 executable test units) and Version 3 (14 executable programs containing the 116 test units) is available in 800 cpi recording density in the following forms:

- 7 track, even parity, BCD recorded from FORTRAN H set punch card code (See Appendix D X3.9-1966)
- 9 track, odd parity, EBCDIC recorded from the American National Standard punch card code
- 9 track, odd parity, ASCII recorded from the American National Standard punch card code

The distribution tape is an unlabeled, fixed block size recorded tape, terminating with two tape mark records.

Version 1 Programs and its data precede Version 3 with its data. Each block contains 720 characters comprised of nine 80-character card image records. Partial blocks at the end of both Version 1 and Version 3 are filled with blank card images, so that Version 1 begins in Block 1 record 1 and Version 3 begins with Block 1597 record 1.

The differences between the punch card code for the FORTRAN H Set and the American National Standard are reflected in the following four characters:

		H-Set	Standard
(	left parenthesis	0-4-8	12-5-8
)	right parenthesis	12-4-8	11-5-8
=	equal	3-8	6-8
+	plus	12	12-6-8

The programs and the data are in the same code.

For FORTRAN processors which contain an option on the coded character set for conversion of the FORTRAN programs, but not for the data, or perform a logical conversion only, causing the program listing to print a different character representation for the four characters listed above should perform a character conversion to the test programs and data before performing the tests, because the program listing is considered part of the documentation.

The following tables identify each main program unit, subprogram and data in two different forms:

The Block and Record number identifies the block number and the record within the block of the start of each element of information.

The card image number is the record number for the location of the start of each element of information.

For Version 3, one table lists the elements in relation to their position on the tape with Version 1 preceding it, and the other table assumes that the tape has been forward spaced over Version 1 (1596 blocks).

Each element of information in the tables is identified by the letter:

M = main program unit
F = function subprogram
S = subroutine subprogram
B = Block Data subprogram

WARNING - Version 1 and Version 3 each contain the same subprograms. If Version 1 and Version 3 are to be retained as a single file for use, one copy of the subprograms (63 functions and subroutines) must be deleted otherwise duplicate external procedure names will occur.

In Version 1, the Directory (segment 000) recorded as a set of comment lines is included as part of the first test unit, segment 008. This causes this test unit to contain 871 card images. The Directory of 342 card images may be removed and by appending a STOP statement and an END line may be compiled to obtain a program listing.

A1. VERSION 1 DISTRIBUTION TAPE ORGANIZATION

Block & Record #		Segment #	Name		Card Image #
1	1	000	*		1
		008	FMTRW	M	
97	8		46 data cards		872
102	9	009	AFRMT	M	918
115	7		3 data cards		1033
116	1	010	DATA2	M	1036
133	6	011	AASGN	M	1194
163	4	013	DASGN	M	1462
210	1	015	CASGN	M	1882
262	2	016	LASGN	M	2351
273	9	017	INTRL	M	2457
294	5	020	UGOTO	M	2642
302	2	021	AGOTO	M	2711
318	7	022	CGOTO	M	2860
334	9	030	ARBAD	M	3006
347	7	031	ARFAD	M	3121
354	1	032	ARBSB	M	3178
361	5	033	ARFSB	M	3245
369	5	034	ARBAS	M	3317
378	3	035	ARFAS	M	3396
384	9	036	ARBMI	M	3456
392	3	037	ARBMR	M	3522
399	4	038	ARFMD	M	3586
407	3	039	ARBDV	M	3657
415	9	040	ARFDV	M	3735
423	3	041	ARBEX	M	3801
433	3	042	ARFEX	M	3891
441	5	043	ARBHI	M	3965
461	2	050	SBB67	M	4142
469	9	051	SBB45	M	4221
479	6	052	SBB13	M	4308
492	1	053	SBF17	M	4420
500	8	054	SIMIF	M	4499
509	4	055	IFABS	M	4576
516	5	056	IFFLT	M	4640
521	9	057	IFFIX	M	4689
528	5	058	IFSGN	M	4748
537	6	059	IFDAB	M	4830
544	8	060	IFTRN	M	4895
556	7	061	IFMOD	M	5002
566	1	062	IFMAX	M	5086
593	6	063	IFMIN	M	5334
618	6	064	IFDSG	M	5559
625	1	065	IFDIM	M	5617
632	7	066	IFSGL	M	5686
641	6	067	IFREL	M	5766
652	9	068	IFIMG	M	5868
667	3	069	IFDBL	M	5997
673	6	070	IFCPX	M	6054
680	4	071	IFCJG	M	6115
687	7	072	IFBMS	M	6181
702	1	073	IFFMS	M	6310
722	2	080	EXPON	M	6491
728	8	081	DEXPO	M	6551
736	4	082	CEXPO	M	6619
747	3	083	LOGTM	M	6717
753	6	084	DPLOG	M	6774
761	1	085	CXLOG	M	6841
772	8	086	COLOG	M	6947
779	1	087	DCLOG	M	7003
786	4	088	SINUS	M	7069
795	4	089	DPSIN	M	7150
804	5	090	CSICO	M	7232
811	7	091	COSNS	M	7297
820	8	092	DPCOS	M	7379
829	8	094	TANGH	M	7460
836	2	095	SQROT	M	7517
842	3	096	DSQRO	M	7572
849	3	097	CSQRO	M	7635
857	5	098	ARCTG	M	7709
863	9	099	DACTG	M	7767
871	3	100	ACTG2	M	7833
877	5	101	DATN2	M	7889
884	8	102	DMODA	M	7955
891	8	103	CABSA	M	8018
901	2	110	BSFTS	M	8102
913	3	111	FSFTS	M	8211
931	7	140	CPXAD	M	8377
940	2	141	CPXMU	M	8453
955	8	142	CPXDV	M	8594
965	1	143	CPXEX	M	8677
978	9	144	CPXOP	M	8802
985	9	145	CREAD	M	8865
993	4	146	CREMU	M	8932
1000	3	147	CREDV	M	8994
1006	7	148	CREOP	M	9052
1014	1	149	MISC3	M	9118
1024	8	150	MISC4	M	9215
1036	5	160	BRFCP	M	9320
1045	6	400	AFS	F	9402
1046	7	420	BFS	F	9412
1047	8	430	CFS	F	9422
1048	9	440	DFS	F	9432
1050	2	450	EFS	F	9443
1051	4	460	FFS	F	9454

*See preceding page.

M = Main Program
F = Function Subprogram
S = Subroutine Subprogram
B = BLOCK DATA Subprogram

VERSION 1 DISTRIBUTION TAPE ORGANIZATION - continuation

Block & Record #	Segment #	Name		Card Image #
1053 1	161	BIFCP	M	9469
1062 7	401	IAFI	F	9556
1063 8	421	IBFI	F	9566
1064 9	431	ICFI	F	9576
1066 1	441	IDFI	F	9586
1067 5	451	IEFI	F	9599
1068 7	461	IFFI	F	9610
1070 4	162	FRFCP	M	9625
1085 1	402	GFS	F	9757
1086 3	422	HFS	F	9768
1087 6	432	IRFS	F	9780
1089 4	442	JRFS	F	9796
1090 6	452	RFS	F	9807
1093 8	163	FIFCP	M	9836
1107 5	403	IFI	F	9959
1108 7	423	JFI	F	9970
1110 1	433	KFI	F	9982
1111 8	443	LFI	F	9998
1113 1	453	MFI	F	10009
1116 3	164	CFCCP	M	10038
1130 9	404	AFC	F	10170
1132 1	414	BFC	F	10180
1133 2	424	CFC	F	10190
1134 4	434	DFC	F	10201
1135 7	444	EFC	F	10213
1136 9	454	FFC	F	10224
1138 6	464	HFC	F	10239
1141 7	165	DPFCP	M	10267
1156 7	405	AFD	F	10402
1157 8	415	BFD	F	10412
1158 9	425	CFD	F	10422
1160 2	435	DFD	F	10433
1161 5	445	EFD	F	10445
1163 3	455	FFD	F	10461
1164 5	465	GFD	F	10472
1165 8	475	HFD	F	10484
1169 4	166	BFCCP	M	10516
1185 4	406	AFB	F	10660
1186 5	416	BFB	F	10670
1187 6	426	CFB	F	10680
1188 8	436	DFB	F	10691
1190 1	446	EFB	F	10702
1191 4	456	FFB	F	10714
1192 7	466	GFB	F	10726
1193 9	476	HFB	F	10737

Block & Record #	Segment #	Name		Card Image #
1196 7	167	SBRTN	M	10762
1208 2	407	AAQ	S	10865
1210 7	417	ABQ	S	10888
1212 2	427	ACQ	S	10901
1214 5	168	FSBRT	M	10922
1231 5	408	ADQ	S	11075
1235 8	418	AEQ	S	11114
1238 4	428	AFQ	S	11137
1242 9	169	BLKDT	M	11178
1250 8	409	BLOKD	D	11249
1254 8	179	BLKDA	M	11285
1262 6	419	BLAKD	B	11355
1265 3	429	BLBKD	B	11379
1267 2	439	BLCKD	B	11396
1269 4	180	UNFRW	M	11416
1284 2	182	BACUP	M	11549
1292 4	190	DOTRM	M	11623
1307 4	191	DOLMT	M	11758
1314 3	192	DONSC	M	11820
1332 7	193	DONSI	M	11986
1339 4	194	DONSX	M	12046
1353 8	195	DONML	M	12176
1361 1	196	DONIO	M	12241
1371 2	197	MORDO	M	12332
1390 9	412	MDQ	S	12510
1392 4	200	SUBR1	M	12523
1398 2	410	SUBRQ	S	12575
1409 4	300	LOGIF	M	12676
1439 9	411	SMCQ	S	12951
1441 3	301	BARIF	M	12963
1460 7	302	FARIF	M	13138
1471 7	310	IOFMT	M	13237
1506 2	38 data cards			13547
1510 4	312	RDFMT	M	13585
1532 7	462	FMTQ	S	13786
1536 4	13 data cards			13819
1537 8	350	MISC5	M	13832
1555 2	351	FUNMX	M	13988
1561 6	352	NAMES	M	14046
1570 4	413	MAQQ	S	14125
1572 1	463	MBQQ	S	14140
1573 7	473	AMQQ	S	14155
1576 1	483	BMQQ	S	14176
1577 8	360	SPEC2	M	14192
1596 6	blank card			14361
1596 9	last blank card			14364

A2. VERSION 3 DISTRIBUTION TAPE ORGANIZATION

Block & Record #	Segment #	Name		Card Image #
1597 1	008-011	PART 1	M	14365
1716 4	49 data cards			15439
1721 8	013-015	PART 2	M	15488
1824 7	6 data cards			16414
1825 4	016-034	PART 3	M	16420
1944 3	6 data cards			17490
1944 9	035-053	PART 4	M	17496
2069 1	6 data cards			18613
2069 7	054-064	PART 5	M	18619
2197 2	6 data cards			19766
2197 8	065-073	PART 6	M	19772
2298 5	6 data cards			20678
2299 2	080-092	PART 7	M	20684
2409 3	6 data cards			21675
2409 9	094-111	PART 8	M	21681
2514 9	6 data cards			22626
2515 6	140-150	PART 9	M	22632
2622 8	6 data cards			23597
2623 5	160-164	PART 10	M	23603
2693 9	400	AFS	F	24237
2695 1	420	BFS	F	24247
2696 2	430	CFS	F	24257
2697 3	440	DFS	F	24267
2698 5	450	EFS	F	24278
2699 7	460	FFS	F	24289
2701 4	401	IAFI	F	24304
2702 5	421	IBFI	F	24314
2703 6	431	ICFI	F	24324
2704 7	441	IDFI	F	24334
2706 2	451	IEFI	F	24347
2707 4	461	IFFI	F	24358
2709 1	402	GFS	F	24373
2710 3	422	HFS	F	24384
2711 6	432	IRFS	F	24396
2713 4	442	JRFS	F	24412
2714 6	452	RFS	F	24423
2717 8	403	IFI	F	24452
2719 1	423	JFI	F	24463
2720 4	433	KFI	F	24475
2722 2	443	LFI	F	24491
2723 4	453	MFI	F	24502
2726 6	404	AFC	F	24531
2727 7	414	BFC	F	24541
2728 8	424	CFC	F	24551
2730 1	434	DFC	F	24562
2731 4	444	EFC	F	24574
2732 6	454	FFC	F	24585
2734 3	464	HFC	F	24600
2737 4	6 data cards			24628
2738 1	165-169	PART 11	M	24634
2812 7	405	AFD	F	25306
2813 8	415	BFD	F	25316
2814 9	425	CFD	F	25326
2816 2	435	DFD	F	25337
2817 5	445	EFD	F	25349
2819 3	455	FFD	F	25365
2820 5	465	GFD	F	25376
2821 8	475	HFD	F	25388
2825 4	406	AFB	F	25420
2826 5	416	BFB	F	25430
2827 6	426	CFB	F	25440
2828 8	436	DFB	F	25451
2830 1	446	EFB	F	25462
2831 4	456	FFB	F	25474
2832 7	466	GFB	F	25486
2833 9	476	HFB	F	25497
2836 7	407	AAQ	S	25522
2839 3	417	ABQ	S	25545
2840 7	427	ACQ	S	25558
2843 1	408	ADQ	S	25579
2847 4	418	AEQ	S	25618
2849 9	428	AFQ	S	25641
2854 5	409	BLOKD	B	25682
2858 5	6 data cards			25718
2859 2	179-200	PART 12	M	25724
2998 3	410	SUBRQ	S	26976
3009 5	412	MDQ	S	27077
3010 9	419	BLAKD	B	27090
3013 6	429	BLBKD	B	27114
3015 5	439	BLCKD	B	27131
3017 7	6 data cards			27151
3018 4	300-312	PART 13	M	27157
3139 3	411	MCQ	S	28245
3140 6	462	FMTQ	S	28257
3144 3	57 data cards			28290
3150 6	350-360	PART 14	M	28347
3206 8	413	MAQQ	S	28853
3208 5	463	MBQQ	S	28868
3210 2	473	AMQQ	S	28883
3212 5	483	BMQQ	S	28904
3214 3	6 data cards			28920
3214 8	last data card			28925
3214 9	(blank filler card)			28926

M = Main Program
F = Function Subprogram
S = Subroutine Subprogram
B = BLOCK DATA Subprogram

VERSION 3 DISTRIBUTION TAPE ORGANIZATION
(Listed as if Version 1 (1596 blocks) had been deleted or forward spaced.)

Block	Record #	Segment #	Name		Card Image #
1	1	008-011	PART 1	M	1
120	4	49	data cards		1075
125	8	013-015	PART 2	M	1124
228	7	6	data cards		2050
229	4	016-034	PART 3	M	2056
348	3	6	data cards		3126
348	9	035-053	PART 4	M	3132
473	1	6	data cards		4249
473	7	054-064	PART 5	M	4255
601	2	6	data cards		5402
601	8	065-073	PART 6	M	5408
702	5	6	data cards		6314
703	2	080-092	PART 7	M	6320
813	3	6	data cards		7311
813	9	094-111	PART 8	M	7317
918	9	6	data cards		8262
919	6	140-150	PART 9	M	8268
1026	8	6	data cards		9233
1027	5	160-164	PART 10	M	9239
1097	9	400	AFS	F	9873
1099	1	420	BFS	F	9883
1100	2	430	CFS	F	9893
1101	3	440	DFS	F	9903
1102	5	450	EFS	F	9914
1103	7	460	FFS	F	9925
1105	4	401	IAFI	F	9940
1106	5	421	IBFI	F	9950
1107	6	431	ICFI	F	9960
1108	7	441	IDFI	F	9970
1110	2	451	IEFI	F	9983
1111	4	461	IFFI	F	9994
1113	1	402	GFS	F	10009
1114	3	422	HFS	F	10020
1115	6	432	IRFS	F	10032
1117	4	442	JRFS	F	10048
1118	6	452	RFS	F	10059
1121	8	403	IFI	F	10088
1123	1	423	JFI	F	10099
1124	4	433	KFI	F	10111
1126	2	443	LFI	F	10127
1127	4	453	MFI	F	10138
1130	6	404	AFC	F	10167
1131	7	414	BFC	F	10177
1132	8	424	CFC	F	10187
1134	1	434	DFC	F	10198
1135	4	444	EFC	F	10210
1136	6	454	FFC	F	10221
1138	3	464	HFC	F	10236
1141	4	6	data cards		10264
1142	1	165-169	PART 11	M	10270
1216	7	405	AFD	F	10942
1217	8	415	BFD	F	10952
1218	9	425	CFD	F	10962
1220	2	435	DFD	F	10973
1221	5	445	EFD	F	10985
1223	3	455	FFD	F	11001
1224	5	465	GFD	F	11012
1225	8	475	HFD	F	11024
1229	4	406	AFB	F	11056
1230	5	416	BFB	F	11066
1231	6	426	CFB	F	11076
1232	8	436	DFB	F	11087
1234	1	446	EFB	F	11098
1235	4	456	FFB	F	11110
1236	7	466	GFB	F	11122
1237	9	476	HFB	F	11133
1240	7	407	AAQ	S	11158
1243	3	417	ABQ	S	11181
1244	7	427	ACQ	S	11194
1247	1	408	ADQ	S	11215
1251	4	418	AEQ	S	11254
1253	9	428	AFQ	S	11277
1258	5	409	BLOKD	B	11318
1262	5	6	data cards		11354
1263	2	179-200	PART 12	M	11360
1402	3	410	SUBRQ	S	12612
1413	5	412	MDQ	S	12713
1414	9	419	BLAKD	B	12726
1417	6	429	BLBKD	B	12750
1419	5	439	BLCKD	B	12767
1421	7	6	data cards		12787
1422	4	300-312	PART 13	M	12793
1543	3	411	SMCQ	S	13881
1544	6	462	FMTQ	S	13893
1548	3	57	data cards		13926
1554	6	350-360	PART 14	M	13983
1610	8	413	MAQQ	S	14489
1612	5	463	MBQQ	S	14504
1614	2	473	AMQQ	S	14519
1616	5	483	BMQQ	S	14540
1618	3	6	data cards		14556
1618	8	last	data card		14561
1618	9	(blank	filler card)		14562

M = Main Program
F = Function Subprogram
S = Subroutine Subprogram
B = BLOCK DATA Subprogram

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15. SUPPLEMENTARY NOTES Volumes 1, 2, and 3 contain the documentation, Version 1 program listing, Version 3 program listing, respectively. The magnetic tape containing the NBS FORTRAN Test Programs is available in 7-track BCD, 9-track ASCII or EBCDIC recording.

16. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)*

The NBS FORTRAN test programs, written in Standard FORTRAN, are designed to test whether a FORTRAN compiler accepts the forms and interpretations of the FORTRAN language as described in the American National Standard FORTRAN document X3.9-1966. The test programs, comprised of 116 test units, are structured into two versions, each containing approximately 14,500 punch card images. The test units may be used as separate executable FORTRAN programs, or may be linked end to end with other test units, with a minimum of user effort, to improve operating efficiency. Version 1 is structured into 116 executable FORTRAN programs, and Version 3, containing the same 116 test units, is structured into 14 executable FORTRAN programs for use on large FORTRAN processors.

The test program design criteria was to:

- Constrain all test programs to the FORTRAN Standard X3.9-1966.
- Reduce the effect of those areas in which the FORTRAN Standard does not prescribe a method or solution, e.g., range, precision, size of computer, etc.
- Simplify the use of the FORTRAN test programs.
- Test FORTRAN language elements before they are used in support of other tests.
- Maintain an open ended system so that tests may be changed or added.

The test programs require the use of a card reader, printer and one intermediate tape unit.

17. KEY WORDS *(six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons)*

Computer programming language; FORTRAN: FORTRAN validation; language validation; standard FORTRAN; test program design.

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NBS FORTRAN Test Programs

Volume 2—Listings for Version 1

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NBS FORTRAN Test Programs
Volume 2—Listings for Version 1

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INTRODUCTION

This document, Volume 2 of three volumes, contains the program listings and supporting input data for the NBS FORTRAN Test Programs, Version 1, developed by the Institute for Computer Sciences and Technology, National Bureau of Standards. The test programs are written in ASA Standard FORTRAN and test the language elements described in the ASA Standard FORTRAN document X3.9-1966.

The NBS FORTRAN Test Programs, Version 1, contain 116 test units, each structured as an executable FORTRAN program. Test units numbered 008, 009, 310, and 312 contain input data which is listed following the respective test unit.

This listing is in the order described in Volume 1 Section III Distribution Tape Organization.

Volume 1, Section I describes the system design, the programming techniques and conventions used in the program development and should enable the user to extend, alter or reorganize the test programs.

Volume 1, Section II defines the organization and operating procedure for performing the tests and contains a set of representative results obtained from actual running of the test programs on several FORTRAN processors.

Volume 1, Section III describes the order and location of each test unit and data as recorded on magnetic tape for distribution.

Volume 2 contains the program listings for the NBS FORTRAN Test Programs, Version 1.

Volume 3 contains the program listings for the NBS FORTRAN Test Programs, Version 3.

Listings of NBS FORTRAN Test Programs, Version 1

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C* OONSX - 194 DO LOOPS - EXTENDED RANGE                M - 1 - - - 130P0003040
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C* DONML - 195 OO LOOPS - NESTED NEST                   M - 1 - - -  65P0003060
C*                                                                      P0003070
C* OONIO - 196 DO LOOPS - I/O TERMINAL STATEMENTS       M - 1 X - -.  91P0003080
C*                                                                      P0003090
C* MORDO - 197 OO LOOPS -I/O,STATMT FT.,INTR FT.,CALL   M - 1 X - - 143P0003100
C*  BSFOF - 005 STATEMENT FUNCTIONS                     M - - - - -  35P0003110
C*   MDQ - 412     SUBROUTINE SUBPROGRAM                S - - - - -  13P0003120
C*                                                                      P0003130
C* SUBR1 - 200 SUBROUTINE - OPERATIONS DONE AT SUB LEVEL M - 1 X C -  52P0003140
C* SUBRQ - 410     SUBROUTINE SUBPROGRAM - NO ARG. LIST  S - - X C - 101P0003150
C*                                                                      P0003160
C* LOGIF - 300 LOGICAL IF STATEMENTS                    M - 1 - - - 275P0003170
C*  SMCQ - 411     SUBROUTINE SUBPROGRAM                S - - - - -  12P0003180
C*                                                                      P0003190
C* BARIF - 301 ARITHMETIC IF STATEMENTS - INTEGER, REAL M - 1 - - - 175P0003200
C*                                                                      P0003210
C* FARIF - 302 ARITHMETIC IF STATEMENTS - D.P.          M - 1 - - -  99P0003220
C*                                                                      P0003230
C* IOFMT - 310 FORMATTEO REAO/WRITE -AOOITIONAL FEATURES M I 5 - - - 310P0003240
C*            38 OATA CARDS                           - - - - - -  38P0003250
C*                                                                      P0003260
C* RDFMT - 312 FORMATS IN ARRAYS                        M I 1 - - O 201P0003270
C*  FMTQ - 462     SUBROUTINE SUBPROGRAM                S - - - - -  33P0003280
C*            13 DATA CAROS                           - - - - - -  13P0003290
C*                                                                      P0003300
C* MISC5 - 350 SPECIFICATIONS FOR PROGRAM FORM          M - 1 - - - 156P0003310
C*                                                                      P0003320
C* FUNMX - 351 BASIC EXTERNAL FUNCTIONS - TRIG FORMULAE M - 1 - - -  58P0003330
C*                                                                      P0003340
C* NAMES - 352 NAMES RESEMBLE FORTRAN VERBS, FUNCTIONS  M - 1 - - -  79P0003350
C*  MAQQ - 413     SUBROUTINE  (INTRINSIC FUNCTION NAMES S - - - - -  15P0003360
C*  MBQQ - 463     SUBROUTINE   USED AS VARIABLE NAMES IN S - - - - -  15P0003370
C*  AMQQ - 473     SUBROUTINE   SOME SUBRTS. ANO AS      S - - - - D  21P0003380
C*  BMQQ - 483     SUBROUTINE   FUNCTIONS IN OTHERS)     S - - - - -  16P0003390
C*                                                                      P0003400
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C* SPEC2 - 360 COMMON, DIMENSION, EQUIVALENCE            M - 1 - / - 169P0003410
C*                                                                      P0003420
C***********************************************************************P0080010
C*****                                                                  P0080020
C*****                          FMTRW - (008)                           P0080030
C*****                                                                  P0080040
C***********************************************************************P0080050
C*****  GENERAL PURPOSE                                        ASA REFSP0080060
C*****    TO TEST SIMPLE FORMAT AND FORMATTED I/O STATEMENTS   7.1.3.2.2P0080070
C*****    SO THAT THESE FEATURES MAY BE USED IN OTHER TEST     7.1.3.2.3P0080080
C*****    PROGRAM SEGMENTS                                     7.2.3    P0080090
C*****  RESTRICTIONS OBSERVED                                          P0080100
C*****  *  ALL FORMAT STATEMENTS ARE LABELED                  7.2.3  /57P0080110
C*****  *  H AND X DESCRIPTORS ARE NEVER REPEATED             7.2.3.3/54P0080120
C*****  *  FOR W.D DESCRIPTORS, D IS ALWAYS SPECIFIED AND     7.2.3.1/31P0080130
C*****     W IS EQUAL TO OR GREATER THAN D                     7.2.3.1/33P0080140
C*****  *  FIELD WIDTH IS NEVER ZERO                          7.2.3  /18P0080150
C*****  *  IF THERE IS AN I/O LIST, THE FORMAT STATEMENT       7.2.3.4/22P0080160
C*****     CONTAINS AT LEAST ONE FIELD DESCRIPTOR (OTHER                P0080170
C*****     THAN H OR X)                                                 P0080180
C*****  *  ITEMS IN I/O LIST CORRESPOND TO FORMAT DESCRIPTORS  7.2.3.4/36P0080190
C*****  *  NEGATIVE OUTPUT VALUES ARE SIGNED                  7.2.3.6/56P0080200
C*****  *  FIELD WIDTH NEVER EXCEEDED BY OUTPUT               7.2.3.6/01P0080210
C*****  *  FOR I CONVERSION, EXTERNAL INPUT FIELDS ARE      7.2.3.6.1/07P0080220
C*****     INTEGER CONSTANTS                                            P0080230
C*****  GENERAL COMMENTS                                               P0080240
C*****    PLUS SIGNS FOR INPUT FIELDS ARE USUALLY OMITTED      7.2.3.6/44P0080250
C*****                                                                  P0080260
C*****                                                                  P0080270
C*****                                                                  P0080280
C*****    FORMATTED WRITES WITHOUT AN I/O LIST (FORMAT        7.1.3.2.3/05P0080290
C*****    STATEMENTS TEST H AND X DESCRIPTORS AND SLASH       7.2.3.2  /44P0080300
C*****    RECORD DIVIDERS)                                    7.2.3.8  /09P0080310
C*****                                                        7.2.3.9  /31P0080320
C  INPUT DATA TO THIS SEGMENT CONSISTS OF 40 CARD IMAGES IN COL. 1 - 80 P0080330
COL.       1-----------------------------------------------------------61 P0080340
CARD  1      999                                                        P0080350
CARD  2      555554444                                                  P0080360
CARD  3      666  777777  8                                             P0080370
CARD  4      333333111112222222255555444444444444                       P0080380
CARD  5      7.7123456.7                                                P0080390
CARD  6      8.889.9997.123456                                          P0080400
CARD  7      5.44446.5555533.133.133.133.1444.1                         P0080410
CARD  8      5555.15555.1  66666.166666.1  44.22                        P0080420
CARD  9      2.12.12.12.12.1666.3334.3334.3334.333                      P0080430
CARD 10    -0.1E+01+0.22E-01 0.333E+02 0.4444E+03-0.55555E-03+0.666666E+ P0080440
COL.     62------------77                                               P0080450
CARD 10 00+0.9876543E+12                                               P0080460
COL.       1-----------------------------------------------------------61 P0080470
CARD 11    1.05.522.066.633.123455.0789                                P0080480
CARD 12    123.00456.88 0.123E+01  +0.987+1 -0.2345+02 -0.6879E+2+0.7E+0 P0080490
COL      62-----70                                                     P0080500
CARD 12 3 0.4E+03                                                      P0080510
COL.       1-----------------------------------------------------------61 P0080520
CARD 13     0.9876543E-04+0.1357913E-04                                P0080530
CARD 14    19.34+0.2468E+02    +.765+287.643.96 0.5407E+0243.96+0.5407E+0 P0080540
COL.     62-------------78                                             P0080550
CARD 14 243.96    0.5407+2                                             P0080560
COL.       1---------------------------- ----------------------------61 P0080570
CARD 15      +0.10+06                                                  P0080580
CARD 16    -0.3340-04    -.334-4 +0.7657654D00 0.123456789010+10       P0080590
CARD 17     +0.987654321098760-1+0.987654321098760-01     .98765432109876 P0080600
COL.     62-66                                                         P0080610
CARD 17 -1                                                             P0080620
COL.       1-----------------------------------------------------------61 P0080630
CARD 18     -.555555542D+03  -0.555555542+3                            P0080640
CARD 19    TABC                                                        P0080650
CARD 20    FDEFFGHIT*+T1F$)TF                                          P0080660
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CARD 21      9.91.19.92.29.93.39.94.49.91.19.92.29.93.39.94.4                P0080670
CARD 22    9.95.59.96.69.97.79.98.89.95.59.96.69.97.79.98.8                  P0080680
CARD 23      -9.9-9.9-9.9-9.9                                                P0080690
CARD 24    -0.99D+01-0.99D+01-0.99D+01-0.99D+01-0.99D+01 -.99D+01  -.99+    P0080700
COL.      62-------72                                                        P0080710
CARD 24 01    -.99+1                                                        P0080720
COL.       1-----------------------------------------------------------61   P0080730
CARD 25    9999999999                                                       P0080740
CARD 26      +0.99D+01 0.99D+01  +.99D01    +.99D1                          P0080750
CARD 27    .9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9      P0080760
CARD 28    TFTFTFTFTF                                                       P0080770
CARD 29      99999999+0.99D+01 0.99D+01 0.99D+01+0.99D+01     .99D1          P0080780
CARD 30    9.95.59.96.69.97.79.98.899999999999999999TFFT9.99.99.99.99.9     P0080790
CARD 31          T   F          T    F                                     P0080800
CARD 32      4444.55555                                                     P0080810
COL.       1-----------------------------------------------------------61   P0080820
CARD 33    123.45678E2  1234.5678  123.45678  12.345678  1.2345678  .123   P0080830
COL.      62-66                                                            P0080840
CARD 33 45678                                                             P0080850
COL.       1-----------------------------------------------------------61   P0080860
CARD 34     9876.5498.7654E2 9876.54   987.6548647860-486.4786E286.4786    P0080870
COL.      62---------------80                                              P0080880
CARD 34  8657.86D0  9876.54                                               P0080890
COL.       1-----------------------------------------------------------61   P0080900
CARD 35     9.8765598.7654E2  9876.54  987.6548647860-386.4786E286.4786    P0080910
COL.      62---------------80                                              P0080920
CARD 35  8657.86D0  9876.54                                               P0080930
COL.       1-----------------------------------------------------------61   P0080940
CARD 36    1223335448886112 22                                            P0080950
CARD 37    4556662334449661 11                                            P0080960
CARD 38    7889993775558997 77                                            P0080970
CARD 39    11112 334 559 880 11                                           P0080980
CARD 40    6 778 995 441 222 00                                           P0080990
C*****                                                                    P0081000
C*****  S P E C I F I C A T I O N S  SEGMENT 008                           P0081010
C*****                                                                    P0010010
C*****  WHEN EXECUTING ONLY SEGMENT 008, THE SPECIFICATION STATEMENTS     P0010015
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE C= IN COLUMNS              P0010020
C*****  1 AND 2 REMOVED                                                  P0010025
C=     DIMENSION A1S(5),A2S(2,2)  ,EP1S(33),CMA1S(5),A3S(3,3,3)          P0010030
C=    1,IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6),MCA1I(5)                  P0010035
C=     INTEGER I2I(2,2),I3I(2,2,2),MCA3I(2,3,3)                          P0010040
C=     LOGICAL MCA1B(7),A1B(2),A2B(2,2),A3B(2,2,2),AVB,CVB,DVB ,MCBVB    P0010045
C=     DOUBLE PRECISION DPA1D(5),MCA3D(1,4,2),ZZDVD ,A2D(2,2),A3D(2,2,2) P0010050
C=    1,AC1D(10),BC2D(7,4),DPAVD,DPBVD                                   P0010055
C=     COMPLEX BVC,QAVC,CHAVC,CHBVC,CHCVC,CHDVC                          P0010060
C=    1,LL1C(32),LM2C(8,4),A1C(12),A2C(2,2),B3C(2,2,2),B1C(8)            P0010065
C*****                                                                    P0010070
      DIMENSION A1S(5),A2S(2,2)  ,EP1S(33),CMA1S(5),A3S(3,3,3)            P008A1
     1,IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6),MCA1I(5)                    P008A2
      INTEGER I2I(2,2),I3I(2,2,2),MCA3I(2,3,3)                            P008A3
      LOGICAL MCA1B(7),A1B(2),A2B(2,2),A3B(2,2,2),AVB,CVB,DVB ,MCBVB      P008A4
      DOUBLE PRECISION DPA1D(5),MCA3D(1,4,2),ZZDVD ,A2D(2,2),A3D(2,2,2)   P008A5
     1,AC1D(10),BC2D(7,4),DPAVD,DPBVD                                     P008A6
      COMPLEX BVC,QAVC,CHAVC,CHBVC,CHCVC,CHDVC                            P008A7
     1,LL1C(32),LM2C(8,4),A1C(12),A2C(2,2),B3C(2,2,2),B1C(8)              P008A8
C*****  I N P U T - O U T P U T  TAPE  ASSIGNMENT STATEMENTS              P0081020
C*****                                                                    P0081030
C*****  WHEN EXECUTING ONLY SEGMENT 008, THE FOLLOWING STATEMENTS        P0070010
C*****  NUVI=6 AND IRVI=5 MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.   P0070015
C*****                                                                    P0070020
C=     IRVI = 5                                                           P0070025
C=     NUVI = 6                                                           P0070030
      IRVI = 5                                                            P008B1
      NUVI = 6                                                            P008B2
C*****  IDENTIFY THE SOURCE OF THE TEST PROGRAMS                          P0070035
      WRITE(NUVI,0071)                                                    P0070040
0071  FORMAT (41H1 F O R T R A N  T E S T  P R O G R A M S//              P0070045
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     1 42H  PREPARED BY NATIONAL BUREAU OF STANDARDS//                    P0070050
     3 38H  FOR USE ON FORTRAN PROCESSORS       //                       P0070055
     4 42H  IN ACCORDANCE WITH ASA FORTRAN X3.9-1966//                   P0070060
     5 23H  VERSION 1            ///)                                    P0070065
C*****  3 OF 6 INPUT CARDS IDENTIFY THE USERS SYSTEM AND COMPILER        P0070070
C       PREPARED BY USER                                                 P0070075
C       READ, NO LIST                                                    P0070080
C       PREPARED BY USER                                                 P0070085
C       READ, NO LIST                                                    P0070090
C       PREPARED BY USER                                                 P0070095
C       READ, NO LIST                                                    P0070100
      READ(IRVI,0070)                                                    P0070105
      READ(IRVI,0072)                                                    P0070110
      READ(IRVI,0073)                                                    P0070115
0070  FORMAT(40H   BASED ON ASA FORTRAN X3.9-1966       /)               P0070120
0072  FORMAT(40H   TEST PROGRAMS                        /)               P0070125
0073  FORMAT(40H   FORTRAN COMPILER                     /)               P0070130
      WRITE(NUVI,0070)                                                   P0070135
      WRITE(NUVI,0072)                                                   P0070140
      WRITE(NUVI,0073)                                                   P0070145
C*****    HEADER FORMAT STATEMENT                                        P0081040
0080  FORMAT (1H1, 1X,27HFMTRW - (008) FORMATTED I/O//2X,                P0081050
     138HASA REFS - 7.1.3.2.2  7.1.3.2.3  7.2.3//2X,7HRESULTS)           P0081060
      WRITE (NUVI,0080)                                                  P0081070
C*****    FORMAT WITH DIGITS 0-9 IN H FIELDS                             P0081080
0081  FORMAT (//22H  10101010101010101010,9H999999999,8H88888888/2X,     P0081090
     17H7777777,6H666666,5H55555,4H4444,3H333,2H22,1H1)                  P0081100
      WRITE (NUVI,0081)                                                  P0081110
C*****    FORMAT  CONTAINING ALL LETTERS (A-Z) IN H FIELDS AND           P0081120
C*****    A VARIABLE NUMBER OF BLANKS IN H AND X FIELDS                  P0081130
0082  FORMAT(/2X,3HAAA,5X,5H     ,3HBBB,10X,3HCCC/3H   ,3HDDD,9X,3HEEE,  P0081140
     19H        ,3HFFF/4X,3HGGG,8X,3HHHH,8H        ,3HIII/5H     ,3HJJJP0081150
     2,7H       ,3HKKK,7X,3HLLL/6X,3HMMM,6X,3HNNN,6H      ,3HOOO/7X,     P0081160
     3 3HPPP,5H     ,3HQQQ,5X,3HRRR/8X,3HSSS,4X,3HTTT,4H    ,3HUUU/    1P0081170
     45H        VVV    ,3HWWW,3X,3HXXX/12X,3HYYY,3X,3HZZZ)               P0081180
      WRITE (NUVI,0082)                                                  P0081190
C*****    FORMAT CONTAINING H FIELD WITH ALL POSSIBLE                    P0081200
C*****    SPECIAL CHARACTERS                                  3.1/46P0081210
0083  FORMAT(/21H  = + - * / ( ) , . $)                                  P0081220
      WRITE (NUVI,0083)                                                  P0081230
C*****    FORMAT  TO TEST VERTICAL SPACING                               P0081240
C*****                                                  7.1.3.4/04P0081250
7154  FORMAT(/24H  BEGIN VERTICAL SPACING//30H  FORMAT(14H   SKIP 1 LINEP0081260
     1  ) )                                                              P0081270
      WRITE (NUVI, 7154)                                                 P0081280
7155  FORMAT(32H  FORMAT(15H   SKIP 2 LINES  // ) )                      P0081290
      WRITE (NUVI, 7155)                                                 P0081300
7156  FORMAT(33H  FORMAT(16H   SKIP 3 LINES  /// ) )                     P0081310
      WRITE (NUVI,7156)                                                  P0081320
0084  FORMAT( 32H  IMBEDDED SLASHES - SKIP 1 LINE //                     P0081330
     1  14H  SKIP 2 LINES///  14H  SKIP 3 LINES/ 3(/),                  P0081340
     2  19H  SKIP TO NEXT LINE/ 1H , 12H SKIP 1 LINE/ 1HO,              P0081350
     38H TEST NO/1H+,9X,14H/1H+,7HADVANCE/19H  SKIP TO NEW PAGE /       P0081360
     4  1H1,              /// 30H  END OF VERTICAL SPACING TEST)         P0081370
      WRITE (NUVI,0084)                                                  P0081380
C*****    FORMATTED READ AND WRITE STATEMENTS WITH INTEGER  7.1.3.2.1/25P0081390
C*****    VARIABLES AND ARRAY ELEMENTS IN AN I/O LIST. (THE   7.2.3.3/01P0081400
C*****    NUMBER OF ITEMS IN THE LIST IS VARIABLE.) SOME                 P0081410
C*****    FORMAT STATEMENTS CONTAIN REPEATED FIELDS.                     P0081420
C*****    FORMATS CONTAINING I CONVERSION DESCRIPTORS.      7.2.3.6.1/03P0081430
C*****    FIELDS WIDTH IS FROM 1 TO 5 DIGITS.  SOME         7.2.3.3  /01P0081440
C*****    FIELDS ARE REPEATED                                            P0081450
0085  FORMAT (//25H  BEGIN I CONVERSION TEST/40H  EACH PAIR OF LINES SHOP0081460
     1ULD BE IDENTICAL/47H  LINE 1 OF EACH GROUP IS HOLLERITH INFORMATIOP0081470
     2N)                                                                 P0081480
      WRITE (NUVI,0085)                                                  P0081490
C*****  INPUT CARD   1                                                   P0081500
0086  FORMAT (2X,I3)                                                     P0081510
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      READ (IRVI,0086) JACVI                                                    P0081520
C*****  INPUT CARD   2                                                         P0081530
0087  FORMAT  ( 1X,.I5. 1X,I4)                                                 P0081540
      READ (IRVI,0087) KBCVI, IAC1I(1)                                          P0081550
C*****  INPUT CARD   3                                                         P0081560
0088  FORMAT (2X,I3,2X,3(I2),2X,I1)                                            P0081570
      READ (IRVI,0088) IAC2I(1,2), LCCVI, IAC1I(5), IHDVI, MCA3I(1,2,3)         P0081580
C*****  INPUT CARD   4                                                         P0081590
0089  FORMAT (2X,2(I3),1(I5),4(I2),5(I1),3(I4))                                P0081600
      READ (IRVI,0089) MDCVI, IAC2I(2,2), IAC1I(4), NECVI, IAC1I(3),           P0081610
     1     IAC2I(2,3), IAC2I(2,1), MRRVI, IGDVI, KGVI, IEDVI, IAC2I(1,1)P0081620
     2     ,IAC1I(2), IAC2I(2,7), MCA3I(2,1,3)                                P0081630
7086  FORMAT (/  5H  999)                                                      P0081640
      WRITE (NUVI,7086)                                                        P0081650
      WRITE (NUVI,0086) JACVI                                                  P0081660
7087  FORMAT (/ 11H  5555 4444)                                                P0081670
      WRITE (NUVI,7087)                                                        P0081680
      WRITE (NUVI,0087) KBCVI, IAC1I(1)                                        P0081690
7088  FORMAT (/ 16H  666  777777  8)                                           P0081700
      WRITE (NUVI,7088)                                                        P0081710
      WRITE (NUVI,0088) IAC2I(1,2), LCCVI, IAC1I(5), IHDVI, MCA3I(1,2,3)P0081720
7089  FORMAT (/ 38H  33333311111222222225555544444444444)                      P0081730
      WRITE (NUVI,7089)                                                        P0081740
      WRITE (NUVI,0089) MDCVI, IAC2I(2,2), IAC1I(4), NECVI, IAC1I(3),          P0081750
     1     IAC2I(2,3), IAC2I(2,1), MRRVI, IGDVI, KGVI, IEDVI, IAC2I(1,1)P0081760
     2     ,IAC1I(2), IAC2I(2,7), MCA3I(2,1,3)                                P0081770
C*****     FORMATTED READ AND WRITE STATEMENTS WITH REAL     7.1.3.2.1/25P0081780
C*****     VARIABLES AND ARRAY ELEMENTS IN AN I/O LIST.(THE  7.2.3.6.2/18P0081790
C*****     NUMBER OF ITEMS IN THE LIST IS VARIABLE.) ONLY    7.2.3.3  /01P0081800
C*****     F CONVERSION IS USED IN THE FORMAT STATEMENTS.                  P0081810
C*****     SOME F FIELD DESCRIPTORS ARE REPEATED. FIELD                    P0081820
C*****     WIDTH ALWAYS CONTAINS 1 POSITION FOR DECIMAL PT.                P0081830
C*****     FORMATS CONTAINING F CONVERSION DESCRIPTORS.      7.2.3.6.2/18P0081840
C*****     FIELD WIDTH IS FROM 1 TO 7 DIGITS. PLACEMENT OF   7.2.3.3  /01P0081850
C*****     DECIMAL POINT IS VARIABLE. SOME F FIELDS ARE                    P0081860
C*****     REPEATED                                                        P0081870
7080  FORMAT (/ 25H  BEGIN F CONVERSION TEST/40H  EACH PAIR OF LINES SHOP0081880
     1ULD BE IDENTICAL)                                                    P0081890
      WRITE (NUVI,7080)                                                        P0081900
C*****  INPUT CARD   5                                                         P0081910
7081  FORMAT (2X,F3.1,F8.1)                                                    P0081920
      READ (IRVI,7081) ACVS, CMAVS                                             P0081930
C*****  INPUT CARD   6                                                         P0081940
7082  FORMAT(2X,F4.2,F5.3,F8.6)                                                P0081950
      READ (IRVI,7082) A1S(2), BCVS, CMBVS                                     P0081960
C*****  INPUT CARD   7                                                         P0081970
7083  FORMAT (2X,F6.4,F7.5,4(F4.1),F5.1)                                       P0081980
      READ (IRVI,7083) HHCVS, CMCVS, GGCVS, FFCVS, A1S(1), AC1S(25),           P0081990
     1    AC2S(4,1)                                                          P0082000
C*****  INPUT CARD   8                                                         P0082010
7084  FORMAT (2X,2(F6.1),2X,2(F7.1),2X,F5.2)                                   P0082020
      READ (IRVI,7084) AC1S(18), AC1S(7), AC2S(4,4) , AC1S(8), AC1S(10) P0082030
C*****  INPUT CARD   9                                                         P0082040
7085  FORMAT (2X,5(F3.1),F7.3,3(F5.3))                                         P0082050
      READ (IRVI,7085) AC2S(3,3) , AC2S(5,1), CCVS, AC1S(12), DCVS,            P0082060
     1    AC1S(13), AC1S(5), A3S(1,1,2), AC2S(3,5)                           P0082070
7091  FORMAT (/ 13H  7.7123456.7)                                              P0082080
      WRITE (NUVI,7091)                                                        P0082090
      WRITE (NUVI,7081) ACVS, CMAVS                                            P0082100
7092  FORMAT (/ 19H  8.889.9997.123456)                                        P0082110
      WRITE (NUVI,7092)                                                        P0082120
      WRITE (NUVI,7082) A1S(2), BCVS, CMBVS                                    P0082130
7093  FORMAT (/ 36H  5.44446.5555533.133.133.133.1444.1)                       P0082140
      WRITE (NUVI,7093)                                                        P0082150
      WRITE (NUVI,7083) HHCVS, CMCVS, GGCVS, FFCVS, A1S(1), AC1S(25)           P0082160
     1    ,AC2S(4,1)                                                         P0082170
7094  FORMAT (/ 37H  5555.15555.1  66666.166666.1  44.22 )                     P0082180
      WRITE (NUVI,7094)                                                        P0082190
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      WRITE (NUVI,7084) AC1S(18), AC1S(7), AC2S(4,4) , AC1S(8), AC1S(10)P0082200
7095  FORMAT ( /39H  2.12.12.12.12.1666.3334.3334.3334.333)              P0082210
      WRITE (NUVI,7095)                                                 P0082220
      WRITE (NUVI,7085) AC2S(3,3) , AC2S(5,1), CCVS, AC1S(12), DCVS,    P0082230
     1    AC1S(13), AC1S(5),  A3S(1,1,2), AC2S(3,5)                    P0082240
C*****    FORMATTED READ AND WRITE STATEMENTS WITH REAL      7.1.3.2.1/ P0082250
C*****     VARIABLES AND ARRAY ELEMENTS IN AN I/O LIST.      7.2.3.6.2/ P0082260
C*****     E CONVERSION IS USED IN THE FORMAT STATEMENTS     7.2.3.3  / P0082270
C*****     SOME E FIELD DESCRIPTORS ARE REPEATED                        P0082280
C*****    (FIELD WIDTH ALWAYS INCLUDES 6 EXTRA POSITIONS  7.2.3.6.2.1/47P0082290
C*****    TO PROVIDE FOR SIGN, DECIMAL POINT AND EXPONENT.    7.2.3.6/01P0082300
C*****    PROVISION IS ALWAYS MADE FOR THE DIGIT ZERO     7.2.3.6.2.1/04P0082310
C*****    BEFORE THE DECIMAL POINT)                                    P0082320
C*****    THE NUMBER OF DECIMAL PLACES VARIES FROM 1                   P0082330
C*****    TO 7 DIGITS.                                                 P0082340
7110  FORMAT (//25H  BEGIN E CONVERSION TEST/40H  EACH PAIR OF LINES SHOP0082350
     1ULD BE IDENTICAL)                                                 P0082360
      WRITE (NUVI,7110)                                                 P0082370
C*****  INPUT CARD  10                                                  P0082380
7111  FORMAT (E8.1,E9.2,E10.3,E11.4,E12.5,E13.6,E14.7)                  P0082390
      READ (IRVI,7111) AVS, BVS, EP1S(5), AC2S(1,5), CVS, AC2S(5,4),    P0082400
     1      A3S(2,1,2)                                                 P0082410
7112  FORMAT (/ 21H  -0.1E+01   0.22E-01/2X,E8.1,2X,E9.2//              P0082420
     1         25H   0.333E+02   0.4444E+03/2X,E10.3,2X,E11.4//        P0082430
     2         29H  -0.55555E-03   0.666666E+00/2X,E12.5,2X,E13.6//    P0082440
     3         16H   0.9876543E+12/2X,E14.7)                           P0082450
      WRITE (NUVI,7112) AVS, BVS, EP1S(5), AC2S(1,5), CVS, AC2S(5,4),   P0082460
     1      A3S(2,1,2)                                                 P0082470
C*****    FORMATTED READ AND WRITE STATEMENTS WITH COMPLEX  7.1.3.2.1/25P0082480
C*****    VARIABLES AND ARRAY ELEMAENTS IN AN I/O LIST.     7.2.3.6.4/52P0082490
C*****    E AND F CONVERSION ARE USED IN THE FORMAT         7.2.3.4  /39P0082500
C*****    STATEMENTS. SOME FORMAT DESCRIPTORS ARE REPEATED  7.2.3.3  /01P0082510
7118  FORMAT (  31H1 BEGIN COMPLEX CONVERSION TEST/32H  EACH GROUP SHOULP0082520
     1D BE IDENTICAL)                                                   P0082530
      WRITE (NUVI,7118)                                                 P0082540
C*****  INPUT CARD  11                                                  P0082550
7119  FORMAT ( 2(F3.1) , 2(F4.1), 2(F7.4))                              P0082560
      READ (IRVI,7119) CHAVC, CHBVC, A1C(2)                             P0082570
C*****  INPUT CARDS 12, 13                                              P0082580
7120  FORMAT ( 2(F6.2), 2(E10.3), 2(E11.4), 2(E8.1)/ 2(E14.7))          P0082590
      READ (IRVI,7120) A2C(1,2), B3C(2,2,1), CHCVC, A1C(1), CHDVC       P0082600
C*****  INPUT CARD  14                                                  P0082610
7122  FORMAT (F5.2, E11.4, E10.3, F4.1, 3(F5.2,E11.4))                  P0082620
      READ (IRVI,7122) A2C(2,1), BVC, QAVC, LM2C(1,2), LL1C(2)          P0082630
7123  FORMAT (/ 10H  1.0  5.5/ 2X, F3.1,2X, F3.1 //                     P0082640
     1 12H  22.0  66.6/ 2X, F4.1, 2X, F4.1 //                           P0082650
     2 18H  33.1234  55.0789/ 2X, F7.4, 2X, F7.4 )                      P0082660
      WRITE (NUVI,7123) CHAVC, CHBVC, A1C(2)                            P0082670
7124  FORMAT (/  16H  123.00  456.88/ 2X, F6.2, 2X, F6.2 //             P0082680
     1 24H   0.123E+01   0.987E+01/ 2X, E10.3, 2X, E10.3 //             P0082690
     2 26H  -0.2345E+02  -0.6879E+02/ 2X, E11.4, 2X, E11.4 //           P0082700
     3 20H   0.7E+03   0.4E+03/ 2X, E8.1, 2X, E8.1 //                   P0082710
     4 32H   0.9876543E-04   0.1357913E-04/ 2X, E14.7, 2X, E14.7)       P0082720
      WRITE (NUVI,7124) A2C(1,2), B3C(2,2,1), CHCVC, A1C(1), CHDVC      P0082730
7126  FORMAT (/ 20H  19.34   0.2468E+02/ 2X, F5.2, 2X, E11.4//          P0082740
     1 18H   0.765E+02  87.6/ 2X, E10.3, 2X,F4.1//                     P0082750
     2 18H  43.96 0.5407E+02/      3(F7.2,E11.4/))                     P0082760
      WRITE (NUVI,7126) A2C(2,1), BVC, QAVC, LM2C(1,2), LL1C(2)         P0082770
C*****     FORMATTED READ AND WRITE STATEMENTS WITH          7.1.3.2.1/25P0082780
C*****       BLE PRECISION VARIABLES IN AN I/O LIST.         7.2.3.6.3/41P0082790
C*****    D CONVERSION IS USED IN THE FORMAT STATEMENTS.     7.2.3.3  /01P0082800
C****     SOME D FORMAT DESCRIPTORS ARE REPEATED. (FIELD                 P0082810
C****     WIDTH ALWAYS INCLUDES 6 EXTRA POSITIONS TO      7.2.3.6.2.1/45P0082820
C***  .   PROVIDE FOR SIGN, DECIMAL POINT AND EXPONENT    7.2.3.6    /04P0082830
C*****    AND 1 POSITION FOR OPTIONAL DIGIT ZERO BEFORE   7.2.3.6.2.1/04P0082840
C*****    THE DECIMAL POINT)                                           P0082850
7127  FORMAT ( /25H  BEGIN D CONVERSION TEST/32H  EACH GROUP SHOULD BE IP0082860
     1DENTICAL)                                                         P0082870
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      WRITE (NUVI,7127)                                                 P0082880
C*****  INPUT CARD  15                                                  P0082890
7128  FORMAT ( 2X, D8.1)                                               P0082900
      READ (IRVI,7128) DPAVD                                            P0082910
C*****  INPUT CARDS  16, 17, 18                                         P0082920
7129  FORMAT ( 2(D10.3), D14.7, D18.11/ 3(D21.14)/ 2(D16.9))            P0082930
      READ (IRVI,7129) MCA3D(1,2,2), AC1D(2), BC2D(3,1), AC1D(1),       P0082940
     1     ZZDVD, AC1D(3), DPBVD, MCA3D(1,2,1), BC2D(1,2)               P0082950
7130  FORMAT (/ 10H   0.1D+06)                                          P0082960
      WRITE (NUVI,7130)                                                 P0082970
      WRITE (NUVI,7128) DPAVD                                           P0082980
7131  FORMAT (/ 12H  -0.334D-04/ 2X, D10.3 / 2X, D10.3 //               P0082990
     1 16H   0.7657654D+00/ 2X, D14.7 //                                P0083000
     2 20H1  0.12345678901D+10/ 2X, D18.11 //                           P0083010
     3 23H   0.987654321098 76D-01/ 2X, D21.14/ 2X, D21.14 / 2X, D21.14//P0083020
     4 18H  -0.5555555542D+03/ 2X, D16.9/ 2X, D16.9 )                   P0083030
      WRITE (NUVI,7131) MCA3D(1,2,2), AC1D(2), BC2D(3,1), AC1D(1)       P0083040
     1     ZZDVD, AC1D(3), DPBVD, MCA3D(1,2,1), BC2D(1,2)               P0083050
C*****    FORMATTED READ AND WRITE STATEMENTS WITH LOGICAL  7.1.3.2.1/25P0083060
C*****    VARIABLES AND ARRAY ELEMENTS IN AN I/D LIST       7.2.3.7  /56P0083070
C*****    SOME L DESCRIPTORS ARE REPEATED.                              P0083080
7132  FORMAT(//25H  BEGIN L CONVERSION TEST/33H  LINES BELOW SHOULD BE IP0083090
     1DENTICAL)                                                         P0083100
C*****    L CONVERSION IS USED IN THE FORMAT STATEMENTS     7.2.3.3  /01P0083110
      WRITE (NUVI,7132)                                                 P0083120
C*****  INPUT CARD   19                                                 P0083130
7133  FORMAT (L4)                                                       P0083140
      READ (IRVI,7133) A2B(2,1)                                         P0083150
C*****  INPUT CARD   20                                                 P0083160
7134  FORMAT ( 2(L4), L3, L2, L3, 2(L1))                                P0083170
      READ (IRVI,7134) MCA1B(1), MCBVB, A2B(1,1), A3B(1,1,1), CVB,      P0083180
     1     DVB, A3B(1,2,1)                                              P0083190
7135  FORMAT (//24H     T   F   F  T T  FTF/ 2X, 3(L4), L3, L2, L3,     P0083200
     1  2(L1))                                                          P0083210
      WRITE (NUVI,7135) A2B(2,1), MCA1B(1), MCBVB, A2B(1,1), A3B(1,1,1),P0083220
     1     CVB, DVB, A3B(1,2,1)                                         P0083230
C*****    FORMATTED READ AND WRITE STATEMENTS WITH ARRAY    7.1.3.2.1/26P0083240
C*****    NAMES OF ALL TYPES IN AN I/O LIST. THE NUMBER OF  7.1.3.2.1/39P0083250
C*****    ITEMS IN THE LIST IS VARIABLE. SOME FIELD         7.2.3.3  /01P0083260
C*****    DESCRIPTORS ARE REPEATED.                                     P0083270
7097  FORMAT (//32H  TEST UNSUBSCRIPTED ARRAY NAMES/35H  IN I/O LISTS. EP0083280
     1ACH GROUP OF LINES/22H  SHOULD BE IDENTICAL.)                     P0083290
      WRITE (NUVI,7097)                                                 P0083300
C*****  INPUT CARDS  21, 22                                             P0083310
7098  FORMAT(2X,8(F3.1),8F3.1/8(2(F3.1)))                               P0083320
      READ (IRVI,7098) B1C,B3C                                          P0083330
C*****  INPUT CARDS  23, 24, 25                                         P0083340
7099  FORMAT(2X,4(F4.1)/4(D9.2),4D9.2/5(I2))                            P0083350
      READ (IRVI,7099) A2S, A3D, MCA1I                                  P0083360
C*****  INPUT CARDS  26, 27, 28                                         P0083370
7100  FORMAT(2X,4(D9.2)/27(F2.1)/5(L1),5L1)                             P0083380
      READ (IRVI,7100) A2D, A3S, A1B, A3B                               P0083390
C*****  INPUT CARDS  29, 30                                             P0083400
7101  FORMAT (2X,4(I2),5(D9.2)/4(2(F3.1)),8(I2),4(L1),5(F3.1))          P0083410
      READ (IRVI,7101) I2I, DPA1D, A2C, I3I, A2B, CMA1S                 P0083420
7102  FORMAT (/ 26H  9.91.19.92.29.93.39.94.4 / 2X,8(F3.1)/2X,8(F3.1))  P0083430
      WRITE (NUVI,7102) B1C                                             P0083440
7103  FORMAT (/ 18H  -9.9-9.9-9.9-9.9/2X,4(F4.1) //                     P0083450
     138H  -0.99D+01-0.99D+01-0.99D+01-0.99D+01/2X,4(D9.2)/2X,4(D9.2)// P0083460
     2 12H  9999999999/ 2X, 5(I2) //38H   0.99D+01 0.99D+01 0.99D+01 0.9P0083470
     39D+01/ 2X, 4(D9.2) // 37H  0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9/1X,P0083480
     4  9(F4.1)/ 1X, 9(F4.1)/ 1X,9(F4.1)/  4H1 TF/ 2X,2(L1))           P0083490
      WRITE (NUVI,7103) A2S, A3D, MCA1I, A2D, A3S, A1B                  P0083500
7104  FORMAT (/  10H  TFTFTFTF/  2X, 8(L1) // 10H  99999999/ 2X, 4(I2)//P0083510
     1 11H   0.99D+01/ 5(D11.2/)    /26H  9.95.59.96.69.97.79.98.8/2X,  P0083520
     28(F3.1)/2X,8(F3.1)/2X,8(F3.1)//18H  999999999999999/2X,8(I2)//    P0083530
     3  6H  TFFT/ 2X, 4(L1) // 17H  9.99.99.99.99.9/2X, 5(F3.1))       P0083540
      WRITE (NUVI,7104) A3B, I2I, DPA1D, A2C, B3C, I3I, A2B, CMA1S      P0083550
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C*****     FORMATTED WRITES TO TEST THAT LEADING BLANKS        7.2.3.6/51P0083560
C*****     ARE INSERTED IN THE OUTPUT FIELD WHEN THE OUTPUT                P0083570
C*****     PRODUCED IS SMALLER THAN THE FIELD WIDTH. (I, E,                P0083580
C*****     F AND D DESCRIPTORS ARE TESTED)                                 P0083590
7090  FORMAT ( /30H  LEADING BLANK INSERTION TEST/40H  EACH PAIR OF LINEP0083600
     1S SHOULD BE IDENTICAL)                                              P0083610
      WRITE (NUVI,7090)                                                   P0083620
7096  FORMAT (/  3H  8/I3//4H  22/I4//5H   22/I5//6H    22/I6//          P0083630
     1 7H     22/I7// 5H  7.7/F5.1// 7H   8.88/F7.2/  9H1   9.999/      P0083640
     2  F9.3// 11H     5.4444/F11.4//  13H      6.55555/F13.5//          P0083650
     3 15H       7.123456/F15.6// 10H  0.21E+01/E10.2//                  P0083660
     4 12H   0.331E+02/E12.3// 14H    0.4441E+03/E14.4//                 P0083670
     5 16H     0.55551E+04/E16.5// 18H      0.666661E+05/E18.6//         P0083680
     6 20H       0.1234567E+06/E20.7)                                    P0083690
      WRITE (NUVI,7096) MCA3I(1,2,3), IAC1I(3), NECVI, IAC11(3),         P0083700
     1     IAC2I(2,3), ACVS, A1S(2), BCVS, HHCVS, CMCVS, CMBVS,         P0083710
     2     DCVS, AC1S(25), AC2S(4,1), AC1S(7), AC1S(8), CMAVS           P0083720
7105  FORMAT (/  9H  0.1D+00/D9.1// 10H   0.1D+00/D10.1//                P0083730
     1 11H    0.1D+00/D11.1// 12H     0.1D+00/D12.1//                   P0083740
     2 10H  1.0  5.5/ 2(F5.1) // 12H   9.9    5.5/ 2(F6.1) //           P0083750
     3 14H    9.9     5.5/ 2(F7.1) // 16H      1.0     5.5/ 2(F8.1))   P0083760
      WRITE (NUVI,7105) AC1D(3), ZZDVD, ZZDVD,                           P0083770
     1     ZZDVD, CHAVC, B3C(1,1,1), B3C(1,1,1), CHAVC                  P0083780
C*****     FORMATTED READ AND WRITE STATEMENT TO TEST THAT     7.2.3.7/03P0083790
C*****     OPTIONAL BLANKS MAY PRECEDE A LOGICAL INPUT FIELD   7.2.3.7/06P0083800
7138  FORMAT (  33H1 TEST LOGICAL FIELDS WITH BLANKS/33H  LINES BELOW SHP0083810
     1OULD BE IDENTICAL)                                                  P0083820
      WRITE (NUVI,7138)                                                   P0083830
C*****  INPUT CARD   31                                                   P0083840
7139  FORMAT ( L6, L4, L10, L5)                                           P0083850
      READ (IRVI,7139) AVB, MCA1B(2), A2B(1,2), A3B(2,1,2)                P0083860
7140  FORMAT (//27H       T    F          T     F/ 2X, L6, L4, L10, L5)   P0083870
      WRITE (NUVI,7140) AVB, MCA1B(2), A2B(1,2), A3B(2,1,2)               P0083880
C*****     FORMATTED READ AND WRITE TO TEST F DESCRIPTORS      7.2.3.1/31P0083890
C*****     WHERE D IS EQUAL TO ZERO AND WHERE W EQUALS D       7.2.3.4/40P0083900
C*****     (2ND TEST APPLIES ONLY TO READ STMNTS.)                         P0083910
7108  FORMAT (//36H  TEST D = 0, W=D+1  (PAIRS OF LINES/ 28H  BELOW SHOUP0083920
     1LD BE IDENTICAL))                                                   P0083930
      WRITE (NUVI,7108)                                                   P0083940
C*****  INPUT CARD   32                                                   P0083950
7141  FORMAT (2X, F5.0, F5.5)                                             P0083960
      READ (IRVI,7141) ACVS, BVS                                          P0083970
7109  FORMAT (//7H  4444./2X, F5.0// 9H    .55555/ 3X,F6.5)             P0083980
      WRITE (NUVI,7109) ACVS, BVS                                         P0083990
C*****     FORMATS WITH G CONVERSIONS                                      P0084000
C*****  INPUT CARD   33                                                   P0084010
7142  FORMAT(  3(G11.4), 3G11.4)                                          P0084020
      READ (IRVI,7142) AC1S(14), AC1S(15), AC1S(16), AC1S(17)  ,          P0084030
     1                 AC1S(21), AC1S(22)                               P0084040
7143  FORMAT(/ 2X,23HBEGIN G CONVERSION      /2X,38HEACH PAIR OF LINES SHP0084050
     1OULD BE IDENTICAL//36H      .1235E+05       1235.       123.5/     P0084060
     2  G14.4,4X,2G11.4///3X,33H  12.35            1.235       .1235/    P0084070
     3  G14.4,4X,2G11.4)                                                 P0084080
      WRITE(NUVI,7143) AC1S(14), AC1S(15), AC1S(16), AC1S(17),            P0084090
     1                 AC1S(21), AC1S(22)                               P0084100
C*****     SCALE FACTOR APPLIED TO F,E,D,G DESCRIPTORS                     P0084110
C*****     ON READ, BUT NOT ON WRITE                                       P0084120
C*****  INPUT CARD   34                                                   P0084130
7144  FORMAT(2PF8.3,-2PE9.4,F9.4,0PG9.4,D9.4,-2PE9.4,F9.4,D9.4,2PG9.4)    P0084140
      READ(IRVI,7144)EP1S(16),EP1S(17),EP1S(18), EP1S(19),                P0084150
     1   BC2D(1,4),EP1S(20),EP1S(22),BC2D(2,1),EP1S(23)                   P0084160
7145  FORMAT(22H1 SCALE FACTOR ON READ/31H  IN ORDER OF FORMAT OCCURRENCP0084170
     1E//40H  CARD    9876.54    98.7654E2      9876.54/                  P0084180
     2  40H  DESC     2PF8.3      -2PE9.4         F9.4/                  P0084190
     3  40H  TO BE  98.7654    .9877E+04    987654.00/                   P0084200
     4  4H  IS, F12.4, E12.4, F12.2//                                    P0084210
     5  40H  CARD    987.654    864786D-4    86.4786E2/                  P0084220
     6  40H  DESC     0PG9.4         D9.4      -2PE9.4/                  P0084230
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     7  40H  TD BE  987.654    .8648D-02    .8648E+04/                    P0084240
     8  4H  IS, F12.3,012.4, E12.4//                                       P0084250
     9  40H  CARO   86.4786   8657.8700      9876.54/                      P0084260
     A  40H  OESC       F9.4         09.4       2PG9.4/                   P0084270
     B  40H  TO BE 8647.860    .86580+04        98.77/                    P0084280
     C4H  IS,F12.3, 012.4, G16.4)                                         P0084290
      WRITE(NUVI,7145) EP1S(16),EP1S(17),EP1S(18),EP1S(19),               P0084300
     1   BC2D(1,4),EP1S(20),EP1S(22),BC2D(2,1),EP1S(23)                  P0084310
C*****    SCALE FACTDR APPLIED TD  F, E, D, G  DESCRIPTORS               P0084320
C*****    ON WRITE, BUT, NOT DN READ                                     P0084330
C*****  INPUT CARD   35                                                  P0084340
7152  FORMAT(F8.2,E9.4,F9.2,G9.3,D9.0,E9.4,F9.4,D9.2,G9.4)               P0084350
      READ(IRVI,7152) AC1S(1),AC1S(2),AC1S(3),AC1S(4),                   P0084360
     1  AC1D(4),AC1S(20),AC1S(23),AC10(5),AC1S(24)                       P0084370
7153  FDRMAT(/23H  SCALE FACTOR ON WRITE/31H  IN ORDER DF FDRMAT DCCURREP0084380
     1NCE//40H  CARO   9.87655   98.7654E2     9876.54/                   P0084390
     2  40H  DESC   2PF12.2    -2PE12.4       F12.4/                     P0084400
     3  40H  TO BE   987.65   .0099E+06     98.7654/                     P0084410
     4  4H  IS, 2PF12.2, -2PE12.4,F12.4//                                P0084420
     5  40H  CARO   987.654   8647860-3   86.4786E2/                     P0084430
     6  40H  DESC   1PG12.2       D12.4     -2PE12.4/                    P0084440
     7  40H  TD BE 9.88E+02  8.64790+02    .0086E+06/                    P0084450
     8   4H  IS, 1PG12.2, 012.4,  -2PE12.4//                            P0084460
     9  40H  CARO   86.4786   8657.8600      9876.54/                     P0084470
     A  40H  DESC   2PF12.2      1PD12.4      2PG16.4/                   P0084480
     B  40H  TO BE  8647.86  8.65790+03        9877./                    P0084490
     C   4H  IS, 2PF12.2, 1PD12.4, 2PG16.4//                            P0084500
     H28H  THE LAST TWO LINES OF EACH/24H  SET SHDULD BE THE SAME)       P0084510
      WRITE(NUVI,7153) AC1S(1),AC1S(2),AC1S(3),AC1S(4),                  P0084520
     1  AC1D(4),AC1S(20),AC1S(23),AC1D(5),AC1S(24)                       P0084530
C*****  I/D FDRMAT RESCAN                                                P0084540
C*****  INPUT CARDS  36, 37, 38                                          P0084550
7146  FDRMAT( I1,I2,I3)                                                  P0084560
      READ(IRVI,7146) I2I,IAC1I                                          P0084570
7147  FORMAT(/ 37H  FDRMAT RESCAN - THE SECONO GROUP OF/38H  EACH SET SHP0084580
     1DULD AGREE WITH THE FIRST //15H   1   22   333/15H   4   55   666/P0084590
     115H   7   88   999/1H )                                            P0084600
      WRITE(NUVI,7147)                                                   P0084610
7148  FORMAT(I4,I5,I6)                                                   P0084620
      WRITE(NUVI,7148) I2I(1,1),I2I(2,1),I2I(1,2),I2I(2,2),IAC1I         P0084630
C*****  INPUT CAROS  39, 40                                              P0084640
7149  FORMAT(I4, 2(I1,1X,I2))                                            P0084650
      READ( IRVI,7149) I2I, IAC1I                                        P0084660
7150  FDRMAT(/21H   2 **   4 $$   6 ((/7H   8 $$/1H )                   P0084670
      WRITE( NUVI,7150)                                                  P0084680
7151  FORMAT (I4,3H **,1(I4,3H $$,(I4,3H (())))                          P0084690
      WRITE( NUVI,7151) I2I(2,1),I2I(2,2),IAC1I(2),IAC1I(4)              P0084700
C*****    END OF TEST SEGMENT 008                                        P0084710
C*****  WHEN EXECUTING DNLY SEGMENT 008 , THE STDP AND END CARDS         P0084720
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C= IN CDLUMNS         P0084730
C*****  1 AND 2 REMOVED                                                  P0084740
C=    STOP                                                               P0084750
C=    END                                                                P0084760
      STOP                                                               P008C1
      END                                                                P008C2
   PREPARED BY USER
   DD NDT READ OR WRITE RECORD  2  .  ODUBLE SPACE ON OUTPUT.   IO 2
   PREPARED BY USER
   OO NOT READ OR WRITE RECORD  4  .  OOUBLE SPACE DN DUTPUT    IO 4
   PREPARED BY USER
     OO NOT READ OR WRITE RECORD 6  OOUBLE SPACE ON OUTPUT    IO 6
  999
  555554444
  666  777777  8
  333333111112222222255555444444444444
  7.7123456.7
  8.889.9997.123456
  5.44446.5555533.133.133.133.1444.1
```

```
  5555.15555.1  66666.166666.1  44.22
  2.12.12.12.12.1666.3334.3334.3334.333
-0.1E+01+0.22E-01 0.333E+02 0.4444E+03-0.55555E-03+0.666666E+00+0.9876543E+12
1.05.522.066.633.123455.0789
123.00456.88 0.123E+01  +0.987+1 -0.2345+02 -0.6879E+2+0.7E+03 0.4E+03
 0.9876543E-04+0.1357913E-04
19.34+0.2468E+02   +.765+287.643.96 0.5407E+0243.96+0.5407E+0243.96   0.5407+2
  +0.1D+06
-0.334D-04   -.334-4 +0.7657654D00 0.12345678901D+10
 +0.98765432109876D-1+0.98765432109876D-01    .98765432109876-1
 -.555555542D+03  -0.555555542+3
TABC
FDEFFGHIT*+T1F$)TF
  9.91.19.92.29.93.39.94.49.91.19.92.29.93.39.94.4
9.95.59.96.69.97.79.98.89.95.59.96.69.97.79.98.8
  -9.9-9.9-9.9-9.9
-0.99D+01-0.99D+01-0.99D+01-0.99D+01-0.99D+01 -.99D+01  -.99+01   -.99+1
9999999999
  +0.99D+01 0.99D+01  +.99D01   +.99D1
.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9
TFTFTFTFTF
  99999999+0.99D+01 0.99D+01 0.99D+01+0.99D+01    .99D1
9.95.59.96.69.97.79.98.899999999999999999TFFT9.99.99.99.99.9
     T   F          T    F
  4444.55555
123.45678E2  1234.5678  123.45678  12.345678  1.2345678  .12345678
 9876.5498.7654E2 9876.54   987.654864786D-486.4786E286.4786  8657.86D0  9876.54
 9.8765598.7654E2  9876.54  987.654864786D-386.4786E286.4786  8657.86D0  9876.54
1223335448886112 22
4556662334449661 11
7889993775558997 77
11112 334 559 880 11
6 778 995 441 222 00
C*************************************************************************P0090010
C*****                                                                    P0090020
C*****                          AFRMT - (009)                             P0090030
C*****                                                                    P0090040
C*************************************************************************P0090050
C*****  GENERAL PURPDSE                                      ASA REFSP0090060
C*****    TD TEST SIMPLE FDRMAT AND FDRMATTED I/D STATEMENTS  7.1.3.2.2P0090070
C*****    WHICH USE A-CDNVERSIDN SD THAT THIS FEATURE MAY     7.1.3.2.2P0090080
C*****    BE USED IN DTHER SEGMENTS                           7.1.3.2.3P0090090
C*****                                                        7.2.3    P0090100
C*****                                                        7.2.3.8  P0090110
C*****  RESTRICTIDNS DBSERVED                                          P0090120
C*****  *  ALL FDRMAT STATEMENTS ARE LABELED                7.2.3  /57P0090130
C*****  *  H AND X DESCRIPTDRS ARE NEVER REPEATED           7.2.3.3/54P0090140
C*****  *  FIELD WIDTH IS NEVER ZERD                        7.2.3  /18P0090150
C*****  *  IF THERE IS AN I/D LIST, THE FDRMAT STATEMENT     7.2.3.4/22P0090160
C*****     CDNTAINS AT LEAST ONE FIELD DESCRIPTDR (DTHER                P0090170
C*****     THAN H OR X)                                                 P0090180
C*****  *  ITEMS IN I/O LIST CORRESPDND TD FORMAT DESCRIPTDRS 7.2.3.4/36P0090190
C*****  *  FIELD WIDTH NEVER EXCEEDED BY DUTPUT             7.2.3.6/01P0090200
C*****                                                                  P0090210
C*****    READ AND WRITE STATEMENTS FDR ENTIRE SEGMENT FOLLDW           P0090220
C*****                                                                  P0090230
C*****    FDRMATTED READ AND WRITE STATEMENTS WITH ALL      7.1.3.2.1/25P0090240
C*****    TYPES DF FIELDS. DNLY A (HDLLERITH) CDNVERSIDN    7.2.3.8  /16P0090250
C*****    IS USED IN THE FDRMAT STATEMENTS. SOME A FDRMAT   7.2.3.3  /01P0090260
C*****    DESCRIPTORS ARE REPEATED                                      P0090270
C INPUT DATA TD THIS SEG. CDNSISTS DF 3 DATA CARD IMAGES IN CDLS. 1 - 55P0090280
CDL.      1----------------------------31--------------------55         P0090290
CARD  1   B=EF-*JKL/()012TUVW+,.$X YZACDGHIPQRSMND678(C)B2$9+A345       P0090300
CARD  2   QZ1*A                                                         P0090310
CARD  3   ABCDEFGHIJKLMNDPQRSTUVWXYZ                                    P0090320
C*****                                                                  P0090330
C*****  S P E C I F I C A T I D N S   SEGMENT 009                       P0090340
C*****                                                                  P0010080
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C*****  WHEN EXECUTING ONLY SEGMENT 009, THE SPECIFICATION STATEMENTS   P0010085
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0010090
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0010095
C*****                                                                  P0010100
C=     DIMENSION A1S(5),A3S(3,3,3),EP1S(33),IAC2I(2,7),AC2S(5,6)        P0010105
C=    1,MCA1I(5),CMA1S(5)                                               P0010110
C=     INTEGER BVI,MAVI,LAVI,MCA3I(2,3,3)                               P0010115
C=     REAL MVS,CVS,BCVS                                                P0010120
C=     LOGICAL MCA1B(7), A1B(2), A2B(2,2),A3B(2,2,2),AVB,EVB            P0010125
       DIMENSION A1S(5),A3S(3,3,3),EP1S(33),IAC2I(2,7),AC2S(5,6)        P009A1
      1,MCA1I(5),CMA1S(5)                                               P009A2
       INTEGER BVI,MAVI,LAVI,MCA3I(2,3,3)                               P009A3
       REAL MVS,CVS,BCVS                                                P009A4
       LOGICAL MCA1B(7), A1B(2), A2B(2,2),A3B(2,2,2),AVB,EVB            P009A5
C*****                                                                  P0010130
C*****  I N P U T - O U T P U T  T A P E  ASSIGNMENT STATEMENTS          P0090350
C*****                                                                  P0070150
C*****  WHEN EXECUTING ONLY SEGMENT 009, THE FOLLOWING TWO STATEMENTS   P0070155
C*****   NUVI = 6   AND IRVI = 5   MUST HAVE                            P0070160
C*****  THE C= IN COL 1 AND 2 REMOVED.                                  P0070165
C=     NUVI = 6                                                         P0070170
C=     IRVI = 5                                                         P0070175
       NUVI = 6                                                         P009B1
       IRVI = 5                                                         P009B2
C*****                                                                  P0070180
       WRITE (NUVI,0090)                                                P0090360
       READ (IRVI,0091) MVS, IAC2I(2,2),MAVI ,AC2S(4,2),MCA1I(1),LAVI,  P0090370
      1  A2B(1,2),A1B(2), BCVS, MCA1B(2), BVI, CVS,  EVB,A1S(2),EP1S(9),  P0090380
      2A3S(1,1,1),A3B(2,2,1),MCA3I(1,2,3), MCA3I(2,1,2), MCA3I(1,1,3)   P0090390
       WRITE (NUVI,0092) BVI, MVS, CVS, MAVI, EVB, MCA1I(1), EP1S(9),   P0090400
      1     A1S(2), A1B(2), MCA1B(2), IAC2I(2,2), AC2S(4,2),            P0090410
      2     LAVI, BCVS, A2B(1,2), MCA3I(1,1,3), A3S(1,1,1),             P0090420
      3     MCA3I(2,1,2), MCA3I(1,2,3), A3B(2,2,1)                      P0090430
C*****    FORMATTED READ AND WRITE TO TEST HOLLERITH FIELDS   7.2.3.8/22P0090440
C*****    WHERE FIELD WIDTH IS LESS THAN THE WORD LENGTH      7.2.3.8/28P0090450
C*****    CAPACITY OF THE MACHINE                                       P0090460
       WRITE (NUVI,0093)                                                P0090470
       READ (IRVI,0094) CMA1S(2), CMA1S(1), LCCVI, AVB, BVI             P0090480
       WRITE (NUVI,0095) BVI, AVB, CMA1S(2), LCCVI, CMA1S(1)            P0090490
C*****    FORMATTED READ AND WRITE TO TEST HOLLERITH FIELDS   7.2.3.8/20P0090500
C*****    WHERE FIELD WIDTH IS GREATER THAN THE WORD LENGTH   7.2.3.8/25P0090510
C*****    CAPACITY OF THE MACHINE                                       P0090520
       WRITE (NUVI,0096)                                                P0090530
       READ (IRVI,0097) MRRVI                                           P0090540
       WRITE (NUVI,0098) MRRVI                                          P0090550
C*****                                                                  P0090560
C*****                                                                  P0090570
C*****    FORMAT STATEMENTS FOR THE ENTRIRE SEGMENT FOLLOW              P0090580
C*****    FORMATS TO TEST A CONVERSION. FIELD WIDTH IS        7.2.3.8/16P0090590
C*****    FROM 1 TO 4 CHARACTERS. SOME A DESCRIPTORS ARE      7.2.3.3/01P0090600
C*****    REPEATED.                                                     P0090610
0090  FORMAT (1H1,1X,26HAFRMT - (009) A-CONVERSION//2X,                 P0090620
     117HASA REF - 7.2.3.8//40H  EACH PAIR OF LINES SHOULD BE IDENTICAL/P0090630
     28X,26HFOR COMPUTERS STORING FOUR/8X,27HOR MORE CHARACTERS PER WORDP0090640
     3)                                                                 P0090650
0091  FORMAT ( 2(A1), 2(A2), 3(A3), 3(A4), A1, A2, A3, A4, 6(A3))      P0090660
0092  FORMAT (// 29H  ABCDEFGHIJKLMNOPQRSTUVWX YZ/ 2X, 2(A1), 2(A2),   P0090670
     1  3(A3), 3(A4)//12H  =-*/()+,.$/ 2X, A1, A2, A3, A4 //            P0090680
     2  20H  0123456789+AB2$(C)/ 2X, 6 A3 )                            P0090690
C*****    FORMATS TO TEST A CONVERSION WHERE FIELD WIDTH      7.2.3.8/22P0090700
C*****    IS LESS THAN THE WORD LENGTH CAPACITY OF MACHINE    7.2.3.8/28P0090710
0093  FORMAT (//35H  TEST A CONVERSION - ADDING BLANKS/40H  EACH PAIR OFP0090720
     1 LINES SHOULD BE IDENTICAL)                                       P0090730
0094  FORMAT ( 5(A1))                                                  P0090740
0095  FORMAT (//4H   A  / 3X, A3//4H   */ 3X, A3  //4H   0/ 3X, A3//   P0090750
     1 4H   1/3X, A3 //4H   Z/ 3X,A3)                                   P0090760
C*****    FORMATS TO TEST A CONVERSION WHERE FIELD WIDTH      7.2.3.8/20P0090770
C*****    IS GREATER THAN WORD LENGTH CAPACITY OF MACHINE     7.2.3.8/25P0090780
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0096  FORMAT(/25H  TEST A FIELD TRUNCATION/37H  2ND LINE SHDULD PARTIALLP0090790
     1Y MATCH 1ST)                                                     P0090800
0097  FDRMAT ( A26 )                                                   P0090810
0098  FORMAT (// 28H  ABCOEFGHIJKLMNOPQRSTUVWXYZ/ 2X, A26)            P0090820
C*****    END DF TEST SEGMENT 009                                      P0090830
C*****  WHEN EXECUTING ONLY SEGMENT 009 , THE STDP AND END CARDS       P0090840
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C= IN COLUMNS      P0090850
C*****  1 AND 2 REMOVED                                              P0090860
C=     STDP                                                          P0090870
C=     END                                                           P0090880
       STOP                                                          P009C1
       END                                                           P009C2
B=EF-*JKL/()012TUVW+,.$X YZACDGHIPQRSMNO678(C)B2$9+A345
QZ1*A
ABCOEFGHIJKLMNOPQRSTUVWXYZ
C*************************************************************************P0100010
C*****                                                                 P0100020
C*****                          OATA2 - (010)                          P0100030
C*****                                                                 P0100040
C*************************************************************************P0100050
C*****                                                                 P0100060
C*****  GENERAL PURPDSE                                                P0100070
C*****    TO TEST CONTENTS OF VARIABLES THAT WERE FORMEO BY            P0100080
C*****    OATA STATEMENTS IN SEG. DATA1 - (003)                        P0100090
C*************************************************************************P0030010
C*****                                                                 P0030020
C*****                          OATA1 - (003)                          P0030030
C*****                                COMPLETE WITH OATA2 - (010)      P0030040
C*****                                                                 P0030050
C*************************************************************************P0030060
C*****  GENERAL PURPOSE                                    ASA REFSP0030070
C*****    TO TEST FORMAT DF OATA STATEMENT                  7.2.2   P0030080
C*****  RESTRICTIONS OBSERVEO                                        P0030090
C*****    ND DUMMY ARGUMENTS OR EXTERNAL FUNCTIDN NAMES     7.2.2/27P0030100
C*****    APPEAR IN DATA STATEMENTS                       8.4.1.1/40P0030110
C*****                                                     10.1.2/08P0030120
C*****    NO INITIALY OEFINED ITEMS APPEAR IN BLANK COMMON  7.2.2/39P0030130
C*****                                                     10.2.4/47P0030140
C*****    STORAGE UNITS INITIALIZEO ONLY ONCE             10.1.2/10P0030150
C*****    SUBSCRIPTS ARE INTEGER CONSTANTS                 7.2.2/28P0030160
C*****  EXPLICIT VARIABLES                                           P0030170
C*****    AVI  IS INTEGER                                            P0030180
C*****    JVS IS REAL                                                P0030190
C*****                                                               P0030200
C*****  S P E C I F I C A T I O N S  SEGMENTS 003 ANO 010             P0030210
C*****                                                               P0030220
C*****  WHEN EXECUTING ONLY SEGMENTS 003 ANO 010, THE SPECIFICATIDN  P0010140
C*****  STATEMENTS WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=     P0010145
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                              P0010150
C*****                                                               P0010155
C=    DIMENSION IAC2I(2,7), EP1S(33), AC2S(5,6)                      P0010160
C=   1,AC3S(1,1,3)                                                   P0010165
C=    INTEGER AVI ,MCA3I(2,3,3), I1I(5)                              P0010170
C=    REAL JVS                                                       P0010175
C=    LOGICAL MAVB,MBVB,MCVB,   MCA1B(7),GH2B(1,2),GI3B(1,1,2),GG1B(2)P0010180
C=    DOUBLE PRECISION AVO,BVO,CVO,OVO                               P0010185
C=   1,OPA2O(2,2),MCA3O(1,4,2),A1D(4)                               P0010190
C=    CDMPLEX ADSVC,BCVC,CHEVC,OCVC,LL1C(32),LM2C(8,4),LN3C(9,2,2)   P0010195
C*****                                                               P0010200
      DIMENSION IAC2I(2,7), EP1S(33), AC2S(5,6)                      P003A1
     1,AC3S(1,1,3)                                                   P003A2
      INTEGER AVI ,MCA3I(2,3,3), I1I(5)                              P003A3
      REAL JVS                                                       P003A4
      LOGICAL MAVB,MBVB,MCVB,   MCA1B(7),GH2B(1,2),GI3B(1,1,2),GG1B(2)P003A5
      DOUBLE PRECISIDN AVD,BVO,CVO,OVO                               P003A6
     1,DPA2O(2,2),MCA3O(1,4,2),A10(4)                                P003A7
      CDMPLEX ADSVC,BCVC,CHEVC,OCVC,LL1C(32),LM2C(8,4),LN3C(9,2,2)   P003A8
C*****    TEST DATA INITIALIZATIDN OF INTEGER CONSTANTS TO    5.1.1.1 P0030230
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C*****    INTEGER VARIABLES                                                  P0030240
      DATA  I1I(1),MCA3I(1,2,1),MCA3I(2,2,2),IAC2I(2,5),IAC2I(2,6),         P0030250
     AMCA3I(2,1,1)/0,2*10,3*246/                                             P0030260
C*****    TEST DATA INITIALIZATION OF REAL CONSTANTS TO       5.1.1.2       P0030270
C*****    REAL VARIABLES                                                     P0030280
      DATA EP1S(8),EP1S(10),EP1S(12),AC2S(5,5),EP1S(11),AC2S(5,3),          P0030290
     AAC2S(5,2)/2*0.,2*-750.05,.24615E3,2.4615E2,3.54674E+3/                 P0030300
C*****    TEST DATA INITIALIZATION OF DP CONTANTS TO          5.1.1.3       P0030310
C*****    DP VARIABLES                                                       P0030320
      DATA BVD ,DPA2D(2,1),CVD,DPA2D(1,2),  DVD,DPA2D(2,2)/+34567890.1D-P0030330
     A3,345.678901D+2,112233.5D-08,11.22335D-4,3.4D12,0.34D13/               P0030340
C*****    TEST DATA INITIALIZATION OF COMPLEX CONSTANTS TO    5.1.1.4       P0030350
C*****    COMPLEX VARIABLES                                                  P0030360
      DATA ADSVC,LN3C(9,1,2),LL1C(30),LN3C(8,2,2),LM2C(8,3),LN3C(9,1,1),P0030370
     ALL1C(32),LN3C(8,1,2)/2*(11.1,22.22),(-3.45E1,-67.8E-1),               P0030380
     B(-34.5E0,-6.78E0),(10.E0,-20.E0),(1.0E1,-2.0E1),(-20.0E1,+4.E3),      P0030390
     C(-200.E0,+4000.E0)/                                                   P0030400
C*****    TEST DATA INITIALIZATION OF LOGICAL CONSTANTS TO    5.1.1.5       P0030410
C*****    LOGICAL VARIABLES                                                  P0030420
      DATA MAVB ,MCA1B(6), MBVB/2*.TRUE.,.FALSE./                           P0030430
C*****    TEST DATA INITIALIZATION OF HOLLERITH CONSTANTS     5.1.1.6       P0030440
      DATA GI3B(1,1,2),GG1B(1),EP1S(15)/2HNO,2*2HAD/                        P0030450
C*****    TEST DATA INITIALIZATION OF A MIXTURE OF ALL TYPES OF              P0030460
C*****    CONSTANTS AND VARIABLES IN ONE DATA STATEMENT                      P0030470
      DATA  I1I(2),IAC2I(1,5),IAC2I(1,3), I1I(5),IAC2I(2,4),                P0030480
     AMCA3I(1,1,2), AVI,EP1S(13),AC2S(2,6),AC2S(1,6),AC3S(1,1,1),           P0030490
     BAC2S(3,6),AC3S(1,1,2),AC2S(4,6), AVD,A1D(1),DPA2D(1,1),               P0030500
     CMCA3D(1,1,1),A1D(2),MCA3D(1,1,2),LL1C(29),LN3C(8,2,1),BCVC,           P0030510
     DLM2C(8,4),GH2B(1,1),GI3B(1,1,1), MCVB/3*0,4*-750,2*0.,2*246.15,       P0030520
     E354674.E-2,354.674E+ 1,35467.4E-01,3*-.295D5,-29.5D+3,                P0030530
     F3456.78901D+01,0.345678901D+5,2*(1.11E1,+222.2E-1),(-34.5,-6.78),     P0030540
     G(-.345E2,-678.E-2),2*.TRUE.,.FALSE./, I1I(3), I1I(4),                 P0030550
     HMCA3I(1,2,2),AC2S(5,6),JVS      ,EP1S(14),AC3S(1,1,3),IAC2I(1,4),     P0030560
     ICHEVC,LL1C(31),DCVC,LM2C(8,2),A1D(3),MCA3D(1,3,1),A1D(4),             P0030570
     JMCA3D(1,4,1),          MCA1B(7),GH2B(1,2)           / 2*10,+246,P0030580
     K-.75005E03,-7.5005E+02,2HBC,2H*=,2H P,2*(10.,-20.),                   P0030590
     L(-200.,+4000.),(-2000.E-1,+400.E1),+1122.335D-6,0.00001122335D+2,     P0030600
     M34.0D11,0.034D14,2*.FALSE./                                           P0030610
C*****    END OF SEGMENT 003                                                 P0030620
C*****                                                                       P0100100
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.         P0100110
C*****                                                                       P0100120
C*****  WHEN EXECUTING ONLY SEGMENTS 003 AND 010 THE FOLLOWING STATEMENTP0070190
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1  AND  2 REMOVED.          P0070195
C=    NUVI = 6                                                             P0070200
      NUVI = 6                                                             P010B1
C*****                                                                     P0070205
      WRITE (NUVI,100)                                                     P0100130
100   FORMAT (1H1,1X,             32HDATA2 - (010) DATA STATEMENT USE/     P0100140
     A   /2X,17HASA REFS. - 7.2.2//2X,7HRESULTS)                           P0100150
      WRITE (NUVI,101)                                                     P0100160
101   FORMAT(/35H  LINE 1 OF EACH GROUP IS HOLLERITH/36H  INFORMATION. TP0100170
     AEST IS SUCCESSFUL IF/37H  EACH GROUP CONTAINS THE SAME VALUES)       P0100180
      WRITE (NUVI,102) I1I(1),    I1I(2), IAC2I(1,5), IAC2I(1,3),          P0100190
     A                 MCA3I(1,2,1), MCA3I(2,2,2),  I1I(3),  I1I(4),     P0100200
     B                 IAC2I(2,5), IAC2I(2,6), MCA3I(2,1,1),              P0100210
     C                 MCA3I(1,2,2), I1I(5), IAC2I(2,4), MCA3I(1,1,2),    P0100220
     D                 AVI                                                P0100230
102   FORMAT    ( /25X,1H0/4(I26/)//                                       P0100240
     A              24X,2H10/4(I26/)//                                    P0100250
     B              23X,3H246/4(I26/)//                                   P0100260
     C              22X,4H-750/4(I26/))                                   P0100270
      WRITE (NUVI,103) EP1S(8), EP1S(10), EP1S(13), AC2S(2,6),            P0100280
     A                 AC2S(1,6),AC3S(1,1,1),EP1S(11),AC2S(5,3),        P0100290
     B                 AC2S(3,6), AC2S(5,2), AC3S(1,1,2), AC2S(4,6),    P0100300
     C                 EP1S(12), AC2S(5,5), AC2S(5,6), JVS              P0100310
103   FORMAT    ( /22X,4H0.00/4(F26.2/)//                                  P0100320
     A              20X,6H246.15/4(F26.2/)//                              P0100330
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     B             19X,7H3546.74/4(F26.2/),                                  P0100340
     C         1H1,18X,7H-750.05/4(F26.2/))                                  P0100350
      WRITE (NUVI,104)ADSVC, LL1C(29), LN3C(9,1,2), LN3C(8,2,1),            P0100360
     A                BCVC, LL1C(30), LM2C(8,4), LN3C(8,2,2),              P0100370
     B                CHEVC, LL1C(31), LM2C(8,3), LN3C(9,1,1),             P0100380
     C                DCVC, LL1C(32), LM2C(8,2), LN3C(8,1,2)               P0100390
104   FORMAT   ( /9X,17H 11.1       22.22/4(F14.1,F12.2/)//                 P0100400
     A             8X,18H-34.50       -6.78/4(F14.2,F12.2/)//             P0100410
     B             8X,18H 10.00      -20.00/4(F14.2,F12.2/)//             P0100420
     C             5X,21H  -200.00     4000.00/4(F14.2,F12.2/))           P0100430
      WRITE (NUVI,105)  AVD, A1D(1), DPA2D(1,1), MCA3D(1,1,1),              P0100440
     A                BVD, A1D(2), DPA2D(2,1), MCA3D(1,1,2),               P0100450
     B                CVD, A1D(3),DPA2D(1,2), MCA3D(1,3,1),                P0100460
     C                DVD, A1D(4), DPA2D(2,2), MCA3D(1,4,1)                P0100470
105   FORMAT   ( /16X,10H-0.295D+05/4(D26.3/)//                             P0100480
     A             11X,15H0.345678901D+05/4(D26.9/)//                      P0100490
     B             13X,13H0.1122335D-02/4(D26.7/),                         P0100500
     C         1H1,17X,8H0.34D+13/4(D26.2/))                               P0100510
      WRITE (NUVI,106) MAVB, MCA1B(6), GH2 B(1,1), GI3B(1,1,1),             P0100520
     A                MBVB, MCVB, MCA1B(7), GH2B(1,2), GG1B(1),            P0100530
     B                EP1S(15), GI3B(1,1,2),                               P0100540
     C                EP1S(14), AC3S(1,1,3), IAC2I(1,4)                    P0100550
106   FORMAT   (//20X,4H   T/  4(L24/)//                                    P0100560
     A             20X,4H   F/  4(L24/)//                                  P0100570
     B             22X,2HAD /2(22X,A2/)/                                   P0100580
     C             22X,2HNO /  22X,A2//                                    P0100590
     D             22X,2HBC /  22X,A2//                                    P0100600
     E             22X,2H*= /  22X,A2//                                    P0100610
     F             22X,2H P /  22X,A2)                                     P0100620
C*****    END OF SEGMENT 010                                               P0100630
C*****  WHEN EXECUTING ONLY SEGMENTS 003 AND 010, THE  STOP  AND  END      P0100640
C*****  CARDS WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                   P0100650
C*****  IN COLUMNS  1  AND  2  REMOVED                                     P0100660
C=     STOP                                                               P0100670
C=     END                                                                P0100680
      STOP                                                                P010C1
      END                                                                 P010C2
C*******************************************************************************P0110010
C*****                                                                    P0110020
C*****                          AASGN - (011)                             P0110030
C*****                                                                    P0110040
C*******************************************************************************P0110050
C*****  GENERAL PURPOSE                                          ASA REF  P0110060
C*****  * TO TEST VERY SIMPLE ARITHMETIC ASSIGNMENT              7.1.1.1  P0110070
C*****    STATEMENTS, SO THAT THIS STATEMENT MAY BE                       P0110080
C*****    USED IN LATER SEGMENTS                                          P0110090
C*****  * TO TEST THAT ALL TYPES OF INTEGER AND REAL CONSTANTS      5.1.1P0110100
C*****    MAY BE FORMED                                          5.1.1.1P0110110
C*****                                                           5.1.1.2P0110120
C*****  GENERAL COMMENTS                                                 P0110130
C*****  * ONLY REAL AND INTEGER TYPES ARE INCLUDED IN                    P0110140
C*****    THIS SEGMENT - NO MIXING OF TYPES                               P0110150
C*****  * IN ORDER NOT TO EXCEED THE WORD LENGTH CAPACITY OF             P0110160
C*****    SOME COMPUTERS, INTEGER CONSTANTS ARE LIMITED TO                P0110170
C*****    5 DIGITS AND REAL CONSTANTS TO 7 DIGITS.                        P0110180
C*****                                                                    P0110190
C*****  S P E C I F I C A T I O N S  SEGMENT 011                          P0110200
C*****                                                                    P0010210
C*****  WHEN EXECUTING ONLY SEGMENT 011, THE SPECIFICATION STATEMENT      P0010215
C*****  WHICH APPEARS AS A COMMENT MUST HAVE THE C= REMOVED               P0010220
C=     DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6),A2S(2,2)          P0010225
      DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6),A2S(2,2)           P011A1
C*****                                                                    P0010230
C*****  O U T P U T  T A P E  ASSIGNMENT - NO INPUT DATA                  P0110210
C*****                                                                    P0070210
C*****  WHEN EXECUTING ONLY SEGMENT 011, THE FOLLOWING STATEMENT          P0070215
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS  1 AND 2  REMOVED.          P0070220
C*****                                                                    P0070225
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C=     NUVI = 6                                                                 P0070230
       NUVI = 6                                                                 P011B1
C*****                                                                          P0070235
       WRITE (NUVI,110)                                                         P0110220
110    FORMAT (1H1,1X, 37HAASGN - (011) SIMPLE REAL AND INTEGER/10X,32HARP0110230
      1ITHMETIC ASSIGNMENT STATEMENTS/2X,16HASA REF. - 7.1.1//34H  LINE 1P0110240
      2 OF EACH PAIR IS HOLLERITH/13H  INFORMATION//17H  INTEGER RESULTS)P0110250
C*****    HEADER FOR SEGMENT 011 WRITTEN                                        P0110260
C*****    TEST ASSIGNMENT OF UNSIGNED INTEGER CONSTANTS          7.1.1.1/40P0110270
C*****    TO VARIABLES                                           5.1.1.1/15P0110280
       MRRVI = 1                                                                P0110290
       JACVI = 12345                                                            P0110300
       KBCVI = 000                                                              P0110310
C*****    TEST ASSIGNMENT OF SIGNED INTEGER CONSTANTS TO         7.1.1.1/40P0110320
C*****    VARIABLES                                               5.1.1/11P0110330
       MCAVI = +2                                                               P0110340
       LCCVI = -3                                                               P0110350
       MDCVI = - 8765                                                           P0110360
       NECVI = + 6912                                                           P0110370
C*****    TEST ASSIGNMENT OF UNSIGNED INTEGER CONSTANTS          7.1.1.1/40P0110380
C*****    TO ARRAYS                                              5.1.1.1/15P0110390
       IAC1I(1)   = 0                                                           P0110400
       IAC2I(2,1) = 02468                                                       P0110410
       IAC2I(2,2) = 00                                                          P0110420
       IAC1I(3)   = 4444                                                        P0110430
C*****    TEST ASSIGNMENT OF SIGNED INTEGER CONSTANTS            7.1.1.1/40P0110440
C*****    TO ARRAYS                                               5.1.1/11P0110450
       IAC2I(1,1) = +45                                                         P0110460
       IAC1I(4)   = + 4321                                                      P0110470
       IAC1I(2)   = -23                                                         P0110480
       IAC2I(1,2) = - 3123                                                      P0110490
C*****    TEST ASSIGNMENT OF UNSIGNED REAL CONSTANTS             7.1.1.1/40P0110500
C*****    TO VARIABLES (BASIC REAL CONSTANTS)                    5.1.1.2/18P0110510
       ACVS  = 1.0                                                              P0110520
       BCVS  = 358.6724                                                         P0110530
C*****    TEST ASSIGNMENT OF SIGNED REAL CONSTANTS               7.1.1.1/40P0110540
C*****    TO VARIABLES (BASIC REAL CONSTANTS)                    5.1.1.2/18P0110550
C*****                                                              5.1.1/11P0110560
       CCVS  = -2.0                                                             P0110570
       DCVS  = +3.0                                                             P0110580
       ECVS = -2714.250                                                         P0110590
       FCVS = +29.30542                                                         P0110600
C*****    TEST ASSIGNMENT OF UNSIGNED REAL CONSTANTS             7.1.1.1/40P0110610
C*****    TO ARRAYS (BASIC REAL CONSTANTS)                       5.1.1.2/18P0110620
C*****                                                              5.1.1/11P0110630
       AC1S(2)    = 86.27                                                       P0110640
       AC2S(1,2) = 1034.2                                                       P0110650
       AC1S(1)    = 0.0                                                         P0110660
       AC2S(1,1) = 0.00000                                                      P0110670
C*****    TEST ASSIGNMENT OF SIGNED REAL CONSTANTS               7.1.1.1/40P0110680
C*****    TO ARRAYS (BASIC REAL CONSTANTS)                       5.1.1.2/18P0110690
C*****                                                              5.1.1/11P0110700
       AC2S(2,2) = +345.678                                                     P0110710
       AC1S(3)    = -2.5                                                        P0110720
       AC2S(2,1) = -5.66                                                        P0110730
       AC1S(4)    = +1.111111                                                   P0110740
C*****    TEST ASSIGNMENT OF UNSIGNED AND SIGNED REAL            5.1.1.2/22P0110750
C*****    CONSTANTS WITH NO DECIMAL DIGITS TO BOTH                              P0110760
C*****    VARIABLES AND ARRAYS                                                  P0110770
       GCVS  =  1.                                                              P0110780
       HCVS  = -2.                                                              P0110790
       AADVS = +3.                                                              P0110800
       AC2S(3,1) =  4.                                                          P0110810
       AC2S(1,3) = +5.                                                          P0110820
       AC1S(5)    = -6.                                                         P0110830
C*****    TEST ASSIGNMENT OF UNSIGNED AND SIGNED REAL            5.1.1.2/22P0110840
C*****    CONSTANTS WITH NO INTEGER PART TO BOTH                                P0110850
C*****    VARIABLES AND ARRAYS                                                  P0110860
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      BBDVS = .0                                                        P0110870
      CCDVS = +.23                                                      P0110880
      DDDVS = -.716                                                     P0110890
      AC1S(6)   = -.7                                                   P0110900
      AC2S(4,1) = .81                                                   P0110910
      AC1S(7)   = +.9                                                   P0110920
C*****    TEST ASSIGNMENT OF UNSIGNED AND SIGNED REAL          5.1.1.2/25P0110930
C*****    CONSTANTS WITH UNSIGNED AND SIGNED DECIMAL           5.1.1.2/32P0110940
C*****    EXPONENTS TO BOTH VARIABLES AND ARRAYS                        P0110950
      EEDVS =  1.05E02                                                  P0110960
      FFDVS = -7.6E1                                                    P0110970
      GGDVS = +332.4E0                                                  P0110980
      HHDVS = 51.32E-1                                                  P0110990
      DDDVS = +5.34E-3                                                  P0111000
      PPDVS = -14.19E-2                                                 P0111010
      QQDVS = -9.9E+2                                                   P0111020
      RRDVS = +10.5210E+3                                               P0111030
      SSDVS = 4.56E+1                                                   P0111040
      AC2S(1,4) = 665.2E0                                               P0111050
      AC1S(11) =-52.9E01                                                P0111060
      AC1S(9) = +78.564E2                                               P0111070
      AC2S(5,1) = -3.4567E+3                                            P0111080
      AC2S(1,5) = 61.62E+2                                              P0111090
      AC1S(10) = +0.023E+1                                              P0111100
      AC1S(8) =  94.333E-1                                              P0111110
      AC1S(12) = +0.3524E-2                                             P0111120
      AC2S(3,2) = -743.2E-3                                             P0111130
C*****    TEST ASSIGNMENT OF UNSIGNED AND SIGNED REAL          5.1.1.2/22P0111140
C*****    CONSTANTS (NO DECIMAL PART) WITH DECIMAL             5.1.1.2/26P0111150
C*****    EXPONENTS TO BOTH VARIABLES AND ARRAYS                        P0111160
      TTDVS = 1.E0                                                      P0111170
      UUDVS = +123.E2                                                   P0111180
      VVDVS = -11.E3                                                    P0111190
      WWDVS = 144.E-1                                                   P0111200
      XXDVS = -12.E-2                                                   P0111210
      YYDVS = +3645.E-3                                                 P0111220
      ZZDVS = 1.E+4                                                     P0111230
      CMAVS = -200.E+1                                                  P0111240
      CMBVS = +99.E+2                                                   P0111250
      AC1S(13) = +0.E00                                                 P0111260
      AC2S(2,5) = -1512.E2                                              P0111270
      AC2S(4,3) = 214.E3                                                P0111280
      AC1S(15) = 34.E-1                                                 P0111290
      AC1S(14) = -4.E-2                                                 P0111300
      AC2S(3,4) = +53214.E-4                                            P0111310
      AC2S(4,4) = +6.E+3                                                P0111320
      AC2S(2,3) = 72.E+4                                                P0111330
      AC1S(16) = -813.E+1                                               P0111340
C*****    TEST ASSIGNMENT OF UNSIGNED AND SIGNED REAL          5.1.1.2/22P0111350
C*****    CONSTANTS (NO INTEGER PART) WITH DECIMAL             5.1.1.2/26P0111360
C*****    EXPONENTS TO BOTH VARIABLES AND ARRAYS                        P0111370
      CMCVS = .234E0                                                    P0111380
      CMDVS = -.3E2                                                     P0111390
      CMEVS = +.44E1                                                    P0111400
      CMFVS = .36E-3                                                    P0111410
      CMGVS = +.9E-4                                                    P0111420
      CMHVS = -.10E-2                                                   P0111430
      CMDVS = .777E+1                                                   P0111440
      CMPVS = -.29E+3                                                   P0111450
      CMQVS = +.04E+2                                                   P0111460
      AC1S(17) = .90E1                                                  P0111470
      AC2S(4,2) = +.810E0                                               P0111480
      AC1S(19) = -.7E3                                                  P0111490
      AC2S(3,3) = .62E+3                                                P0111500
      AC1S(21) = +.5310E+1                                              P0111510
      A2S(1,2) = -.442E+2                                               P0111520
      AC1S(18) = .3E-4                                                  P0111530
      AC2S(2,4) = +.25E-03                                              P0111540
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      A2S(2,1) = -.163E-2                                                P0111550
C*****    TEST ASSIGNMENT OF UNSIGNED AND SIGNED REAL          5.1.1.2/34P0111560
C*****    CONSTANTS (FORMED BY PLACING DECIMAL EXPONENT                   P0111570
C*****    AFTER INTEGER CONSTANT) TO BOTH VARIABLES AND                   P0111580
C*****    ARRAYS                                                          P0111590
      AVS = 709E3                                                        P0111600
      BVS = +81842E0                                                     P0111610
      CVS = -9E5                                                         P0111620
      DVS = 627E+2                                                       P0111630
      EVS = +53E+3                                                       P0111640
      FVS = -4E+04                                                       P0111650
      GVS = 1463E-2                                                      P0111660
      HVS = +2E-3                                                        P0111670
      PVS = -355E-1                                                      P0111680
      AC1S(24) = 29E5                                                    P0111690
      AC1S(20) = +4072E3                                                 P0111700
      AC2S(5,4) = -61835E2                                               P0111710
      AC2S(3,5) = 829E+1                                                 P0111720
      AC1S(22) = +03E+2                                                  P0111730
      AC1S(25) = -1E+3                                                   P0111740
      AC2S(4,5) = 3404E-4                                                P0111750
      A2S(2,2) = +55E-5                                                  P0111760
      AC1S(23) = -761E-1                                                 P0111770
C*****    VERIFY CORRECTNESS OF ASSIGNMENT BY WRITING                     P0111780
C*****    THE INFORMATION                                                 P0111790
      WRITE (NUVI,111) MRRVI, JACVI, KBCVI, MCAVI, LCCVI, MDCVI, NECVI,  P0111800
     1      (IAC1I(IVI),IVI=1,4),((IAC2I(IVI,JVI),IVI=1,2),JVI=1,2)      P0111810
      WRITE (NUVI,112)                                                   P0111820
      WRITE (NUVI,113) ACVS, BCVS, CCVS, DCVS, ECVS, FCVS, AC1S(2),      P0111830
     1                 AC2S(1,2), AC1S(1), AC2S(1,1), AC2S(2,2),        P0111840
     2                 AC1S(3), AC2S(2,1), AC1S(4), GCVS, HCVS,         P0111850
     3                 AADVS, AC2S(3,1)                                 P0111860
      WRITE (NUVI,114) AC2S(1,3), AC1S(5), BBDVS, CCDVS, DDDVS, AC1S(6),P0111870
     1                 AC2S(4,1), AC1S(7), EEDVS, FFDVS, GGDVS, HHDVS,  P0111880
     2                 OODVS, PPDVS, QQDVS, RRDVS, SSDVS                P0111890
      WRITE (NUVI,115) AC2S(1,4), AC1S(11), AC1S(9), AC2S(5,1),          P0111900
     1                 AC2S(1,5), AC1S(10), AC1S(8), AC1S(12),          P0111910
     2                 AC2S(3,2), TTDVS, UUDVS, VVDVS, WWDVS, XXDVS,    P0111920
     3                 YYDVS                                            P0111930
      WRITE (NUVI,116) CMAVS, CMBVS, AC1S(13), AC2S(2,5), AC2S(4,3),     P0111940
     1                 AC1S(15), AC1S(14), AC2S(3,4), AC2S(4,4),        P0111950
     2                 AC2S(2,3), AC1S(16), CMCVS, CMDVS, CMEVS,ZZDVS   P0111960
      WRITE (NUVI,117) CMFVS, CMGVS, CMHVS, CMOVS, CMPVS, CMQVS,        P0111970
     1                 AC1S(17), AC2S(4,2), AC1S(19), AC2S(3,3),        P0111980
     1                 AC1S(21),A2S(1,2),AC1S(18), AC2S(2,4),A2S(2,1)   P0111990
      WRITE (NUVI,118) AVS, BVS, CVS, DVS, EVS, FVS, GVS, HVS, PVS,      P0112000
     1                 AC1S(24), AC1S(20), AC2S(5,4), AC2S(3,5),        P0112010
     2                 AC1S(22),AC1S(25),AC2S(4,5),A2S(2,2)  ,          P0112020
     3                 AC1S(23)                                         P0112030
111   FORMAT(/7X,1H1,7X,5H12345,13X,1H0/1X,I7,5X,I7,7X,I7//              P0112040
     1 7X, 1H2, 10X, 2H-3,8X, 6H -8765/1X, I7, 5X, I7,  7X, I7//        P0112050
     2 3X, 5H 6912, 11X, 1H0, 11X, 3H-23/ 1X, I7, 5X, I7, 7X,I7//      P0112060
     3 4X, 4H4444, 7X, 5H 4321, 12X, 2H45/ 1X, I7, 5X, I7, 7X, I7//    P0112070
     4 4X, 4H2468, 6X, 6H -3123, 13X, 1H0/ 1X, I7, 5X, I7, 7X, I7)     P0112080
112   FORMAT (/14H  REAL RESULTS)                                        P0112090
113   FORMAT(/3X,3H1.0, 10X, 8H358.6724, 6X, 4H-2.0/1X,F5.1,6X,F12.4,2X,P0112100
     1 F8.1//3X,3H3.0,8X,9H-2714.250,7X,8H29.30542/1X,F5.1,6X,F11.3,3X, P0112110
     2 F12.5//2X,5H86.27,8X,6H1034.2,10X,3H0.0/1X,F6.2,5X,F9.1,5X,F8.1//P0112120
     3 3X, 3H0.0, 10X,7H345.678,7X, 4H-2.5/1X,F5.1,6X,F11.3,3X,F8.1//   P0112130
     4 2X,5H-5.66,11X,8H1.111111,5X,3H1.0/1X,F6.2,5X,F14.6,F8.1//       P0112140
     5 2X,4H-2.0,12X,3H3.0,10X,3H4.0/1X,F5.1,6X,F9.1,5X,F8.1)           P0112150
114   FORMAT(/3X,3H5.0,11X,4H-6.0,10X,3H0.0/1X,F5.1,6X,F9.1,5X,F8.1//    P0112160
     1 3X,4H0.23,10X,6H-0.716,7X,4H-0.7/1X,F6.2,5X,F11.3,3X,F8.1//      P0112170
     2 3X,4H0.81,11X,3H0.9/1X,F6.2,5X,F9.1/1H1,2X,9H0.105E+03,3X,       P0112180
     3 9H-0.76E+02,5X,10H0.3324E+03/E12.3,E12.2,E15.4//                 P0112190
     4 3X,10H0.5132E+01,3X,9H0.534E-02,3X,11H-0.1419E+00/E13.4,E12.3,   P0112200
     5 E14.4//2X,9H-0.99E+03,5X,12H0.105210E+05,10H 0.456E+02/E11.2,    P0112210
     6 E17.6,E10.3)                                                     P0112220
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115    FORMAT(/3X,10H0.6652E+03,2X,10H-0.529E+03,4X,11H0.78564E+04/E13.4,P0112230
      1 E12.3,E15.5//2X,12H-0.34567E+04,2X,10H0.6162E+04,3X,8H0.23E+00/  P0112240
      2 E14.5,E12.4,E11.2//3X,11H0.94333E+01,2X,10H0.3524E-02,2X,        P0112250
      3 11H-0.7432E+00/E14.5,E12.4,E13.4//3X,7H0.1E+01,6X,9H0.123E+05,   P0112260
      4 3X,9H-0.11E+05/E10.1,E15.3,E12.2//3X,9H0.144E+02,3X,9H-0.12E+00, P0112270
      5 5X,10H0.3645E+01/E12.3,E12.2,E15.4)                              P0112280
116    FORMAT(/12H  -0.200E+04,4X,8H0.99E+04,5X,7H0.0E+00/E12.3,E12.2,    P0112290
      1 E12.1//2X,11H-0.1512E+06,3X,9H0.214E+06,4X,8H0.34E+01/E13.4,     P0112300
      2 E12.3,E12.2//2X,8H-0.4E-01,6X,11H0.53214E+01,2X,7H0.6E+04/E10.1, P0112310
      3 E17.5,E9.1//3X,8H0.72E+06,4X,10H-0.813E+04,4X,9H0.234E+00/E11.2, P0112320
      4 E14.3,E13.3//2X,8H-0.3E+02,6X,8H0.44E+01,5X,7H0.1E+05/E10.1,     P0112330
      5 E14.2,E12.1)                                                     P0112340
117    FORMAT(/3X,8H0.36E-03,5X,7H0.9E-04,5X,9H-0.10E-02/E11.2,E12.1,     P0112350
      1 E14.2//3X,9H0.777E+01,3X,9H-0.29E+03,5X,7H0.4E+01/E12.3,E12.2,   P0112360
      2 E12.1//3X,8H0.90E+01,5X,9H0.810E+00,3X,8H-0.7E+03/E11.2,E14.3,   P0112370
      3 E11.1//3X,8H0.62E+03,5X,10H0.5310E+01,2X,10H-0.442E+02/E11.2,    P0112380
      4 E15.4,E12.3//3X,7H0.3E-04,6X,8H0.25E-03,4X,10H-0.163E-02/E10.1,  P0112390
      5 E14.2,E14.3/1H1)                                                 P0112400
118    FORMAT(3X,9H0.709E+06,4X,11H0.81842E+05,1X,8H-0.9E+06/E12.3,E15.5,P0112410
      1 E9.1//3X,9H0.627E+05,4X,8H0.53E+05,4X,8H-0.4E+05/E12.3,E12.2,    P0112420
      2 E12.1//3X,10H0.1463E+02,3X,7H0.2E-02,5X,10H-0.355E+02/E13.4,     P0112430
      3 E10.1,E15.3//3X,8H0.29E+07,5X,10H0.4072E+07,2X,12H-0.61835E+07/  P0112440
      4 E11.2,E15.4,E14.5//3X,9H0.829E+04,4X,7H0.3E+03,5X,8H-0.1E+04/    P0112450
      5 E12.3,E11.1,E13.1//3X,10H0.3404E+00,3X,8H0.55E-03,4X,10H-0.761E+0P0112460
     62/E13.4,E11.2,E14.3)                                               P0112470
C*****    END OF TEST SEGMENT 011                                        P0112480
C*****  WHEN EXECUTING ONLY SEGMENT 011, THE STOP  AND  END CARDS        P0112490
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P0112500
C*****  IN COLUMNS  1  AND  2  REMOVED                                   P0112510
C=     STOP                                                             P0112520
C=     END                                                              P0112530
       STOP                                                             P011C1
       END                                                              P011C2
C*******************************************************************************P0130010
C*****                                                                  P0130020
C*****                          DASGN - (013)                           P0130030
C*****                                                                  P0130040
C*******************************************************************************P0130050
C*****  GENERAL PURPOSE                                        ASA REF  P0130060
C*****  * TO TEST ALL POSSIBLE METHODS OF FORMING DOUBLE      5.1.1 THRUP0130070
C*****    PRECISION CONSTANTS                                           P0130080
C*****  * TO TEST THAT D.P. VARIABLES AND ARRAY               5.1.2 /5  P0130090
C*****    ELEMENTS MAY BE REFERENCED                          5.1.3.1/16P0130100
C*****  * TO TEST VERY SIMPLE ARITHMETIC ASSIGNMENT           7.1.1.1   P0130110
C*****    STATEMENTS, SO THAT THIS FEATURE CAN BE USED        TABLE 1   P0130120
C*****    FOR INITIALIZATION IN LATER SEGMENTS                          P0130130
C*****  S P E C I F I C A T I O N S  SEGMENT 013                        P0130140
C*****                                                                 P0010240
C*****  WHEN EXECUTING ONLY SEGMENT 013, THE SPECIFICATION STATEMENTS  P0010245
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                 P0010250
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0010255
C*****                                                                 P0010260
C=     DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD,MCGVD,    P0010265
C=    1MCHVD,MCIVD,EEDVD,ACVD,BCVD,CCVD,DCVD,DDDVD,CCDVD,FFDVD,GGDVD,   P0010270
C=    2 HHDVD,EP1D(43),AC1D(10),BC2D(7,4),CC3D(7,2,2),FC2D(5,5)         P0010275
C=     DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD,DPEVD,DPFVD,DPGVD,DPHVD,P0010280
C=    1  DPIVD,DPJVD,DPKVD,DPLVD,DPMVD,DPNVD,DPOVD,DPPVD,              P0010285
C=    2  AADVD,BBDVD,PPDVD,RRDVD,SSDVD,TTDVD,UUDVD,VVDVD,WWDVD,XXDVD,  P0010290
C=    3  YYDVD,22DVD,ECVD,FCVD,GCVD,HCVD,RC3D(3,3,3),MCJVD,MCKVD       P0010295
C*****                                                                 P0010300
       DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD,MCGVD,    P013A1
      1MCHVD,MCIVD,EEDVD,ACVD,BCVD,CCVD,DCVD,DDDVD,CCDVD,FFDVD,GGDVD,   P013A2
      2 HHDVD,EP1D(43),AC1D(10),BC2D(7,4),CC3D(7,2,2),FC2D(5,5)         P013A3
       DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD,DPEVD,DPFVD,DPGVD,DPHVD,P013A4
      1  DPIVD,DPJVD,DPKVD,DPLVD,DPMVD,DPNVD,DPOVD,DPPVD,              P013A5
      2  AADVD,BBDVD,PPDVD,RRDVD,SSDVD,TTDVD,UUDVD,VVDVD,WWDVD,XXDVD,  P013A6
      3  YYDVD,22DVD,ECVD,FCVD,GCVD,HCVD,RC3D(3,3,3),MCJVD,MCKVD       P013A7
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0130150
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C*****                                                                  P0130160
C*****  WHEN EXECUTING ONLY SEGMENT 013, THE FOLLOWING STATEMENT        P0070240
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.         P0070245
C*****                                                                  P0070250
C=     NUVI = 6                                                         P0070255
       NUVI = 6                                                         P013B1
       WRITE (NUVI,130)                                                 P0130170
       WRITE(NUVI,131)                                                  P0130180
130    FORMAT(1H1,1X,36HDASGN - (013) SIMPLE D.P. ARITHMETIC/           P0130190
      1 16X,18HASSIGNMENT STMNTS./2X,28HASA REFS. - 7.1.1.1  5.1.1.3//  P0130200
      2  2X,7HRESULTS)                                                 P0130210
131    FORMAT(/2X,23HLINE 1 OF EACH GROUP IS/                           P0130220
      A 2X,21HHOLLERITH INFORMATION)                                    P0130230
C*****     HEADER FOR THIS SEGMENT WRITTEN                              P0130240
C*****     TEST ASSIGNMENT OF UNSIGNED DP CONSTANTS WITH       7.1.1.1/41P0130250
C*****     UNSIGNED EXPONENTS TO VARIABLES AND ARRAY ELEMENTS  5.1.1.3/40P0130260
C*****                                                         5.1.1  /14P0130270
C*****                                                         5.1.1.3/36P0130280
C*****                                                         5.1.1.2/26P0130290
       MCAVD = 3.4D1                                                    P0130300
       MCBVD = 123456.7891011D02                                        P0130310
       AC1D(1)      = 3.4D1                                             P0130320
       AC1D(2)      = 123456.7891011D02                                 P0130330
       BC2D(1,1)    = 3.4D1                                             P0130340
       BC2D(2,1)    = 123456.7891011D02                                 P0130350
       CC3D(1,1,1) = 3.4D1                                              P0130360
       CC3D(2,1,1) = 123456.7891011D2                                   P0130370
C*****     ASSIGNMENT OF UNSIGNED DP CONSTANTS WITH            5.1.1.3/36P0130380
C*****     SIGNED EXPONENTS TO VARIABLES AND ARRAY ELEMENTS    5.1.1.2/26P0130390
       MCCVD =  29.8765234D-3                                           P0130400
       MCDVD =  345.10000555D+4                                         P0130410
       AC1D(3)      = 29.8765234D-3                                     P0130420
       AC1D(4)      = 345.10000555D+4                                   P0130430
       BC2D(3,1)    = 29.8765234D-3                                     P0130440
       BC2D(4,1)    = 345.10000555D+4                                   P0130450
       CC3D(3,1,1) = 29.8765234D-3                                      P0130460
       CC3D(4,1,1) = 345.10000555D+4                                    P0130470
C*****     ASSIGNMENT OF UNSIGNED DP CONSTANTS (NO DECIMAL     5.1.1.2/22P0130480
C*****     PART) WITH UNSIGNED EXPONENTS TO VARIABLES                   P0130490
C*****     AND ARRAY ELEMENTS                                           P0130500
       MCEVD = 22232425.D00                                             P0130510
       AC1D(5)      = 22232425.D00                                      P0130520
       BC2D(5,1)    = 22232425.D00                                      P0130530
       CC3D(5,1,1) = 22232425.D00                                       P0130540
C*****     ASSIGNMENT OF UNSIGNED DP CONSTANTS (NO             5.1.1.2/22P0130550
C*****     INTEGER PART) WITH UNSIGNED EXPONENTS TO                     P0130560
C*****     VARIABLES AND ARRAY ELEMENTS                                 P0130570
       MCFVD = .281420D5                                                P0130580
       AC1D(6)      = .281420D5                                         P0130590
       BC2D(6,1)    = .281420D5                                         P0130600
       CC3D(6,1,1) = .281420D5                                          P0130610
C*****     ASSIGNMENT OF UNSIGNED DP CONSTANTS (NO DECIMAL              P0130620
C*****     PART) WITH SIGNED EXPONENTS TO VARIABLES AND                 P0130630
C*****     ARRAY ELEMENTS                                               P0130640
       MCGVD =  4455667788.D+6                                          P0130650
       MCHVD =  35692483569248.D-02                                     P0130660
       AC1D(7)      = 4455667788.D+6                                    P0130670
       AC1D(8)      = 35692483569248.D-02                               P0130680
       BC2D(7,1)    = 4455667788.D+6                                    P0130690
       BC2D(1,2)    = 35692483569248.D-02                               P0130700
       CC3D(7,1,1) = 4455667788.D+6                                     P0130710
       CC3D(1,2,1) = 35692483569248.D-2                                 P0130720
C*****     ASSIGNMENT OF UNSIGNED DP CONSTANTS (NO                      P0130730
C*****     INTEGER PART) WITH SIGNED EXPONENTS TO                       P0130740
C*****     VARIABLES AND ARRAY ELEMENTS                                 P0130750
       ACVD =   .6549876D-3                                             P0130760
       BCVD =   .78D+10                                                 P0130770
       AC1D(9)      = .6549876D-3                                       P0130780
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      AC1D(10)     = .78D+10                                          P0130790
      BC2D(2,2)    = .6549876D-3                                      P0130800
      BC2D(3,2)    = .78D+10                                          P0130810
      CC3D(2,2,1) = .6549876D-3                                       P0130820
      CC3D(3,2,1) = .78D+10                                           P0130830
C*****    ASSIGNMENT OF SIGNED DP CONSTANTS WITH          5.1.1  /12P0130840
C*****    UNSIGNED EXPONENTS TO VARIABLES AND ARRAY                 P0130850
C*****    ELEMENTS                                                  P0130860
      CCVD =    +0.0D0                                              P0130870
      DCVD =    -17263544.5D3                                       P0130880
      EP1D(1)      = +0.0D0                                         P0130890
      EP1D(2)      = -17263544.5D3                                  P0130900
      BC2D(4,2)    = +0.0D00                                        P0130910
      BC2D(5,2)    = -17263544.5D3                                  P0130920
      CC3D(4,2,1) = +0.0D0                                          P0130930
      CC3D(5,2,1) = -17263544.5D3                                   P0130940
C*****    ASSIGNMENT OF SIGNED DP CONSTANTS WITH                    P0130950
C*****    SIGNED EXPONENTS TO VARIABLES AND ARRAY                   P0130960
C*****    ELEMENTS                                                  P0130970
      ECVD =    +1987.62D+1                                         P0130980
      FCVD =    -2.54396621D+2                                      P0130990
      GCVD =    +34.786529910234D-7                                 P0131000
      HCVD =    -44.4D-10                                           P0131010
      EP1D(3)      = +1987.62D+1                                    P0131020
      EP1D(4)      = -2.54396621D+2                                 P0131030
      EP1D(5)      = +34.786529910234D-7                            P0131040
      EP1D(6)      = -44.4D-10                                      P0131050
      BC2D(6,2)    = +1987.62D+1                                    P0131060
      BC2D(7,2)    = -2.54396621D+2                                 P0131070
      BC2D(1,3)    = +34.786529910234D-7                            P0131080
      BC2D(2,3)    = -44.4D-10                                      P0131090
      CC3D(6,2,1) = +1987.62D+1                                     P0131100
      CC3D(7,2,1) = -2.54396621D+2                                  P0131110
      CC3D(1,1,2) = +34.786529910234D-07                            P0131120
      CC3D(2,1,2) = -44.4D-10                                       P0131130
C*****    ASSIGNMENT OF SIGNED DP CONSTANTS (NO DECIMAL             P0131140
C*****    PART) WITH SIGNED EXPONENT TO VARIABLES AND               P0131150
C*****    ARRAY ELEMENTS                                            P0131160
      AADVD =  +0.D+1                                               P0131170
      BBDVD =  -123.D+17                                            P0131180
      CCDVD =  +3692468.D-8                                         P0131190
      DDDVD =  -147937824967.D-5                                    P0131200
      EP1D(7)      = +0.D+1                                         P0131210
      EP1D(8)      = -123.D+17                                      P0131220
      EP1D(9)      = +3692468.D-8                                   P0131230
      EP1D(10)     = -147937824967.D-5                              P0131240
      BC2D(3,3)    = +0.D+1                                         P0131250
      BC2D(4,3)    = -123.D+17                                      P0131260
      BC2D(5,3)    = +3692468.D-8                                   P0131270
      BC2D(6,3)    = -147937824967.D-5                              P0131280
      CC3D(3,1,2) = +0.D+1                                          P0131290
      CC3D(4,1,2) = -123.D+17                                       P0131300
      CC3D(5,1,2) = +3692468.D-8                                    P0131310
      CC3D(6,1,2) = -147937824967.D-5                               P0131320
C*****    ASSIGNMENT OF SIGNED DP CONSTANTS (NO INTEGER             P0131330
C*****    PART) WITH SIGNED EXPONENTS TO VARIABLES AND              P0131340
C*****    ARRAY ELEMENTS                                            P0131350
      EEDVD = +.927786174985D+2                                     P0131360
      FFDVD = -.593549142236l9D+0                                   P0131370
      GGDVD = +.986632710-03                                        P0131380
      HHDVD = -.1D-15                                               P0131390
      EP1D(11)     = +.927786174985D+2                              P0131400
      EP1D(12)     = -.593549142236l9D+0                            P0131410
      EP1D(13)     = +.986632710-03                                 P0131420
      EP1D(14)     = -.1D-15                                        P0131430
      BC2D(7,3)    = +.927786174985D+2                              P0131440
      BC2D(1,4)    = -.593549142236l9D+0                            P0131450
      BC2D(2,4)    = +.986632710-03                                 P0131460
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      BC2D(3,4)    = -.1D-15                                          P0131470
      CC3D(7,1,2) = +.927786174985D+2                                 P0131480
      CC3D(1,2,2) = -.593549142236l9D+0                               P0131490
      CC3D(2,2,2) = +.98663271D-3                                     P0131500
      CC3D(3,2,2) = -.1D-15                                           P0131510
C*****    ASSIGNMENT OF SIGNED DP CONSTANTS (NO DECIMAL               P0131520
C*****    PART) WITH UNSIGNED EXPONENTS TO VARIABLES                  P0131530
C*****    AND ARRAY ELEMENTS                                          P0131540
      PPDVD = +3261294675.D12                                         P0131550
      RRDVD = -969492909.D4                                           P0131560
      EP1D(15)     = +3261294675.D12                                  P0131570
      EP1D(16)     = -969492909.D4                                    P0131580
      BC2D(4,4)    = +3261294675.D12                                  P0131590
      BC2D(5,4)    = -969492909.D4                                    P0131600
      CC3D(4,2,2) = +3261294675.D12                                   P0131610
      CC3D(5,2,2) = -969492909.D4                                     P0131620
C*****    ASSIGNMENT OF SIGNED DP CONSTANTS (NO INTEGER               P0131630
C*****    PART) WITH UNSIGNED EXPONENTS TO VARIABLES                  P0131640
C*****    AND ARRAY ELEMENTS                                          P0131650
      SSDVD = +.001246085D3                                           P0131660
      TTDVD = -.59D2                                                  P0131670
      EP1D(17)     = +.001246085D3                                    P0131680
      EP1D(18)     = -.59D2                                           P0131690
      BC2D(6,4)    = +.001246085D3                                    P0131700
      BC2D(7,4)    = -.59D2                                           P0131710
      CC3D(6,2,2) = +.001246085D3                                     P0131720
      CC3D(7,2,2) = -.59D2                                            P0131730
C*****    ASSIGNMENT OF DP CONSTANTS FORMED BY ADDING        5.1.1.3/42P0131740
C*****    UNSIGNED EXPONENTS TO UNSIGNED INTEGERS                     P0131750
      UUDVD = 798281392253D0                                          P0131760
      EP1D(19)     = 798281392253D0                                   P0131770
      FC2D(1,1)    = 798281392253D0                                   P0131780
      RC3D(1,1,1) = 798281392253D0                                    P0131790
C*****    ASSIGNMENT OF DP CONSTANTS FORMED BY ADDING                 P0131800
C*****    SIGNED EXPONENTS TO UNSIGNED INTEGERS                       P0131810
      VVDVD = 42921D+6                                                P0131820
      WWDVD = 793685443D-4                                            P0131830
      EP1D(20)     = 42921D+6                                         P0131840
      EP1D(21)     = 793685443D-4                                     P0131850
      FC2D(2,1)    = 42921D+6                                         P0131860
      FC2D(3,1)    = 793685443D-4                                     P0131870
      RC3D(2,1,1) = 42921D+6                                          P0131880
      RC3D(3,1,1) = 793685443D-4                                      P0131890
C*****    ASSIGNMENT OF DP CONSTANTS FORMED BY ADDING                 P0131900
C*****    UNSIGNED EXPONENTS TO SIGNED INTEGERS                       P0131910
      XXDVD = +333444555566D2                                         P0131920
      YYDVD = -222333444D1                                            P0131930
      EP1D(22)     = +333444555566D2                                  P0131940
      EP1D(23)     = -222333444D1                                     P0131950
      FC2D(4,1)    = +333444555566D2                                  P0131960
      FC2D(5,1)    = -222333444D1                                     P0131970
      RC3D(1,2,1) = +333444555566D2                                   P0131980
      RC3D(2,2,1) = -222333444D1                                      P0131990
C*****    ASSIGNMENT OF DP CONSTANTS FORMED BY ADDING                 P0132000
C*****    SIGNED EXPONENTS TO SIGNED INTEGERS                         P0132010
      ZZDVD = +1D+1                                                   P0132020
      MCIVD = -2D+2                                                   P0132030
      MCJVD = +33333333333333D-3                                      P0132040
      MCKVD = -444444444D-4                                           P0132050
      EP1D(24)     = +1D+1                                            P0132060
      EP1D(25)     = -2D+2                                            P0132070
      EP1D(26)     = +33333333333333D-3                               P0132080
      EP1D(27)     = -444444444D-4                                    P0132090
      FC2D(1,2)    = +1D+1                                            P0132100
      FC2D(2,2)    = -2D+2                                            P0132110
      FC2D(3,2)    = +33333333333333D-3                               P0132120
      FC2D(4,2)    = -444444444D-4                                    P0132130
      RC3D(3,2,1) = +1D+1                                             P0132140
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      RC3D(1,3,1) = -2D+2                                              P0132150
      RC3D(2,3,1) = +333333333333333D-3                                P0132160
      RC3D(3,3,1) = -444444444D-4                                      P0132170
C*****    ASSIGNMENT OF UNSIGNED DP VARIABLES AND ARRAY       7.1.1.1/41P0132180
C*****    ELEMENTS TO DP VARIABLES AND ARRAY ELEMENTS                  P0132190
C*****    (BOTH PLUS AND MINUS VALUES ARE ASSIGNED IN THIS             P0132200
C*****    WAY)                                                         P0132210
      DPAVD = MCAVD                                                    P0132220
      DPBVD = DCVD                                                     P0132230
      DPCVD = EP1D(1)                                                  P0132240
      DPDVD = EP1D(2)                                                  P0132250
      DPEVD = BC2D(2,2)                                                P0132260
      DPFVD = BC2D(4,2)                                                P0132270
      DPGVD = CC3D(3,1,1)                                              P0132280
      DPHVD = CC3D(7,2,1)                                              P0132290
      EP1D(28) = DPAVD                                                 P0132300
      EP1D(29) = DPBVD                                                 P0132310
      EP1D(30) = EP1D(1)                                               P0132320
      EP1D(31) = EP1D(2)                                               P0132330
      EP1D(32) = BC2D(2,2)                                             P0132340
      EP1D(33) = BC2D(4,2)                                             P0132350
      EP1D(34) = CC3D(3,1,1)                                           P0132360
      EP1D(35) = CC3D(7,2,1)                                           P0132370
      FC2D(5,2) = DPAVD                                                P0132380
      FC2D(1,3) = DPBVD                                                P0132390
      FC2D(2,3) = EP1D(1)                                              P0132400
      FC2D(3,3) = EP1D(2)                                              P0132410
      FC2D(4,3) = BC2D(2,2)                                            P0132420
      FC2D(5,3) = BC2D(4,2)                                            P0132430
      FC2D(1,4) = CC3D(3,1,1)                                          P0132440
      FC2D(2,4) = CC3D(7,2,1)                                          P0132450
      RC3D(1,1,2) = MCAVD                                              P0132460
      RC3D(2,1,2) = DCVD                                               P0132470
      RC3D(3,1,2) = EP1D(1)                                            P0132480
      RC3D(1,2,2) = EP1D(2)                                            P0132490
      RC3D(2,2,2) = BC2D(2,2)                                          P0132500
      RC3D(3,2,2) = BC2D(4,2)                                          P0132510
      RC3D(1,3,2) = CC3D(3,1,1)                                        P0132520
      RC3D(2,3,2) = CC3D(7,2,1)                                        P0132530
C*****    ASSIGNMENT OF SIGNED DP VARIABLES AND ARRAY                  P0132540
C*****    ELEMENTS TO DP VARIABLES AND ARRAY ELEMENTS                  P0132550
C*****    (UNARY MINUS USED TO REVERSE BOTH PLUS AND          6.4     /44P0132560
C*****    MINUS VALUES)                                                P0132570
      DPIVD = -GCVD                                                    P0132580
      DPJVD = -DDDVD                                                   P0132590
      DPKVD = -AC1D(3)                                                 P0132600
      DPLVD = -EP1D(10)                                                P0132610
      DPMVD = -BC2D(3,1)                                               P0132620
      DPNVD = -BC2D(2,4)                                               P0132630
      DPOVD = -CC3D(2,1,1)                                             P0132640
      DPPVD = -CC3D(2,1,2)                                             P0132650
      EP1D(36) = -GCVD                                                 P0132660
      EP1D(37) = -DDDVD                                                P0132670
      EP1D(38) = -AC1D(3)                                              P0132680
      EP1D(39) = -EP1D(10)                                             P0132690
      EP1D(40) = -BC2D(3,1)                                            P0132700
      EP1D(41) = -BC2D(2,4)                                            P0132710
      EP1D(42) = -CC3D(2,1,1)                                          P0132720
      EP1D(43) = -CC3D(2,1,2)                                          P0132730
      FC2D(3,4) = -GCVD                                                P0132740
      FC2D(4,4) = -DDDVD                                               P0132750
      FC2D(5,4) = -AC1D(3)                                             P0132760
      FC2D(1,5) = -EP1D(10)                                            P0132770
      FC2D(2,5) = -BC2D(3,1)                                           P0132780
      FC2D(3,5) = -BC2D(2,4)                                           P0132790
      FC2D(4,5) = -CC3D(2,1,1)                                         P0132800
      FC2D(5,5) = -CC3D(2,1,2)                                         P0132810
      RC3D(3,3,2) = -GCVD                                              P0132820
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      RC3D(1,1,3) = -DDDVD                                                  P0132830
      RC3D(2,1,3) = -AC1D(3)                                                P0132840
      RC3D(3,1,3) = -EP1D(10)                                               P0132850
      RC3D(1,2,3) = -BC2D(3,1)                                              P0132860
      RC3D(2,2,3) = -BC2D(2,4)                                              P0132870
      RC3D(3,2,3) = -CC3D(2,1,1)                                            P0132880
      RC3D(1,3,3) = -CC3D(2,1,2)                                            P0132890
C*****    WRITE RESULTS FOR THIS SEGMENT                                    P0132900
      WRITE (NUVI,132) MCAVD, AC1D(1), BC2D(1,1), CC3D(1,1,1), MCBVD,       P0132910
     A    AC1D(2), BC2D(2,1), CC3D(2,1,1), MCCVD, AC1D(3), BC2D(3,1),       P0132920
     B    CC3D(3,1,1), MCDVD, AC1D(4), BC2D(4,1), CC3D(4,1,1), MCEVD,       P0132930
     C    AC1D(5), BC2D(5,1), CC3D(5,1,1), MCFVD, AC1D(6), BC2D(6,1),       P0132940
     D    CC3D(6,1,1), MCGVD, AC1D(7), BC2D(7,1), CC3D(7,1,1), MCHVD,       P0132950
     E    AC1D(8), BC2D(1,2), CC3D(1,2,1), ACVD, AC1D(9), BC2D(2,2),        P0132960
     F    CC3D(2,2,1), BCVD, AC1D(10), BC2D(3,2), CC3D(3,2,1), CCVD,        P0132970
     G    EP1D(1) , BC2D(4,2), CC3D(4,2,1), DCVD, EP1D(2) , BC2D(5,2),      P0132980
     H    CC3D(5,2,1), ECVD, EP1D(3) , BC2D(6,2), CC3D(6,2,1), FCVD,        P0132990
     I    EP1D(4) , BC2D(7,2), CC3D(7,2,1), GCVD, EP1D(5) , BC2D(1,3),      P0133000
     J    CC3D(1,1,2), HCVD, EP1D(6) , BC2D(2,3), CC3D(2,1,2), AADVD,       P0133010
     K    EP1D(7) , BC2D(3,3), CC3D(3,1,2), BBDVD, EP1D(8) , BC2D(4,3),     P0133020
     L    CC3D(4,1,2), CCDVD, EP1D(9) , BC2D(5,3), CC3D(5,1,2), DDDVD,      P0133030
     M    EP1D(10), BC2D(6,3), CC3D(6,1,2)                                  P0133040
      WRITE (NUVI,133) EEDVD, EP1D(11), BC2D(7,3), CC3D(7,1,2), FFDVD,      P0133050
     1    EP1D(12), BC2D(1,4), CC3D(1,2,2),GGDVD, EP1D(13), BC2D(2,4),      P0133060
     2    CC3D(2,2,2), HHDVD, EP1D(14), BC2D(3,4), CC3D(3,2,2), PPDVD,      P0133070
     3    EP1D(15), BC2D(4,4), CC3D(4,2,2), RRDVD, EP1D(16),BC2D( 5,4),     P0133080
     4    CC3D(5,2,2),SSDVD, EP1D(17), BC2D(6,4), CC3D(6,2,2), TTDVD,       P0133090
     5    EP1D(18), BC2D(7,4), CC3D(7,2,2)                                  P0133100
      WRITE (NUVI,134) UUDVD, EP1D(19), FC2D(1,1), RC3D(1,1,1), VVDVD,      P0133110
     1    EP1D(20), FC2D(2,1), RC3D(2,1,1), WWDVD, EP1D(21), FC2D(3,1),     P0133120
     2    RC3D(3,1,1), XXDVD, EP1D(22), FC2D(4,1), RC3D(1,2,1), YYDVD,      P0133130
     3    EP1D(23), FC2D(5,1), RC3D(2,2,1), ZZDVD, EP1D(24), FC2D(1,2),     P0133140
     4    RC3D(3,2,1), MCIVD, EP1D(25), FC2D(2,2), RC3D(1,3,1), MCJVD,      P0133150
     5    EP1D(26), FC2D(3,2), RC3D(2,3,1), MCKVD, EP1D(27), FC2D(4,2),     P0133160
     6    RC3D(3,3,1)                                                       P0133170
      WRITE (NUVI,135) MCAVD, DPAVD, EP1D(28), FC2D(5,2), RC3D(1,1,2),      P0133180
     A    DCVD, DPBVD, EP1D(29), FC2D(1,3), RC3D(2,1,2), EP1D(1),           P0133190
     B    DPCVD, EP1D(30), FC2D(2,3), RC3D(3,1,2), EP1D(2), DPDVD,          P0133200
     C    EP1D(31), FC2D(3,3), RC3D(1,2,2), BC2D(2,2), DPEVD, EP1D(32),     P0133210
     D    FC2D(4,3), RC3D(2,2,2), BC2D(4,2), DPFVD, EP1D(33), FC2D(5,3),    P0133220
     E    RC3D(3,2,2), CC3D(3,1,1), DPGVD, EP1D(34), FC2D(1,4),             P0133230
     F    RC3D(1,3,2), CC3D(7,2,1), DPHVD, EP1D(35), FC2D(2,4),             P0133240
     G    RC3D(2,3,2), GCVD, DPIVD, EP1D(36), FC2D(3,4), RC3D(3,3,2),       P0133250
     H    DDDVD, DPJVD, EP1D(37), FC2D(4,4), RC3D(1,1,3), AC1D(3),          P0133260
     I    DPKVD, EP1D(38), FC2D(5,4), RC3D(2,1,3), EP1D(10), DPLVD,         P0133270
     J    EP1D(39), FC2D(1,5), RC3D(3,1,3), BC2D(3,1), DPMVD, EP1D(40),     P0133280
     K    FC2D(2,5), RC3D(1,2,3), BC2D(2,4), DPNVD, EP1D(41), FC2D(3,5),    P0133290
     L    RC3D(2,2,3), CC3D(2,1,1), DPOVD, EP1D(42), FC2D(4,5),             P0133300
     M    RC3D(3,2,3), CC3D(2,1,2), DPPVD, EP1D(43), FC2D(5,5),             P0133310
     N    RC3D(1,3,3)                                                       P0133320
132   FORMAT    (/ 6X,8H0.34D+02/4(D14.2/)/                                 P0133330
     A              6X,19H0.1234567891011D+08/4(D25.13/)/                  P0133340
     B              6X,15H0.298765234D-01/4(D21.9/)/                       P0133350
     C              6X,17H0.34510000555D+07/4(D23.11/)/                    P0133360
     D              6X,14H0.22232425D+08/4(D20.8/)/                        P0133370
     E              6X,12H0.281420D+05/4(D18.6/)/                          P0133380
     F              6X,16H0.4455667788D+16/4(D22.10/),                     P0133390
     G           1H1,5X,20H0.35692483569248D+12/4(D26.14/)/                P0133400
     H              6X,13H0.6549876D-03/4(D19.7/)/                         P0133410
     I              6X,8H0.78D+10/4(D14.2/)/                               P0133420
     J              6X,7H0.0D+00/4(D13.1/)/                                P0133430
     K              5X,16H-0.172635445D+11/4(D21.9/)/                      P0133440
     L              6X,12H0.198762D+05/4(D18.6/)/                          P0133450
     M              5X,16H-0.254396621D+03/4(D21.9/)/                      P0133460
     N              6X,20H0.34786529910234D-05/4(D26.14/)/                 P0133470
     O              5X,10H-0.444D-08/4(D15.3/),                            P0133480
     P           1H1,5X,7H0.0D+00/4(D13.1/)/                               P0133490
     Q              5X,10H-0.123D+20/4(D15.3/)/                            P0133500
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     R              6X,13H0.3692468D-01/4(D19.7/)/                          P0133510
     S              5X,19H-0.147937824967D+07/4(D24.12/),1H )               P0133520
133   FORMAT    (   6X,18H0.927786174985D+02/4(D24.12/)/                    P0133530
     T              5X,21H-0.5935491422361 9D+00/4(D26.14/)/                P0133540
     U              6X,14H0.98663271D-03/4(D20.8/)/                         P0133550
     V              5X,8H-0.1D-15/4(D13.1/)/                                P0133560
     W              6X,16H0.3261294675D+22/4(D22.10/),                      P0133570
     X          1H1,4X,16H-0.969492909D+13/4(D21.9/)/                       P0133580
     Y              6X,13H0.1246085D+01/4(D19.7/)/                          P0133590
     Z              5X,9H-0.59D+02/4(D14.2/),1H )                           P0133600
134   FORMAT    (   6X,18H0.798281392253D+12/4(D24.12/)/                    P0133610
     1              6X,11H0.42921D+11/4(D17.5/)/                            P0133620
     2              6X,15H0.793685443D+05/4(D21.9/)/                        P0133630
     3              6X,17H0.33344455566D+13/4(D23.11/)/                     P0133640
     4              5X,16H-0.222333444D+10/4(D21.9/)/                       P0133650
     5              6X,7H0.1D+02/4(D13.1/),                                 P0133660
     6          1H1,4X,8H-0.2D+03/4(D13.1/)/                                P0133670
     7              6X,20H0.33333333333333D+11/4(D26.14/)/                  P0133680
     8              5X,16H-0.444444444D+05/4(D21.9/),1H )                   P0133690
135   FORMAT( 6X,20H0.34000000000000D+02/5(D26.14/)/                         P0133700
     1        5X,21H-0.17263544500000D+11/5(D26.14/)/                       P0133710
     2        6X,20H0.00000000000000D+00/5(D26.14/)/                        P0133720
     3        5X,21H-0.17263544500000D+11/5(D26.14/)/                       P0133730
     4        6X,20H0.654987600000000D-03/5(D26.14/),                       P0133740
     5    1H1,5X,20H0.00000000000000D+00/5(D26.14/)/                        P0133750
     6        6X,20H0.29876523400000D-01/5(D26.14/)/                        P0133760
     7        5X,21H-0.254396621000000D+03/5(D26.14/),                      P0133770
     8 39H1 EACH GROUP SHOULD BE IDENTICAL EXCEPT/                          P0133780
     9 38H  FOR THE SIGNS OF THE FIRST TWO LINES//                          P0133790
     A        6X,20H0.347865299102 34D-05/5(D26.14/)/                       P0133800
     B        5X,21H-0.14793782496700D+07/5(D26.14/)/                       P0133810
     C        6X,20H0.29876523400000D-01/5(D26.14/)/                        P0133820
     D        5X,21H-0.14793782496700D+07/5(D26.14/)/                       P0133830
     E        6X,20H0.29876523400000D-01/5(D26.14/)/                        P0133840
     F        6X,20H0.98663271000000D-03/5(D26.14/)/                        P0133850
     G        6X,20H0.12345678910110D+08/5(D26.14/),                        P0133860
     H    1H1,4X,21H-0.44400000000000D-08/5(D26.14/))                       P0133870
C*****    END OF SEGMENT 013                                               P0133880
C*****  WHEN EXECUTING ONLY SEGMENT 013, THE STOP AND END CARDS            P0133890
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                         P0133900
C*****  IN COLUMNS  1  AND  2  REMOVED                                     P0133910
C=     STOP                                                               P0133920
C=     END                                                                P0133930
       STOP                                                               P013C1
       END                                                                P013C2
C*******************************************************************************P0150010
C*****                                                                    P0150020
C*****                          CASGN - (015)                             P0150030
C*****                                                                    P0150040
C*******************************************************************************P0150050
C*****  GENERAL PURPOSE                                        ASA REF    P0150060
C*****  * TO TEST METHODS OF FORMING COMPLEX CONSTANTS         5.1.1      P0150070
C*****  * TO TEST THAT COMPLEX VARIABLES AND ARRAY             5.1.2 /5   P0150080
C*****    ELEMENTS MAY BE REFERENCED.                          5.1.3 /16  P0150090
C*****  * TO TEST SIMPLE ARITHMETIC ASSIGNMENT STATEMENTS      7.1.1.1    P0150100
C*****    SO THAT THIS FEATURE CAN BE USED FOR INITIALIZATION TABLE 1     P0150110
C*****    IN LATER SEGMENTS                                              P0150120
C*****  S P E C I F I C A T I O N S  SEGMENT 015                          P0150130
C*****                                                                   P0010310
C*****  WHEN EXECUTING ONLY SEGMENT 015, THE SPECIFICATION STATEMENTS    P0010315
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE C= IN COLUMNS             P0010320
C*****  1  AND  2  REMOVED.                                              P0010325
C*****                                                                   P0010330
C=     COMPLEX QEVC,QFVC,QGVC,QHVC,QIVC,QJVC,QKVC,QLVC,QMVC,QNVC,QOVC,   P0010335
C=    1  QPVC,QRVC,QSVC,QTVC,QUVC,QVVC,KVC,LVC,MVC,NVC,OVC,PVC,QVC,VVC,  P0010340
C=    2  MEVC,MFVC,MGVC,MHVC,MIVC,QQVC,MJVC,MKVC,MLVC,     MNVC,MOVC,    P0010345
C=    3  MPVC,MQVC,MRVC,MSVC,MTVC,MUVC,MVVC,BCVC,DCVC,DDVC               P0010350
C=     COMPLEX AVC,BVC,CVC,DVC,EVC,FVC,GVC,HVC,IVC,JVC,AAVC,             P0010355
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C=    1          ABVC,BAVC,BBVC,CCVC,CDVC,CAVC,DAVC,ASVC,BSVC,CSVC,        P0010360
C=    2          DSVC,AAAVC,ABAVC,ACAVC,ADAVC,CHCVC                        P0010365
C=     COMPLEX NUMVC,      QAVC,QBVC,QCVC,QDVC,RVC,SVC,TVC,UVC             P0010370
C=    1 ,         MAVC,MBVC,MCVC,MDVC,B1C(8),B2C(4,2),B3C(2,2,2)          P0010375
C=     COMPLEX LL1C(32),LM2C(8,4),LN3C(9,2,2),A1C(12),A2C(2,2),A3C(2,2,1)P0010380
C*****                                                                    P0010385
      COMPLEX QEVC,QFVC,QGVC,QHVC,QIVC,QJVC,QKVC,QLVC,QMVC,QNVC,QOVC,    P015A1
     1  QPVC,QRVC,QSVC,QTVC,QUVC,QVVC,KVC,LVC,MVC,NVC,OVC,PVC,QVC,VVC,   P015A2
     2  MEVC,MFVC,MGVC,MHVC,MIVC,QQVC,MJVC,MKVC,MLVC,     MNVC,MOVC,     P015A3
     3  MPVC,MQVC,MRVC,MSVC,MTVC,MUVC,MVVC,BCVC,DCVC,DDVC                P015A4
      COMPLEX AVC,BVC,CVC,DVC,EVC,FVC,GVC,HVC,IVC,JVC,AAVC,              P015A5
     1          ABVC,BAVC,BBVC,CCVC,CDVC,CAVC,DAVC,ASVC,BSVC,CSVC,       P015A6
     2          DSVC,AAAVC,ABAVC,ACAVC,ADAVC,CHCVC                       P015A7
      COMPLEX NUMVC,      QAVC,QBVC,QCVC,QDVC,RVC,SVC,TVC,UVC             P015A8
     1 ,         MAVC,MBVC,MCVC,MDVC,B1C(8),B2C(4,2),B3C(2,2,2)          P015A9
      COMPLEX LL1C(32),LM2C(8,4),LN3C(9,2,2),A1C(12),A2C(2,2),A3C(2,2,1)P015AA
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0150140
C*****                                                                   P0070260
C*****  WHEN EXECUTING ONLY SEGMENT 015, THE FOLLOWING STATEMENT         P0070265
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1  AND  2  REMOVED.        P0070270
C*****                                                                   P0070275
C=     NUVI = 6                                                          P0070280
C*****                                                                   P0070285
      NUVI = 6                                                          P015B1
      WRITE (NUVI,150)                                                  P0150150
      WRITE (NUVI,151)                                                  P0150160
150   FORMAT(1H1,1X,32HCASGN - (015) COMPLEX ASSIGNMENT/                P0150170
     1 16X, 10HSTATEMENTS/2X,28HASA REFS. - 5.1.1.4  7.1.1.1//          P0150180
     2 2X, 7HRESULTS//2X,23HLINE 1 OF EACH GROUP IS/                    P0150190
     3 2X,21HHOLLERITH INFORMATION/)                                    P0150200
151   FORMAT(2X,36HVALUES IN A GROUP SHOULD BE THE SAME)                P0150210
C*****    HEADER FOR SEGMENT 015 WRITTEN                                P0150220
C*****  BEGINNING OF TEST OF COMPLEX CONSTANT ASSIGNMENTS. IN           P0150230
C*****  THE FOLLOWING 22 BLOCKS, BOTH PARTS OF THE CONSTANT             P0150240
C*****  HAVE THE SAME METHOD OF FORMATION                               P0150250
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM              P0150260
C*****    UNSIGNED BASIC REAL CONSTANTS                                 P0150270
      QAVC = (22.2,33.33)                                               P0150280
      LL1C(1)     = (22.2,33.33)                                        P0150290
      LM2C(1,1)   = (22.2,33.33)                                        P0150300
      LN3C(1,1,1) = (22.2,33.33)                                        P0150310
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM               P0150320
C*****    SIGNED BASIC REAL CONSTANTS                                   P0150330
      QBVC = (+395.6,+4106.7)                                           P0150340
      QCVC  = (-12345.67,-1234.567)                                     P0150350
      QDVC  = (+8.9,-9.1)                                               P0150360
      QEVC  = (-2635.12,+46.21)                                         P0150370
      LL1C(2)     = (+395.6,+4106.7)                                    P0150380
      LL1C(3)     = (-12345.67,-1234.567)                               P0150390
      LL1C(4)     = (+8.9,-9.1)                                         P0150400
      LL1C(5)     = (-2635.12,+46.21)                                   P0150410
      LM2C(2,1)   = (+395.6,+4106.7)                                    P0150420
      LM2C(3,1)   = (-12345.67,-1234.567)                               P0150430
      LM2C(4,1)   = (+8.9,-9.1)                                         P0150440
      LM2C(5,1)   = (-2635.12,+46.21)                                   P0150450
      LN3C(2,1,1) = (+395.6,+4106.7)                                    P0150460
      LN3C(3,1,1) = (-12345.67,-1234.567)                               P0150470
      LN3C(4,1,1) = (+8.9,-9.1)                                         P0150480
      LN3C(5,1,1) = (-2635.12,+46.21)                                   P0150490
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM               P0150500
C*****    UNSIGNED AND SIGNED REAL CONSTANTS (INTEGER PART              P0150510
C*****    ONLY)                                                         P0150520
      QFVC  = (10.,20.)                                                 P0150530
      QGVC  = (+300.,+4000.)                                            P0150540
      QHVC  = (-50.,-600.)                                              P0150550
      QIVC  = (+71.,-92.)                                               P0150560
      QJVC  = (-883.,+1414.)                                            P0150570
      QKVC  = (10.,+562.)                                               P0150580
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      QLVC  = (2002.,-983.)                                          P0150590
      QMVC  = (+461.,-165.)                                          P0150600
      QNVC  = (-21.,+122.)                                           P0150610
      LL1C(6)      = (10.,20.)                                       P0150620
      LM2C(6,1)    = (+300.,+4000.)                                  P0150630
      LN3C(6,1,1) = (-50.,-600.)                                     P0150640
      LL1C(7)      = (+71.,-92.)                                     P0150650
      LM2C(7,1)    = (-883.,+1414.)                                  P0150660
      LN3C(7,1,1) = (10.,+562.)                                      P0150670
      LL1C(8)      = (2002.,-983.)                                   P0150680
      LM2C(8,1)    = (+461.,-165.)                                   P0150690
      LN3C(8,1,1) = (-21.,+122.)                                     P0150700
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM           P0150710
C*****    UNSIGNED AND SIGNED REAL CONSTANTS (DECIMAL PART           P0150720
C*****    ONLY                                                       P0150730
      QOVC  = (.001,.00200)                                          P0150740
      QPVC  = (+.562,+.562)                                          P0150750
      QQVC  = (-.3,-.3333333)                                        P0150760
      QRVC  = (+.4,-.445)                                            P0150770
      QSVC  = (-.95,+.95)                                            P0150780
      QTVC  = (.0164239,+.36)                                        P0150790
      QUVC  = (.21,-.3963)                                           P0150800
      QVVC  = (+.3398,.3398)                                         P0150810
      NUMVC = (-.6,.6)                                               P0150820
      LL1C(9)      = (.001,.00200)                                   P0150830
      LM2C(1,2)    = (+.562,+.562)                                   P0150840
      LN3C(1,2,1) = (-.3,-.3333333)                                  P0150850
      LL1C(10)     = (+.4,-.445)                                     P0150860
      LM2C (2,2) = (-.95, +.95)                                      P0150870
      LN3C(2,2,1) = (.0164239,+.36)                                  P0150880
      LL1C(11)     = (.21,-.3963)                                    P0150890
      LM2C(3,2)    = (+.3398,.3398)                                  P0150900
      LN3C(3,2,1) = (-.6,.6)                                         P0150910
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM           P0150920
C*****    UNSIGNED REAL CONSTANTS WITH UNSIGNED EXPONENTS            P0150930
      AVC   = (0.0E0,1.0E0)                                          P0150940
      LL1C(12)     = (456231.1E1,789.453E3)                          P0150950
      LM2C(4,2)    = (44.9E4,2.5E3)                                  P0150960
      LN3C(4,2,1) = (2222.3E3,333.2E2)                               P0150970
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM           P0150980
C*****    UNSIGNED REAL CONSTANTS WITH SIGNED EXPONENTS              P0150990
      BVC   = (3.0E+0,3.0E+0)                                        P0151000
      CVC   = (987654.3E-1,876543.2E-2)                              P0151010
      DVC   = (4.444E+3,55.555E-4)                                   P0151020
      EVC   = (6.0E-5,7.7E+6)                                        P0151030
      LL1C(13)     = (3.0E+0,3.0E+0)                                 P0151040
      LM2C(5,2)    = (987654.3E-1,876543.2E-2)                       P0151050
      LN3C(5,2,1) = (4.444E+3,55.555E-4)                             P0151060
      LL1C(14)     = (6.0E-5,7.7E+6)                                 P0151070
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM           P0151080
C*****    SIGNED REAL CONSTANTS WITH UNSIGNED EXPONENTS              P0151090
      FVC   = (+14.2E1,+26.67E0)                                     P0151100
      GVC   = (-36.923E4,-0.234E03)                                  P0151110
      HVC   = (+2.1E2,-2.1E2)                                        P0151120
      IVC   = (-595.9E00,+4.967E2)                                   P0151130
      LM2C(6,2)    = (+14.2E1,+26.67E0)                              P0151140
      LN3C(6,2,1) = (-36.923E4,-0.234E03)                            P0151150
      LL1C(15)     = (+2.1E2,-2.1E2)                                 P0151160
      LM2C(7,2)    = (-595.9E00,+4.967E2)                            P0151170
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM           P0151180
C*****    SIGNED REAL CONSTANTS WITH SIGNED EXPONENTS                P0151190
      JVC   = (+1.0E+0,+1.0E+0)                                      P0151200
      KVC   = (-2.0E-0,-2.0E-0)                                      P0151210
      LVC   = (+49.2E-1,-65.27E+2)                                   P0151220
      MVC   = (-737.1E+3,+99.8E-3)                                   P0151230
      NVC   = (+4774.47E+03,-9362.4E-4)                              P0151240
      OVC   = (-846.2E-5,+13.33E+1)                                  P0151250
      LN3C(7,2,1) = (+1.0E+0,+1.0E+0)                                P0151260
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      LL1C(16)     = (-2.0E-0,-2.0E-0)                              P0151270
      LM2C(1,3)    = (+49.2E-1,-65.27E+2)                           P0151280
      LN3C(1,1,2) = (-737.1E+3,+99.8E-3)                            P0151290
      LL1C(17)     = (+4774.47E+03,-9362.4E-4)                      P0151300
      LM2C(2,3)    = (-846.2E-5,+13.33E+1)                          P0151310
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM          P0151320
C*****    UNSIGNED REAL CONSTANTS (NO DECIMAL PART) WITH            P0151330
C*****    UNSIGNED EXPONENTS                                        P0151340
      PVC  = (77.E7,816248.E2)                                      P0151350
      LL1C(18)     = (77.E7,816248.E2)                              P0151360
      LM2C(3,3)    = (1334.E01,379.E03)                             P0151370
      LN3C(2,1,2) = (1334.E01,379.E03)                              P0151380
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM          P0151390
C*****    UNSIGNED REAL CONSTANTS (NO DECIMAL PART) WITH            P0151400
C*****    SIGNED EXPONENTS                                          P0151410
      QVC  = (3.E+5,3.E+05)                                         P0151420
      RVC  = (299.E-4,299.E-1)                                      P0151430
      SVC  = (1419.E+2,1419.E-2)                                    P0151440
      TVC  = (76.E-3,987.E+0)                                       P0151450
      LL1C(19)     = (3.E+05,3.E+5)                                 P0151460
      LM2C(4,3)    = (299.E-4,299.E-1)                              P0151470
      LN3C(3,1,2) = (1419.E+2,1419.E-2)                             P0151480
      LL1C(20) = (76.E-3, 987.E+0)                                  P0151490
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM          P0151500
C*****    SIGNED REAL CONSTANTS (NO DECIMAL PART) WITH              P0151510
C*****    UNSIGNED EXPONENTS                                        P0151520
      UVC  = (+31.E0,+4659.E1)                                      P0151530
      VVC  = (-728.E2,-93296.E3)                                    P0151540
      MAVC = (+6.E6,-6.E6)                                          P0151550
      MBVC = (-7914.E3,+16.E5)                                      P0151560
      LM2C(5,3)    = (+31.E0,+4659.E1)                              P0151570
      LN3C(4,1,2) = (-728.E2,-93296.E3)                             P0151580
      LL1C(21)     = (+6.E6,-6.E6)                                  P0151590
      LM2C(6,3)    = (-7914.E3,+16.E5)                              P0151600
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM          P0151610
C*****    SIGNED REAL CONSTANTS (NO DECIMAL PART) WITH              P0151620
C*****    SIGNED EXPONENTS                                          P0151630
      MCVC = (+1.E+1,+1.E+1)                                        P0151640
      MDVC = (-2.E-2,-2.E-2)                                        P0151650
      MEVC = (+3.E-3,-3.E+3)                                        P0151660
      MFVC = (-4.E+4,+4.E-4)                                        P0151670
      MGVC = (+5.E+5,-5.E-5)                                        P0151680
      MHVC = (-6.E-6,+6.E+6)                                        P0151690
      LN3C(5,1,2) = (+1.E+1,+1.E+1)                                 P0151700
      LL1C(22)     = (-2.E-2,-2.E-2)                                P0151710
      LM2C(7,3)    = (+3.E-3,-3.E+3)                                P0151720
      LN3C(6,1,2) = (-4.E+4,+4.E-4)                                 P0151730
      LL1C(23)     = (+5.E+5,-5.E-5)                                P0151740
      LM2C(1,4)    = (-6.E-6,+6.E+6)                                P0151750
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM          P0151760
C*****    UNSIGNED REAL CONSTANTS (NO INTEGER PART) WITH            P0151770
C*****    UNSIGNED EXPONENTS                                        P0151780
      MIVC = (.39393E01,.62E04)                                     P0151790
      LL1C(24)     = (.39393E01,.62E04)                             P0151800
      LM2C(2,4)    = (.009E2,.765765E3)                             P0151810
      LN3C(7,1,2) = (.009E2,.765765E3)                              P0151820
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM          P0151830
C*****    UNSIGNED REAL CONSTANTS (NO INTEGER PART) WITH            P0151840
C*****    SIGNED EXPONENTS                                          P0151850
      MJVC =(.352E+09,.352E+3)                                      P0151860
      MKVC =(.147626E+0,.891E-14)                                   P0151870
      MLVC =(.9E-7,.9999E+8)                                        P0151880
      MNVC =(.13E-04,.13E-04)                                       P0151890
      LL1C(25)     =(.352E+09,.352E+3)                              P0151900
      LM2C(3,4)    =(.147626E+0,.891E-14)                           P0151910
      LN3C(1,2,2) =(.9E-7,.9999E+8)                                 P0151920
      LN3C(2,2,2) =(.13E-4,.13E-4)                                  P0151930
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM          P0151940
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C*****    SIGNED REAL CONSTANTS (NO INTEGER PART) WITH                    P0151950
C*****    UNSIGNED EXPONENTS                                              P0151960
      MOVC =(+.77E00,+.77E00)                                             P0151970
      MPVC =(+.878E1,-.878E1)                                             P0151980
      MQVC =(-.9797E2,+.9797E2)                                           P0151990
      MRVC =(-.10101E15,-.10101E15)                                       P0152000
      LL1C(26)     =(+.77E00,+.77E00)                                     P0152010
      LM2C(4,4)    =(+.878E1,-.878E1)                                     P0152020
      LN3C(3,2,2) =(-.9797E2,+.9797E2)                                    P0152030
      LN3C(4,2,2) =(-.10101E15,-.10101E15)                                P0152040
C*****    TEST ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM                P0152050
C*****    SIGNED REAL CONSTANTS (NO INTEGER PART) WITH                    P0152060
C*****    SIGNED EXPONENTS                                                P0152070
      MSVC =(+.68E+12,+.357628E+0)                                        P0152080
      MTVC =(+.798E-3,+.76444E-00)                                        P0152090
      MUVC =(-.3247E+20,-.2594E+5)                                        P0152100
      MVVC =(-.43599E-19,-.12E-4)                                         P0152110
      AAVC =(-.6E-9,-.6E+9)                                               P0152120
      ABVC =(-.9119E+6,+.9119E-6)                                         P0152130
      BAVC =(+.39426E+2,-.39426E-2)                                       P0152140
      BBVC =(+.45E-12,+.45E+12)                                           P0152150
      LL1C(27)     =(+.68E+12,+.357628E+0)                                P0152160
      LM2C(5,4)    =(+.798E-3,+.76444E-00)                                P0152170
      LN3C(5,2,2) =(-.3247E+20,-.2594E+5)                                 P0152180
      LL1C(28)     =(-.43599E-19,-.12E-4)                                 P0152190
      LM2C(6,4)    =(-.6E-9,-.6E+9)                                       P0152200
      LN3C(6,2,2) =(-.9119E+6,+.9119E-6)                                  P0152210
      LM2C(7,4)    =(+.39426E+2,-.39426E-2)                               P0152220
      LN3C(7,2,2) =(+.45E-12,+.45E+12)                                    P0152230
C*****  ASSIGNMENT OF COMPLEX CONSTANTS FORMED FROM SIGNED AND UNSIGNED   P0152240
C*****  INTEGER CONSTANTS WITH SIGNED AND UNSIGNED EXPONENTS              P0152250
      BCVC = (+4793E+2,3479E2)                                            P0152260
      DDVC = (3682E-3,8236E-2)                                            P0152270
      DCVC = (-2571E5,+1752E+5)                                           P0152280
      CHCVC = (+1460E-4,-1064E+01)                                        P0152290
      A1C(5) = (4793E2,3479E+2)                                           P0152300
      A1C(6) = (3682E-03,+8236E-02)                                       P0152310
      A1C(7) = (-2571E+5,1752E+05)                                        P0152320
      A1C(8) = (1460E-4,-1064E1)                                          P0152330
      LM2C(8,2) = (4793E+2,+3479E+2)                                      P0152340
      LN3C(8,2,1) = (+3682E-3,8236E-02)                                   P0152350
      LN3C(8,2,2) = (-2571E+05,1752E5)                                    P0152360
      LN3C(8,1,2) = (1460E-04,-1064E+1)                                   P0152370
C*****    ASSIGNMENT OF COMPLEX VARIABLES AND ARRAY ELEMENTS              P0152380
C*****    TO COMPLEX VARIABLES AND ARRAY ELEMENTS                         P0152390
      CCVC = QTVC                                                         P0152400
      CDVC = LL1C(12)                                                     P0152410
      CAVC = LM2C(1,4)                                                    P0152420
      DAVC = LN3C(6,2,2)                                                  P0152430
      A1C(1) = CCVC                                                       P0152440
      A1C(2) = LL1C(12)                                                   P0152450
      A1C(3) = LM2C(1,4)                                                  P0152460
      A1C(4) = LN3C(6,2,2)                                                P0152470
      A2C(1,1) = QTVC                                                     P0152480
      A2C(2,1) = LL1C(12)                                                 P0152490
      A2C(1,2) = LM2C(1,4)                                                P0152500
      A2C(2,2) = LN3C(6,2,2)                                              P0152510
      A3C(1,1,1) = CCVC                                                   P0152520
      A3C(2,1,1) = LL1C(12)                                               P0152530
      A3C(1,2,1) = LM2C(1,4)                                              P0152540
      A3C(2,2,1) = LN3C(6,2,2)                                            P0152550
C*****    ASSIGNMENT OF COMPLEX VARIABLES AND ARRAY ELEMENTS              P0152560
C*****    TO COMPLEX VARIABLES AND ARRAY ELEMENTS (UNARY          6.4/44P0152570
C*****    MINUS USED TO REVERSE BOTH PLUS AND MINUS VALUES)               P0152580
      ASVC = - QGVC                                                       P0152590
      BSVC = - QHVC                                                       P0152600
      CSVC = - LL1C(26)                                                   P0152610
      DSVC = - LL1C(23)                                                   P0152620
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      AAAVC = - LM2C(1,3)                                                P0152630
      AAAVC = - LM2C(1,3)                                                P0152640
      ABAVC = - LM2C(1,4)                                                P0152650
      ACAVC = - LN3C(5,2,1)                                              P0152660
      ADAVC = - LN3C(6,2,1)                                              P0152670
      B1C(1) = - QGVC                                                    P0152680
      B1C(2) = - QHVC                                                    P0152690
      B1C(3) = - LL1C(26)                                                P0152700
      B1C(4) = - LL1C(23)                                                P0152710
      B1C(5) = - LM2C(1,3)                                               P0152720
      B1C(6) = - LM2C(1,4)                                               P0152730
      B1C(7) = - LN3C(5,2,1)                                             P0152740
      B1C(8) = - LN3C(6,2,1)                                             P0152750
      B2C(1,1) = - QGVC                                                  P0152760
      B2C(2,1) = - QHVC                                                  P0152770
      B2C(3,1) = - LL1C(26)                                              P0152780
      B2C(4,1) = - LL1C(23)                                              P0152790
      B2C(1,2) = - LM2C(1,3)                                             P0152800
      B2C(2,2) = - LM2C(1,4)                                             P0152810
      B2C(3,2) = - LN3C(5,2,1)                                           P0152820
      B2C(4,2) = - LN3C(6,2,1)                                           P0152830
      B3C(1,1,1) = - QGVC                                                P0152840
      B3C(2,1,1) = - QHVC                                                P0152850
      B3C(1,2,1) = - LL1C(26)                                            P0152860
      B3C(2,2,1) = - LL1C(23)                                            P0152870
      B3C(1,1,2) = - LM2C(1,3)                                           P0152880
      B3C(2,1,2) = - LM2C(1,4)                                           P0152890
      B3C(1,2,2) = - LN3C(5,2,1)                                         P0152900
      B3C(2,2,2) = - LN3C(6,2,1)                                         P0152910
C*****    WRITE RESULTS FOR THIS TEST SEGMENT                            P0152920
      WRITE (NUVI, 152) QAVC, LL1C(1), LM2C(1,1), LN3C(1,1,1), QBVC,     P0152930
     1    LL1C(2), LM2C(2,1), LN3C(2,1,1), QCVC, LL1C(3), LM2C(3,1),     P0152940
     2    LN3C(3,1,1), QDVC, LL1C(4), LM2C(4,1), LN3C(4,1,1), QEVC,      P0152950
     3    LL1C(5), LM2C(5,1), LN3C(5,1,1), QFVC, LL1C(6), QGVC,          P0152960
     4    LM2C(6,1), QHVC, LN3C(6,1,1), QIVC, LL1C(7), QJVC, LM2C(7,1),  P0152970
     5    QKVC, LN3C(7,1,1), QLVC, LL1C(8), QMVC, LM2C(8,1), QNVC,       P0152980
     6    LN3C(8,1,1), QOVC, LL1C(9), QPVC, LM2C(1,2), QQVC,             P0152990
     7    LN3C(1,2,1), QRVC, LL1C(10), QSVC, LM2C(2,2), QTVC,            P0153000
     8    LN3C(2,2,1)                                                    P0153010
      WRITE (NUVI,153) QUVC, LL1C(11), QVVC, LM2C(3,2), NUMVC,           P0153020
     1    LN3C(3,2,1), AVC, LL1C(12), LM2C(4,2), LN3C(4,2,1), BVC,       P0153030
     2    LL1C(13), CVC, LM2C(5,2), DVC, LN3C(5,2,1), EVC, LL1C(14),     P0153040
     3    FVC, LM2C(6,2), GVC, LN3C(6,2,1), HVC, LL1C(15), IVC,          P0153050
     4    LM2C(7,2), JVC, LN3C(7,2,1), KVC, LL1C(16), LVC, LM2C(1,3),    P0153060
     5    MVC, LN3C(1,1,2), NVC, LL1C(17)                                P0153070
      WRITE(NUVI,8873)  OVC, LM2C(2,3), PVC,                             P0153080
     1    LL1C(18), LM2C(3,3), LN3C(2,1,2), QVC, LL1C(19)                P0153090
      WRITE (NUVI,154) RVC, LM2C(4,3), SVC, LN3C(3,1,2), TVC,            P0153100
     1    LL1C(20), UVC, LM2C(5,3), VVC, LN3C(4,1,2), MAVC, LL1C(21),    P0153110
     2    MBVC, LM2C(6,3), MCVC, LN3C(5,1,2), MDVC, LL1C(22), MEVC,      P0153120
     3    LM2C(7,3), MFVC, LN3C(6,1,2), MGVC, LL1C(23), MHVC,            P0153130
     4    LM2C(1,4), MIVC, LL1C(24), LM2C(2,4), LN3C(7,1,2)              P0153140
      WRITE (NUVI,8870) MJVC, LL1C(25), MKVC, LM2C(3,4), MLVC,           P0153150
     -                  LN3C(1,2,2), MNVC, LN3C(2,2,2), MOVC, LL1C(26), P0153160
     +                  MPVC, LM2C(4,4), MQVC, LN3C(3,2,2), MRVC,       P0153170
     =                  LN3C(4,2,2), MSVC, LL1C(27), MTVC, LM2C(5,4),   P0153180
     $                  MUVC, LN3C(5,2,2), MVVC, LL1C(28), AAVC,        P0153190
     .                  LM2C(6,4), ABVC, LN3C(6,2,2), BAVC, LM2C(7,4),  P0153200
     +                  BBVC, LN3C(7,2,2)                               P0153210
      WRITE(NUVI,8872) BCVC,A1C(5),LM2C(8,2),DDVC, A1C(6),LN3C(8,2,1),   P0153220
     1      DCVC,A1C(7),LN3C(8,2,2),CHCVC,A1C(8),LN3C(8,1,2)            P0153230
     0WRITE (NUVI,8871) QTVC, CCVC, A1C(1), A2C(1,1), A3C(1,1,1),       P0153240
     1    LL1C(12), CDVC, A1C(2), A2C(2,1), A3C(2,1,1), LM2C(1,4),       P0153250
     2    CAVC, A1C(3), A2C(1,2), A3C(1,2,1), LN3C(6,2,2), DAVC,         P0153260
     3    A1C(4), A2C(2,2), A3C(2,2,1), QGVC, ASVC, B1C(1), B2C(1,1),    P0153270
     4    B3C(1,1,1), QHVC, BSVC, B1C(2), B2C(2,1), B3C(2,1,1),          P0153280
     5    LL1C(26), CSVC, B1C(3), B2C(3,1), B3C(1,2,1), LL1C(23),        P0153290
     6    DSVC, B1C(4), B2C(4,1), B3C(2,2,1), LM2C(1,3), AAAVC, B1C(5),  P0153300
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     7    B2C(1,2), B3C(1,1,2), LM2C(1,4), ABAVC, B1C(6), B2C(2,2),      P0153310
     8    B3C(2,1,2), LN3C(5,2,1), ACAVC, B1C(7), B2C(3,2), B3C(1,2,2),  P0153320
     9    LN3C(6,2,1), ADAVC, B1C(8), B2C(4,2), B3C(2,2,2)               P0153330
C*****    FORMAT STATEMENTS FOR THIS SEGMENT                             P0153340
152   FORMAT   (/ 6X,9H0.222E+02,9X,10H0.3333E+02/4(E15.3,E19.4)//       P0153350
     A    6X,10H0.3956E+03,8X,11H0.41067E+04/4(E16.4,E19.5)//            P0153360
     B    5X,14H-0.1234567E+05,4X,14H-0.1234567E+04/4(E19.7,E18.7)//     P0153370
     C    6X,8H0.89E+01,9X,9H-0.91E+01/4(E14.2,E18.2)//                  P0153380
     D    5X,13H-0.263512E+04,6X,10H0.4621E+02/4(E18.6,E16.4)//          P0153390
     E    6X,7H0.1E+02,11X,7H0.2E+02/2(E13.1,E18.1)//                    P0153400
     F    6X,7H0.3E+03,11X,7H0.4E+04/2(E13.1,E18.1)//                    P0153410
     G    5X,8H-0.5E+02,10X,8H-0.6E+03/2(E13.1,E18.1)//                  P0153420
     H    6X,8H0.71E+02,9X,9H-0.92E+02/2(E14.2,E18.2)//                  P0153430
     I1H1,4X,10H-0.883E+03,9X,10H0.1414E+04/2(E15.3,E19.4)//             P0153440
     J    6X,7H0.1E+02,11X,9H0.562E+03/2(E13.1,E20.3)//                  P0153450
     K    6X,10H0.2002E+04,7X,10H-0.983E+03/2(E16.4,E17.3)//             P0153460
     L    6X,9H0.461E+03,8X,10H-0.165E+03/2(E15.3,E18.3)//               P0153470
     M    5X,9H-0.21E+02,10X,9H0.122E+03/2(E14.2,E19.3)//                P0153480
     N    6X,7H0.1E-02,11X,7H0.2E-02/2(E13.1,E18.1)//                    P0153490
     O    6X,9H0.562E+00,9X,9H0.562E+00/2(E15.3,E18.3)//                 P0153500
     P    5X,8H-0.3E+00,10X,14H-0.3333333E+00/2(E13.1,E24.7)//           P0153510
     Q    6X,7H0.4E+00,10X,10H-0.445E+00/2(E13.1,E20.3)//                P0153520
     R    5X,9H-0.95E+00,10X,8H0.95E+00/2(E14.2,E18.2)//                 P0153530
     S    6X,12H0.164239E-01,6X,8H0.36E+00/2(E18.6,E14.2),1H )           P0153540
153   FORMAT   (  6X,8H0.21E+00,9X,11H-0.3963E+00/2(E14.2,E20.4)//       P0153550
     A    6X,10H0.3398E+00,8X,10H0.3398E+00/2(E16.4,E18.4)//             P0153560
     B    5X,8H-0.6E+00,11X,7H0.6E+00/2(E13.1,E18.1)//                   P0153570
     C1H1,5X,7H0.0E+00,11X,7H0.1E+01/E13.1,E18.1//                       P0153580
     D    6X,13H0.4562311E+07,5X,12H0.789453E+06/E19.7,E17.6//           P0153590
     E    6X,9H0.449E+06,9X,8H0.25E+04/E15.3,E17.2//                     P0153600
     F    6X,11H0.22223E+07,7X,10H0.3332E+05/E17.5,E17.4//               P0153610
     G    6X,7H0.3E+01,11X,7H0.3E+01/2(E13.1,E18.1)//                    P0153620
     H    6X,13H0.9876543E+05,5X,13H0.8765432E+04/2(E19.7,E18.7)//       P0153630
     I    6X,10H0.4444E+04,8X,11H0.55555E-02/2(E16.4,E19.5)//            P0153640
     J    6X,7H0.6E-04,11X,8H0.77E+07/2(E13.1,E19.2)//                   P0153650
     K    6X,9H0.142E+03,9X,10H0.2667E+02/2(E15.3,E19.4)//               P0153660
     L    5X,12H-0.36923E+06,6X,10H-0.234E+03/2(E17.5,E16.3)//           P0153670
     M    6X,8H0.21E+03,9X,9H-0.21E+03/2(E14.2,E18.2)//                  P0153680
     N    5X,11H-0.5959E+03,8X,10H0.4967E+03/2(E16.4,E18.4)//            P0153690
     O    6X,7H0.1E+01,11X,7H0.1E+01/2(E13.1,E18.1)//                    P0153700
     P    5X,8H-0.2E+01,10X,8H-0.2E+01/2(E13.1,E18.1)//                  P0153710
     Q    6X,9H0.492E+01,8X,11H-0.6527E+04/2(E15.3,E19.4),               P0153720
     R1H1,4X,11H-0.7371E+06,8X,9H0.998E-01/2(E16.4,E17.3)//              P0153730
     S    6X,12H0.477447E+07,5X,12H-0.93624E+00/2(E18.6,E17.5),1H )      P0153740
8873  FORMAT(5X,13H-0.846200E-02,6X,11H0.13330E+03/2(E18.6,E17.5)//      P0153750
     U      6X,12H0.770000E+09,6X,11H0.81625E+08/2(E18.6,E17.5)//       P0153760
     V     6X,12H0.133400E+05,6X,11H0.37900E+06/2(E18.6,E17.5)//        P0153770
     W     6X,12H0.300000E+06,6X,11H0.30000E+06/2(E18.6,E17.5),1H )     P0153780
154   FORMAT (  6X,9H0.299E-01,9X,9H0.299E+02/2(E15.3,E18.3)//          P0153790
     A    6X,10H0.1419E+06,8X,10H0.1419E+02/2(E16.4,E18.4)//             P0153800
     B    6X,8H0.76E-01,10X,9H0.987E+03/2(E14.2,E19.3)//                 P0153810
     C    6X,8H0.31E+02,10X,10H0.4659E+05/2(E14.2,E20.4)//               P0153820
     D    5X,10H-0.728E+05,8X,12H-0.93296E+08/2(E15.3,E20.5)//           P0153830
     E    6X,7H0.6E+07,10X,8H-0.6E+07/2(E13.1,E18.1)//                   P0153840
     F    5X,11H-0.7914E+07,8X,8H0.16E+07/2(E16.4,E16.2)//               P0153850
     G    6X,7H0.1E+02,11X,7H0.1E+02/2(E13.1,E18.1),                     P0153860
     H1H1,4X,8H-0.2E-01,10X,8H-0.2E-01/2(E13.1,E18.1)//                  P0153870
     I    6X,7H0.3E-02,10X,8H-0.3E+04/2(E13.1,E18.1)//                   P0153880
     J    5X,8H-0.4E+05,11X,7H0.4E-03/2(E13.1,E18.1)//                   P0153890
     K    6X,7H0.5E+06,10X,8H-0.5E-04/2(E13.1,E18.1)//                   P0153900
     L    5X,8H-0.6E-05,11X,7H0.6E+07/2(E13.1,E18.1)//                   P0153910
     M    6X,11H0.39393E+01,7X,8H0.62E+04/2(E17.5,E15.2)//               P0153920
     N    6X,7H0.9E+00,11X,12H0.765765E+03/2(E13.1,E23.6),1H )           P0153930
8870  FORMAT (  6X,9H0.352E+09,9X,8H0.35E+03/2(E15.3,E17.2)//           P0153940
     (      6X,12H0.147626E+00,6X,9H0.891E-14/2(E18.6,E15.3)//          P0153950
     *      6X,7H0.9E-07,11X,10H0.9999E+08/2(E13.1,E21.4)//             P0153960
     )      6X,8H0.13E-04,10X,8H0.13E-04/2(E14.2,E18.2)//               P0153970
     /      6X,8H0.77E+00,10X,8H0.77E+00/2(E14.2,E18.2)//               P0153980
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     /          6X,9H0.878E+01,8X,10H-0.878E+01/2(E15.3,E18.3/)/          P0153990
     A          5X,11H-0.9797E+02,8X,10H0.9797E+02/2(E16.4,E18.4/),       P0154000
     .       1H1,4X,12H-0.10101E+15,6X,12H-0.10101E+15/2(E17.5,E18.5/)/   P0154010
     ,          6X,8H0.68E+12,10X,12H0.357628E+00/2(E14.2,E22.6/)/        P0154020
     -          6X,9H0.798E-03,9X,11H0.76444E+00/2(E15.3,E20.5/)/         P0154030
     +          5X,11H-0.3247E+20,7X,11H-0.2594E+05/2(E16.4,E18.4/)/      P0154040
     1          5X,12H-0.43599E-19,6X,9H-0.12E-04/2(E17.5,E15.2/)/        P0154050
     2          5X,8H-0.6E-09,10X,8H-0.6E+09/2(E13.1,E18.1/)/             P0154060
     3          5X,11H-0.9119E+06,8X,10H0.9119E-06/2(E16.4,E18.4/)/       P0154070
     4          6X,11H0.39426E+02,6X,12H-0.39426E-02/2(E17.5,E18.5/)/     P0154080
     5          6X,8H0.45E-12,10X,8H0.45E+12/2(E14.2,E18.2/),1H )         P0154090
8872  FORMAT(                                                             P0154100
     6          6X,10H0.4793E+06,8X,10H0.3479E+06/3(E16.4,E18.4/)/        P0154110
     7          6X,10H0.3682E+01,8X,10H0.8236E+02/3(E16.4,E18.4/)/        P0154120
     8         5X,11H-0.2571E+09,8X,10H0.1752E+09/3(E16.4,E18.4/)/        P0154130
     9          6X,10H0.1460E+00,7X,11H-0.1064E+05/3(E16.4,E18.4/))       P0154140
8871  FORMAT(1H1,5X,13H0.1642390E-01,5X,13H0.3600000E+00/5(E19.7,E18.7/))P0154150
     1       /6X,13H0.4562311E+07,5X,13H0.7894530E+06/5(E19.7,E18.7/)/    P0154160
     2        5X,14H-0.6000000E-05,5X,13H0.6000000E+07/5(E19.7,E18.7/)/   P0154170
     3        5X,14H-0.9119000E+06,5X,13H0.9119000E-06/5(E19.7,E18.7/),   P0154180
     4 39H1 EACH GROUP SHOULD BE IDENTICAL EXCEPT/                         P0154190
     5 38H  FOR THE SIGN  OF THE FIRST TWO LINES//                         P0154200
     6        6X,13H0.3000000E+03,5X,13H0.4000000E+04/5(E19.7,E18.7/)/    P0154210
     7        5X,14H-0.5000000E+02,4X,14H-0.6000000E+03/5(E19.7,E18.7/)/  P0154220
     8        6X,13H0.7700000E+00,5X,13H0.7700000E+00/5(E19.7,E18.7/)/    P0154230
     9        6X, 13H0.5000000E+06,4X,14H-0.5000000E-04/5(E19.7,E18.7/)/  P0154240
     A        6X,13H0.4920000E+01,4X,14H-0.6527000E+04/5(E19.7,E18.7/)/   P0154250
     B        5X,14H-0.6000000E-05,5X,13H0.6000000E+07/5(E19.7,E18.7/)/   P0154260
     C        6X,13H0.4444000E+04,5X,13H0.5555500E-02/5(E19.7,E18.7/)/    P0154270
     D   1H1,4X,14H-0.3692300E+06,4X,14H-0.2340000E+03/5(E19.7,E18.7/))   P0154280
C******    END OF TEST SEGMENT 015                                        P0154290
C******  WHEN EXECUTING ONLY SEGMENT 015, THE STOP AND END CARDS          P0154300
C******  WHICH APPEAR AS COMMENTS MUST HAVE THE C= IN COLUMNS             P0154310
C******  1  AND  2  REMOVED.                                              P0154320
C=     STOP                                                              P0154330
C=     END                                                               P0154340
       STOP                                                              P015C1
       END                                                               P015C2
C*************************************************************************P0160010
C******                                                                  P0160020
C******                          LASGN - (016)                           P0160030
C******                                                                  P0160040
C*************************************************************************P0160050
C******     GENERAL PURPOSE                                    ASA REF   P0160060
C******     TO TEST LOGICAL ASSIGNMENTS                        7.1.1.2   P0160070
C******     CONSTANTS USED IN THIS SEGMENT                               P0160080
C******  S P E C I F I C A T I O N S   SEGMENT 016                        P0160090
C******                                                                  P0160100
C******  WHEN EXECUTING ONLY SEGMENT 016, THE SPECIFICATION STATEMENTS    P0010390
C******  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0010395
C******  IN COLUMNS  1  AND  2  REMOVED.                                  P0010400
C******                                                                  P0010405
C=     DIMENSION IAC1I(5)                                                P0010410
C=     LOGICAL MCAVB,MCBVB,MCCVB,MCDVB,MCEVB,MCFVB,MCGVB,MCHVB,MCIVB,    P0010415
C=    1   MCJVB, MCKVB, MCLVB, MCMVB, MCNVB ,MCA1B(7)                    P0010420
C=     LOGICAL A1B(2),A2B(2,2),A3B(2,2,2),AVB,BVB,CVB                    P0010425
C******                                                                  P0010430
       DIMENSION IAC1I(5)                                                P016A1
       LOGICAL MCAVB,MCBVB,MCCVB,MCDVB,MCEVB,MCFVB,MCGVB,MCHVB,MCIVB,    P016A2
      1   MCJVB, MCKVB, MCLVB, MCMVB, MCNVB ,MCA1B(7)                    P016A3
       LOGICAL A1B(2),A2B(2,2),A3B(2,2,2),AVB,BVB,CVB                    P016A4
C******  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0160110
C******  WHEN EXECUTING ONLY SEGMENT 016, THE FOLLOWING STATEMENT         P0070290
C******  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.          P0070295
C******                                                                  P0070300
C=     NUVI = 6                                                          P0070305
       NUVI = 6                                                          P016B1
C******                                                                  P0160120
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      IAC1I(1) = 25                                                     P0160130
      IAC1I(2) = 10                                                     P0160140
      IAC1I(3) = 15                                                     P0160150
      IAC1I(4) = 25                                                     P0160160
C*****    WRITE HEADER FOR THIS SEGMENT                                 P0160170
      WRITE (NUVI,160)                                                  P0160180
160   FORMAT (1H1,28H LASGN - (016) ASSIGNMENT OF/ 16X,17HLOGIGAL VARIAB P0160190
     ALES/21H  ASA REFS. - 7.1.1.2//9H  RESULTS)                        P0160200
C*****    TEST THE ASSIGNMENT OF RELATIONAL EXPRESSIONS          6.2    P0160210
C*****    TO LOGICAL VARIABLES ANO ARRAYS                               P0160220
      MCAVB = IAC1I(2) .LT. IAC1I(3)                                    P0160230
      MCBVB = IAC1I(3) .LT. IAC1I(2)                                    P0160240
      MCCVB = IAC1I(1) .EQ. IAC1I(4)                                    P0160250
      MCOVB = IAC1I(2) .EQ. IAC1I(1)                                    P0160260
      MCEVB = IAC1I(1) .LE. IAC1I(4)                                    P0160270
      MCFVB = IAC1I(2) .LE. IAC1I(1)                                    P0160280
      MCGVB = IAC1I(1) .LE. IAC1I(2)                                    P0160290
      MCHVB = IAC1I(1) .EQ. 25                                          P0160300
      MCIVB = IAC1I(2) .EQ. IAC1I(4)                                    P0160310
      MCA1B(1) = IAC1I(2) .NE. IAC1I(3)                                 P0160320
      MCA1B(2) = IAC1I(1) .NE. IAC1I(4)                                 P0160330
      MCA1B(3) = IAC1I(1) .GT. IAC1I(2)                                 P0160340
      MCA1B(4) = IAC1I(2) .GT. IAC1I(1)                                 P0160350
      MCA1B(5) = IAC1I(1) .GE. IAC1I(2)                                 P0160360
      A1B(1) = IAC1I(1) .GE. IAC1I(4)                                   P0160370
      A1B(2) = IAC1I(2) .GE. IAC1I(1)                                   P0160380
C*****    TEST THE ASSIGNMENT OF A MIXTURE OF RELATIONAL AND            P0160390
C*****    LOGICAL EXPRESSIONS TO LOGICAL VARIABLES AND ARRAYS    6.3    P0160400
      A2B(1,1) = .TRUE.                                                 P0160410
      A2B(1,2) = .FALSE.                                                P0160420
      AVB = A2B(1,2) .AND. .NOT. A2B(1,1)                               P0160430
      BVB = A2B(1,2) .OR. .NOT. A2B(1,1)                                P0160440
      CVB = IAC1I(2).LT.IAC1I(3).AND.(A2B(1,1).OR..NOT.A2B(1,2)).OR.A2B(P0160450
     A1,1).ANO..NOT.A2B(1,2).AND.IAC1I(1).GT.IAC1I(4)                   P0160460
      A2B(2,1) = .NOT. (CVB.AND.MCIVB).AND. IAC1I(2) .NE. IAC1I(3) .AND.P0160470
     1           IAC1I(2) .LT. IAC1I(3) .AND. IAC1I(1) .EQ. IAC1I(4)    P0160480
      A2B(2,2) = A2B(1,2) .AND. IAC1I(1) .EQ. IAC1I(4)                  P0160490
      A3B(1,1,1) = IAC1I(2) .LT. IAC1I(3) .AND. A2B(1,2)                P0160500
      A3B(1,1,2) = IAC1I(2) .GT. IAC1I(3) .ANO. A2B(1,1)                P0160510
      A3B(1,2,1) = .NOT. MCA1B(5) .AND.                                 P0160520
     1             A2B(1,1) .OR. IAC1I(1) .EQ. IAC1I(4)                 P0160530
      A3B(1,2,2) = .NOT. (A2B(1,2) .ANO. IAC1I(1) .EQ. IAC1I(4)).OR.    P0160540
     1             A2B(1,1) .OR. A2B(1,2)                               P0160550
      A3B(2,1,1) = A2B(1,2) .OR. IAC1I(1) .EQ. IAC1I(4)                 P0160560
      A3B(2,2,1) = .NOT.MCCVB.ANO.MCHVB .OR. IAC1I(1) .NE. IAC1I(4) .OR.P0160570
     1             IAC1I(1) .LT. IAC1I(4) .OR. A2B(1,2)                 P0160580
      A3B(2,1,2) = .NOT. A3B(1,1,2) .ANO.                               P0160590
     1           ( A2B(1,1) .ANO. .NOT. A2B(1,2) )                      P0160600
      A3B(2,2,2) = IAC1I(1) .LT. IAC1I(4) .OR. .NOT. A2B(1,2)           P0160610
      MCJVB=IAC1I(2).GT.IAC1I(3).ANO.(A2B(1,1).OR..NOT.A2B(1,2)).OR.A2B(P0160620
     A1,2).ANO..NOT.A2B(1,2).ANO.IAC1I(1).GT.IAC1I(4)                   P0160630
      MCKVB = IAC1I(2).LT.IAC1I(3).AND.A2B(1,1).OR.A2B(1,2)             P0160640
      MCLVB = (IAC1I(2) .LT. IAC1I(3) .ANO. A2B(1,2)) .OR. A2B(1,1)     P0160650
      MCMVB = A2B(1,2) .OR. IAC1I(2) .LT. IAC1I(3) .ANO. A2B(1,1)       P0160660
      MCNVB = A2B(1,2) .OR. (IAC1I(2) .LT. IAC1I(3) .ANO. A2B(1,1))     P0160670
C*****    WRITE VARIABLES THAT ARE TRUE                                 P0160680
      WRITE (NUVI,161) MCAVB, MCCVB, MCEVB, MCFVB, MCHVB, MCA1B(1),     P0160690
     A                 MCA1B(3), MCA1B(5), A1B(1), A2B(1,1), A2B(2,1),  P0160700
     B                 A3B(1,2,1), A3B(1,2,2), A3B(2,1,1), A3B(2,1,2),  P0160710
     C                 A3B(2,2,2), CVB, MCKVB, MCLVB, MCMVB, MCNVB      P0160720
161   FORMAT (//32H  ALL ANSWERS BELOW MUST BE TRUE//21(L16/)//)          P0160730
C*****    WRITE VARIABLES THAT ARE FALSE                                P0160740
      WRITE (NUVI,162) MCBVB, MCOVB, MCGVB, MCIVB, MCA1B(2), MCA1B(4),  P0160750
     A                 A1B(2), A2B(1,2), A2B(2,2),A3B(1,1,1),A3B(1,1,2),P0160760
     B                 A3B(2,2,1), AVB, BVB, MCJVB                      P0160770
162   FORMAT (33H  ALL ANSWERS BELOW MUST BE FALSE//15(L16/))             P0160780
C*****    ENO OF SEGMENT 016                                            P0160790
C*****                                                                  P0160800
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C*****  WHEN EXECUTING ONLY SEGMENT 016, THE  STOP  AND  END              P0160810
C*****  CARDS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=                 P0160820
C*****  IN COL  1  AND  2  REMOVED.                                       P0160830
C*****                                                                    P0160840
C=     STOP                                                              P0160850
C=     END                                                               P0160860
       STOP                                                              P016C1
       END                                                               P016C2
C*******************************************************************************P0170010
C*****                                                                    P0170020
C*****                          INTRL - (017)                             P0170030
C*****                                                                    P0170040
C*******************************************************************************P0170050
C*****  GENERAL PURPOSE                                          ASA REF  P0170060
C*****    TO TEST ARITHMETIC ASSIGNMENT STATEMENTS WHERE    TABLE 1,PG13P0170070
C*****    REAL CONSTANTS AND VARIABLES, INTEGER VARIABLES   (LINES 2,3,  P0170080
C*****    AND ARRAY ELEMENTS, AND DOUBLE PRECISION CON-           5,6,  P0170090
C*****    STANTS AND VARIABLES ARE ASSIGNED TO EACH OTHER          9,10)P0170100
C*****                                                                    P0170110
C*****  S P E C I F I C A T I O N S   SEGMENT 017                         P0170120
C*****                                                                    P0010440
C*****  WHEN EXECUTING ONLY SEGMENT 017, THE SPECIFICATION STATEMENTS     P0010445
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=  IN                    P0010450
C*****  COL  1  AND  2  REMOVED                                           P0010455
C=     DIMENSION A1S(5),A2S(2,2),A3S(3,3,3),IAC1I(5),IAC2I(2,7)          P0010460
C=     INTEGER MCA3I(2,3,3)                                              P0010465
C=     DOUBLE PRECISION AC1D(10),BC2D(7,4),CC3D(7,2,2),DPAVD             P0010470
C*****                                                                    P0010475
       DIMENSION A1S(5),A2S(2,2),A3S(3,3,3),IAC1I(5),IAC2I(2,7)          P017A1
       INTEGER MCA3I(2,3,3)                                              P017A2
       DOUBLE PRECISION AC1D(10),BC2D(7,4),CC3D(7,2,2),DPAVD             P017A3
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0170130
C*****                                                                    P0070310
C*****  WHEN EXECUTING ONLY SEGMENT 017, THE STATEMENT  NUVI = 6          P0070315
C*****  MUST HAVE THE  C=  IN COL 1  AND  2  REMOVED.                     P0070320
C*****                                                                    P0070325
C=     NUVI = 6                                                          P0070330
C*****                                                                    P0070335
       NUVI = 6                                                          P017B1
       WRITE (NUVI,170)                                                  P0170140
170    FORMAT(1H1,1X,39HINTRL - (017) ASSIGN INTEGER, REAL, AND/         P0170150
      1 16X,23HDOUBLE PRECISION VALUES/2X,29HASA REFS. - 7.1.1.1.  5.1.1.P0170160
      22/2X,7HRESULTS/)                                                  P0170170
C*****    TEST ASSIGNMENT OF INTEGER VARIABLES              TABLE 1/LN 5,9P0170180
       JACVI = 1                                                         P0170190
       IAC1I(3) = +111                                                   P0170200
       IAC2I(2,3) = -1111                                                P0170210
       MCA3I(2,1,2) = -11111                                             P0170220
       ACVS = IAC1I(3)                                                   P0170230
       A1S(2) = IAC2I(2,3)                                               P0170240
       A2S(2,1) = MCA3I(2,1,2)                                           P0170250
       A3S(2,1,2) = JACVI                                                P0170260
       DPAVD = MCA3I(2,1,2)                                              P0170270
       AC1D(7) = JACVI                                                   P0170280
       BC2D(7,4) = IAC1I(3)                                              P0170290
       CC3D(5,1,2) = IAC2I(2,3)                                          P0170300
       WRITE (NUVI,171)                                                  P0170310
171    FORMAT (/2X,24HASSIGN INTEGER VARIABLES//3X,           21H1 - TO  P0170320
      1REAL VARIABLES)                                                   P0170330
       WRITE (NUVI,172)ACVS,A1S(2),A2S(2,1),A3S(2,1,2),DPAVD,AC1D(7),BC2DP0170340
      1(7,4),CC3D(5,1,2)                                                 P0170350
172    FORMAT(/8X,8H 111.0 */F14.1//                                     P0170360
      1         7X,9H-1111.0 */F14.1//                                   P0170370
      2         4X,12H  -11111.0 */F14.1//                               P0170380
      3         11X,5H1.0 */F14.1//3X,33H2 - TO DOUBLE PRECISION VARIABLESP0170390
      4         //4X,16H  -0.11111D 05 */D18.5//                         P0170400
      5         11X,9H0.1D 01 */D18.1//                                  P0170410
      6         9X,11H0.111D 03 */D18.3//                                P0170420
```

```
     7        7X,13H-0.1111D 04 */D18.4/)                                    P0170430
C*****    TEST ASSIGNMENT OF INTEGER CONSTANTS                               P0170440
      ACVS = -2222                                                           P0170450
      A1S(2) = +222                                                          P0170460
      A2S(2,1) = -22222                                                      P0170470
      A3S(2,1,2) = 2                                                         P0170480
      DPAVD = 2                                                              P0170490
      AC1D(7) = -22222                                                       P0170500
      BC2D(7,4) = -2222                                                      P0170510
      CC3D(5,1,2) = +222                                                     P0170520
      WRITE (NUVI,173)                                                       P0170530
173   FORMAT (/2X,24HASSIGN INTEGER CONSTANTS//3X,           21H1 - TO RP0170540
     1EAL VARIABLES)                                                         P0170550
      WRITE (NUVI,174)ACVS,A1S(2),A2S(2,1),A3S(2,1,2),DPAVD,AC1D(7),BC2DP0170560
     1(7,4),CC3D(5,1,2)                                                      P0170570
174   FORMAT(/6X,9H-2222.0 */F13.1//                                         P0170580
     1        8X,7H222.0 */F13.1//                                          P0170590
     2        3X,12H  -22222.0 */F13.1//                                    P0170600
     3       10X,5H2.0 */F13.1/  35H1 2 - TO DOUBLE PRECISION VARIABLES/P0170610
     4       /12X,9H0.2D 01 */D19.1//                                       P0170620
     5        5X,16H  -0.22222D 05 */D19.5//                                P0170630
     6        8X,13H-0.2222D 04 */D19.4//                                   P0170640
     7       10X,11H0.222D 03 */D19.3/)                                     P0170650
C*****    TEST ASSIGNMENT OF BASIC REAL CONSTANTS        TABLE 1/LN 2,10P0170660
      JACVI = 3.3                                                            P0170670
      IAC1I(3) = +333.3E-2                                                   P0170680
      IAC2I(2,3) = .3333E+1                                                  P0170690
      MCA3I(2,1,2) = -.0033333E3                                             P0170700
      DPAVD = +3.3333                                                        P0170710
      AC1D(7) = .3333333E1                                                   P0170720
      BC2D(7,4) = -333.3333E-2                                               P0170730
      CC3D(5,1,2) = -.0333333E+2                                             P0170740
      WRITE (NUVI,7173)                                                      P0170750
7173  FORMAT (/2X,27HASSIGN BASIC REAL CONSTANTS//3X,          24H1 - P0170760
     1TO INTEGER VARIABLES)                                                  P0170770
      WRITE(NUVI,7172)JACVI,IAC1I(3),IAC2I(2,3),MCA3I(2,1,2),DPAVD,AC1D(P0170780
     17),BC2D(7,4),CC3D(5,1,2)                                               P0170790
7172  FORMAT(/9X,3H3 */3(I10/)/8X,4H-3 */I10//3X,33H2 - TO DOUBLE PRECISP0170800
     1ION VARIABLES//                                                        P0170810
     2        8X,13H0.33333D 01 */D19.5//                                   P0170820
     3        6X,15H0.33333333D 01 */D19.7//                                P0170830
     4        5X,16H-0.33333333D 01 */D19.7//                               P0170840
     5        6X,15H-0.333333D 01 */D19.6/)                                 P0170850
C*****    TEST ASSIGNMENT OF REAL VARIABLES                                  P0170860
      ACVS = +.0044444E4                                                     P0170870
      A1S(2) = -4444.E-2                                                     P0170880
      A2S(2,1) = -44.4                                                       P0170890
      A3S(2,1,2) = 4.4444E+1                                                 P0170900
      JACVI = A2S(2,1)                                                       P0170910
      IAC1I(3) = A1S(2)                                                      P0170920
      IAC2I(2,3) = A3S(2,1,2)                                                P0170930
      MCA3I(2,1,2) = ACVS                                                    P0170940
      DPAVD = A2S(2,1)                                                       P0170950
      AC1D(7) = A1S(2)                                                       P0170960
      BC2D(7,4) = A3S(2,1,2)                                                 P0170970
      CC3D(5,1,2) = ACVS                                                     P0170980
      WRITE (NUVI,175)                                                       P0170990
175   FORMAT (/23H  ASSIGN REAL VARIABLES//          27H   1 - TO INTEGP0171000
     1ER VARIABLES)                                                          P0171010
      WRITE (NUVI,176)JACVI,IAC1I(3),IAC2I(2,3),MCA3I(2,1,2),DPAVD,AC1D(P0171020
     17),BC2D(7,4),CC3D(5,1,2)                                               P0171030
176   FORMAT(   /7X,5H-44 */2(I10/)/8X,4H44 */2(I10/), 35H1 2 - TO DOUBLP0171040
     1E PRECISION VARIABLES//                                                P0171050
     2        6X,12H-0.444D 02 */D16.3//                                    P0171060
     3        5X,13H-0.4444D 02 */D16.4//                                   P0171070
     4        5X,13H0.44444D 02 */D16.5//                                   P0171080
     5        5X,13H0.44444D 02 */D16.5/)                                   P0171090
C*****    TEST ASSIGNMENT DF D.P. VARIABLES                TABLE 1/LN 3,6P0171100
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      DPAVD=5555.55                                                     P0171110
      AC1D(7) = +55555555555555.D-13                                    P0171120
      BC2D(7,4) = -.0000055555555556D6                                  P0171130
      CC3D(5,1,2) = -.055555555555556D+2                                P0171140
      JACVI = DPAVD                                                     P0171150
      IAC1I(3) = AC1D(7)                                                P0171160
      IAC2I(2,3) = BC2D(7,4)                                            P0171170
      MCA3I(2,1,2) = CC3D(5,1,2)                                        P0171180
      ACVS = CC3D(5,1,2)                                                P0171190
      A1S(2) = BC2D(7,4)                                                P0171200
      A2S(2,1) = AC1D(7)                                                P0171210
      A3S(2,1,2) = DPAVD                                                P0171220
      WRITE (NUVI,177)                                                  P0171230
177   FORMAT (/2X,33HASSIGN DOUBLE PRECISION VARIABLES/                 P0171240
     1/3X,24H1 - TO INTEGER VARIABLES)                                  P0171250
      WRITE (NUVI,178)JACVI,IAC1I(3),IAC2I(2,3),MCA3I(2,1,2),ACVS,A1S(2)P0171260
     1,A2S(2,1),A3S(2,1,2)                                              P0171270
178   FORMAT(/3X,9H   5555 */I10//9X,3H5 */I10//8X,4H-5 */2(I10/)/3X,21HP0171280
     12 - TO REAL VARIABLES//                                           P0171290
     2         3X,16H-0.5555556E 01 */E17.7//                          P0171300
     3         3X,16H-0.5555556E 01 */E17.7//                          P0171310
     4         3X,16H 0.5555556E 01 */E17.7//                          P0171320
     5         3X,16H  0.555555E 04 */E17.6/)                          P0171330
C*****    TEST ASSIGNMENT OF DOUBLE PRECISION CONSTANTS                 P0171340
      JACVI = 66666.D-4                                                 P0171350
      IAC1I(3) = -.000000666666667D7                                    P0171360
      IAC2I(2,3) = -.06666666666666D+2                                  P0171370
      MCA3I(2,1,2)=66666.666666666D-1                                   P0171380
      ACVS = 66666666666666.D0                                          P0171390
      A1S(2) = +66666.D-4                                               P0171400
      A2S(2,1) = -.00000006666666D8                                     P0171410
      A3S(2,1,2) = -.06666666666666D+2                                  P0171420
      WRITE (NUVI,179)                                                  P0171430
179   FORMAT (   35H1 ASSIGN DOUBLE PRECISION CONSTANTS/                P0171440
     1/3X,24H1 - TO INTEGER VARIABLES)                                  P0171450
      WRITE(NUVI,7170)JACVI,IAC1I(3),IAC2I(2,3),MCA3I(2,1,2),ACVS,A1S(2)P0171460
     1,A2S(2,1),A3S(2,1,2)                                              P0171470
7170  FORMAT(  / 9X,3H6 */I10//8X,4H-6 */2(I10/)/3X,9H   6666 */I10//   P0171480
     1 3X,21H2 - TO REAL VARIABLES//                                    P0171490
     2         3X,16H 0.6666667E 14 */E17.7//                          P0171500
     3         3X,16H   0.66666E 01 */E17.5//                          P0171510
     4         3X,16H-0.6666666E 01 */E17.7//                          P0171520
     5         3X,16H-0.6666667E 01 */E17.7/)                          P0171530
      WRITE (NUVI,7171)                                                 P0171540
7171  FORMAT(//34H ALL TEST OUTPUT SHOULD BE CHECKED/                   P0171550
     1          34H AGAINST THE ASTERISKED (*) FIGURE/                  P0171560
     2          18H WHICH PRECEDES IT)                                  P0171570
C*****    END OF TEST SEGMENT 017                                       P0171580
C*****                                                                  P0171590
C*****  WHEN EXECUTING ONLY SEGMENT 017, THE  STOP  AND  END            P0171600
C*****  CARDS WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                 P0171610
C*****  IN COL 1 AND 2 REMOVED.                                         P0171620
C*****                                                                  P0171630
C=    STOP                                                              P0171640
C=    END                                                               P0171650
      STOP                                                              P017C1
      END                                                               P017C2
C*******************************************************************************P0200010
C*****                                                                  P0200020
C*****                          UGOTO - (020)                           P0200030
C*****                                                                  P0200040
C*******************************************************************************P0200050
C*****  GENERAL PURPOSE                                        ASA REF P0200060
C*****    TO TEST UNCONDITIONAL GO TO STATEMENTS              7.1.2.1.1P0200070
C*****  RESTRICTION OBSERVED                                            P0200080
C*****    GO TO STATEMENTS CAUSE BRANCHES ONLY TO             7.1.2 /54P0200090
C*****    EXECUTABLE STATEMENTS                                         P0200100
C*****  GENERAL COMMENTS                                                P0200110
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C*****    GO TO STATEMENTS ALSO TESTED IN SEGMENT 193                    P0200120
C*****                                                                   P0200130
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0200140
C*****                                                                   P0070340
C*****  WHEN EXECUTING ONLY SEGMENT 020, THE STATEMENT  NUVI = 6         P0070345
C*****  MUST HAVE THE C= IN COL 1 AND 2 REMOVED.                         P0070350
C*****                                                                   P0070355
C=     NUVI = 6                                                          P0070360
C*****                                                                   P0070365
       NUVI = 6                                                          P020B1
       WRITE (NUVI,200)                                                  P0200150
200    FORMAT (1H1,1X,33HUGOTO - (020) UNCONDITIONAL GO TO/16X,          P0200160
      19HSTATEMENT//2X,                                                  P0200170
      2 21HASA REFS. - 7.1.2.1.1//2X,7HRESULTS)                          P0200180
C*****    HEADER FOR SEGMENT 020 WRITTEN                                 P0200190
C*****    TEST BRANCH FORWARD                                            P0200200
       GO TO 201                                                         P0200210
203    MRRVI = 3                                                         P0200220
       WRITE (NUVI,7200) MRRVI                                           P0200230
7200   FORMAT (/4X,I1)                                                   P0200240
       GO TO 204                                                         P0200250
207    MRRVI = 7                                                         P0200260
       WRITE (NUVI,7200) MRRVI                                           P0200270
       GO TO 208                                                         P0200280
202    MRRVI = 2                                                         P0200290
       WRITE (NUVI,7200) MRRVI                                           P0200300
C*****    TEST BRANCH BACKWARD                                           P0200310
       GO TO 203                                                         P0200320
201    MRRVI = 1                                                         P0200330
       WRITE (NUVI,7200) MRRVI                                           P0200340
       GO TO 202                                                         P0200350
208    MRRVI = 8                                                         P0200360
       WRITE (NUVI,7200) MRRVI                                           P0200370
       GO TO 209                                                         P0200380
206    MRRVI = 6                                                         P0200390
       WRITE (NUVI,7200) MRRVI                                           P0200400
       GO TO 207                                                         P0200410
204    MRRVI = 4                                                         P0200420
       WRITE (NUVI,7200) MRRVI                                           P0200430
C*****    TEST BRANCH TO STATEMENT IMMEDIATELY AFTER                     P0200440
C*****    UNCONDITIONAL GO TO                                            P0200450
       GO TO 205                                                         P0200460
205    MRRVI = 5                                                         P0200470
       WRITE (NUVI,7200) MRRVI                                           P0200480
       GO TO 206                                                         P0200490
209    WRITE (NUVI,7201)                                                 P0200500
7201   FORMAT (//2X,35HTHIS TEST IS SUCCESSFUL ONLY IF THE/              P0200510
      12X,37HNUMBERS LISTED ABOVE ARE SEQUENTIALLY/                      P0200520
      22X,20HIN ORDER FROM 1 TO 8)                                       P0200530
C*****    END OF TEST SEGMENT 020                                        P0200540
C*****                                                                   P0200550
C*****  WHEN EXECUTING ONLY SEGMENT 020, THE  STOP  AND  END             P0200560
C*****  CARDS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=               P0200570
C*****  IN COL  1  AND  2  REMOVED.                                      P0200580
C=     STOP                                                              P0200590
C=     END                                                               P0200600
       STOP                                                              P020C1
       END                                                               P020C2
C*******************************************************************************P0210010
C*****                                                                   P0210020
C*****                          AGOTO - (021)                            P0210030
C*****                                                                   P0210040
C*******************************************************************************P0210050
C*****  GENERAL PURPOSE                                        ASA REF  P0210060
C*****    TO TEST GO TO ASSIGNMENT STATEMENTS                  7.1.1.3  P0210070
C*****    AND ASSIGNED GO TO STATEMENTS                        7.1.2.1.2P0210080
C*****  RESTRICTIONS OBSERVED                                           P0210090
C*****    INTEGER VARIABLE USED IN ASSIGN STATEMENTS          7.1.1.3  /06P0210100
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C*****     IS NEVER REFERENCED ELSEWHERE IN THIS SEGMENT      10.2.3    /12P0210110
C*****     ASSIGNED GO TO STATEMENTS CAUSE BRANCHES ONLY      7.1.1.3   /03P0210120
C*****     TO EXECUTABLE STATEMENTS                           7.1.2     /54P0210130
C*****     INTEGER VARIABLE ALWAYS CONTAINS STATEMENT         7.1.2.1.2/20P0210140
C*****     LABEL FROM THE ASSIGNED GO TO LIST                           P0210150
C*****   GENERAL COMMENTS                                               P0210160
C*****     IGVI AND KGVI ARE IMPLICITLY DEFINED               5.3       /07P0210170
C*****     GTVI IS EXPLICITLY DEFINED                         7.2.1.6   /55P0210180
C*****     ASSIGN AND ASSIGNED GO TO ALSO TESTED IN                     P0210190
C*****     SEGMENT 190                                                  P0210200
C*****                                                                  P0210210
C*****   S P E C I F I C A T I O N S   SEGMENT 021                       P0210220
C*****                                                                  P0010480
C*****   WHEN EXECUTING ONLY SEGMENT 021, THE SPECIFICATION STATEMENTS  P0010485
C*****   WHICH APPEAR AS COMMENTS, MUST HAVE THE C= IN COL              P0010490
C*****   1  AND  2  REMOVED                                            P0010495
C=     INTEGER GTVI                                                     P0010500
C*****                                                                  P0010505
       INTEGER GTVI                                                     P021A1
C*****   O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0210230
C*****                                                                  P0070370
C*****   WHEN EXECUTING ONLY SEGMENT 021, THE STATEMENT  NUVI = 6       P0070375
C*****   MUST HAVE THE C= IN COL 1 AND 2 REMOVED.                       P0070380
C*****                                                                  P0070385
C=     NUVI = 6                                                         P0070390
C*****                                                                  P0070395
       NUVI = 6                                                         P021B1
       WRITE (NUVI,210)                                                 P0210240
210    FORMAT (1H1,1X,33HAGOTO - (021) ASSIGN AND ASSIGNED/16X,         P0210250
      15HGO TO//2X,                                                     P0210260
      231HASA REFS. - 7.1.1.3 AND 7.1.2.1//2X,7HRESULTS)                P0210270
C*****     HEADER FOR SEGMENT 021 WRITTEN                               P0210280
C*****     TEST FORWARD BRANCHING GO TO WITH ONLY ONE                   P0210290
C*****     LABEL IN THE BRANCH LIST                                     P0210300
       ASSIGN 211 TO IGVI                                               P0210310
       GO TO IGVI, (211)                                                P0210320
C*****     TEST FORWARD BRANCHING GO TO WHICH BRANCHES                   P0210330
C*****     TO IMMEDIATELY FOLLOWING STATEMENT                           P0210340
212    MRRVI = 2                                                        P0210350
       WRITE (NUVI,8212) MRRVI                                          P0210360
       ASSIGN 213 TO GTVI                                               P0210370
       GO TO GTVI, (213)                                                P0210380
C*****     TEST FORWARD BRANCHING GO TO WHERE ALL BRANCHES               P0210390
C*****     ARE IDENTICAL                                                P0210400
213    MRRVI = 3                                                        P0210410
       WRITE (NUVI,8212) MRRVI                                          P0210420
       ASSIGN 214 TO GTVI                                               P0210430
       GO TO GTVI, (214,214,214)                                        P0210440
C*****     TEST FORWARD BRANCHING GO TO WITH SEVERAL UNIQUE              P0210450
C*****     BRANCHES IN THE LIST                                         P0210460
215    MRRVI = 5                                                        P0210470
       WRITE (NUVI,8212) MRRVI                                          P0210480
       ASSIGN 217 TO KGVI                                               P0210490
       ASSIGN 216 TO IGVI                                               P0210500
       GO TO IGVI, (217,218,216,219)                                    P0210510
C*****     TEST BACKWARD BRANCHING GO TO WHERE BRANCHES                  P0210520
C*****     ARE IDENTICAL                                                P0210530
214    MRRVI = 4                                                        P0210540
       WRITE (NUVI,8212) MRRVI                                          P0210550
       ASSIGN 215 TO IGVI                                               P0210560
       GO TO IGVI, (215,215)                                            P0210570
C*****     TEST BACKWARD BRANCHING GO TO WITH ONLY ONE LABEL             P0210580
C*****     IN THE BRANCH LIST                                           P0210590
211    MRRVI = 1                                                        P0210600
       WRITE (NUVI,8212) MRRVI                                          P0210610
       ASSIGN 212 TO GTVI                                               P0210620
       GO TO GTVI, (212)                                                P0210630
C*****     IN THE FIRST PART OF THIS TEST, ALL GO TO STATEMENTS          P0210640
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C*****    WERE EXECUTED ONLY ONCE, IMMEDIATELY AFTER THE                P0210650
C*****    INTEGER VARIABLE WAS DEFINED.  ALL GO TO STATEMENTS           P0210660
C*****    WHICH FOLLOW WILL BE EXECUTED MORE THAN ONCE.                 P0210670
C*****    VALUE OF IGVI IS ALWAYS 8216 IN THIS PART OF THE              P0210680
C*****    TEST UNTIL FINAL MESSAGE IS TO BE WRITTEN                     P0210690
216   MRRVI = 6                                                         P0210700
      WRITE (NUVI,8212) MRRVI                                           P0210710
      ASSIGN 8216 TO IGVI                                               P0210720
8216  GO TO KGVI, (217,219,7210,7214,8210)                              P0210730
217   MRRVI = 7                                                         P0210740
      ASSIGN 218 TO GTVI                                                P0210750
      GO TO 8211                                                        P0210760
218   MRRVI = 8                                                         P0210770
      ASSIGN 219 TO KGVI                                                P0210780
      GO TO 8213                                                        P0210790
219   MRRVI = 9                                                         P0210800
      ASSIGN 7210 TO KGVI                                               P0210810
      GO TO 8213                                                        P0210820
7210  MRRVI = 10                                                        P0210830
      ASSIGN 7211 TO GTVI                                               P0210840
      GO TO 8211                                                        P0210850
7211  MRRVI = 11                                                        P0210860
      ASSIGN 7212 TO GTVI                                               P0210870
      GO TO 8211                                                        P0210880
7212  MRRVI = 12                                                        P0210890
      ASSIGN 7213 TO GTVI                                               P0210900
      GO TO 8211                                                        P0210910
7213  MRRVI = 13                                                        P0210920
      ASSIGN 7214 TO KGVI                                               P0210930
      GO TO 8213                                                        P0210940
7214  MRRVI = 14                                                        P0210950
      ASSIGN 7215 TO GTVI                                               P0210960
      GO TO 8211                                                        P0210970
7215  MRRVI = 15                                                        P0210980
      ASSIGN 7216 TO GTVI                                               P0210990
      GO TO 8211                                                        P0211000
7216  MRRVI = 16                                                        P0211010
      ASSIGN 7217 TO GTVI                                               P0211020
      GO TO 8211                                                        P0211030
7217  MRRVI = 17                                                        P0211040
      ASSIGN 7218 TO GTVI                                               P0211050
      GO TO 8211                                                        P0211060
7218  MRRVI = 18                                                        P0211070
      ASSIGN 7219 TO GTVI                                               P0211080
      GO TO 8211                                                        P0211090
7219  MRRVI = 19                                                        P0211100
      ASSIGN 8210 TO KGVI                                               P0211110
      GO TO 8213                                                        P0211120
8210  MRRVI = 20                                                        P0211130
      ASSIGN 8214 TO IGVI                                               P0211140
      GO TO 8213                                                        P0211150
8211  WRITE (NUVI,8212) MRRVI                                           P0211160
8212  FORMAT (/6X,I2)                                                   P0211170
C*****    TEST GO TO WITH CONTINUATION CARD                             P0211180
      GO TO GTVI, (218, 7211, 7212, 7213, 7215, 7216, 7217, 7218,       P0211190
     1            7219)                                                P0211200
8213  WRITE (NUVI,8212) MRRVI                                           P0211210
      GO TO IGVI, (8216,8214)                                           P0211220
8214  WRITE (NUVI,8215)                                                 P0211230
8215  FORMAT (1H0,2X,35HTHIS TEST IS SUCCESSFUL ONLY IF THE/            P0211240
     1   37HNUMBERS LISTED ABOVE ARE SEQUENTIALLY/                      P0211250
     2 6X,21HIN ORDER FROM 1 TO 20)                                     P0211260
C****     END OF TEST SEGMENT 021                                       P0211270
C***                                                                    P0211280
C*****  WHEN EXECUTING ONLY SEGMENT 021, THE  STOP  AND  END           P0211290
C*****  CARDS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=             P0211300
C*****  IN COL  1  AND  2  REMOVED.                                    P0211310
C=    STOP                                                            P0211320
```

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C=     END                                                              P0211330
       STOP                                                             P021C1
       ENO                                                              P021C2
C*************************************************************************P0220010
C*****                                                                  P0220020
C*****                          CGOTO - (022)                           P0220030
C*****                                                                  P0220040
C*************************************************************************P0220050
C*****  GENERAL PURPOSE                                      ASA REF    P0220060
C*****    TO TEST COMPUTEO GO TO STATEMENTS                  7.1.2.1.3  P0220070
C*****  RESTRICTIONS OBSERVEO                                           P0220080
C*****    VALUE OF INTEGER VARIABLE IS NEVER LESS THAN 1     7.1.2.1.3/33P0220090
C*****    ANO NEVER LARGER THAN THE NUMBER OF BRANCHES                  P0220100
C*****    INTEGER VARIABLES USEO IN COMPUTEO GO TO STMNTS.   10.2.8   /09P0220110
C*****    ARE NOT EQUATED TO AVOID SECONO LEVEL              10.3     /13P0220120
C*****    OEFINITION PROBLEMS                                           P0220130
C*****  GENERAL COMMENTS                                                P0220140
C*****    IGVI ANO KGVI ARE IMPLICITLY DEFINEO               5.3      /07P0220150
C*****    GTVI IS EXPLICITLY OEFINED                         7.2.1.6  /55P0220160
C*****    COMPUTEO GO TO ALSO TESTEO IN SEGMENT 162                     P0220170
C*****                                                                  P0220180
C*****  S P E C I F I C A T I O N S   SEGMENT 022                       P0220190
C*****                                                                  P0010510
C*****  WHEN EXECUTING ONLY SEGMENT 022, THE SPECIFICATION STATEMENTS   P0010515
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE C= IN COL               P0010520
C*****  1  ANO  2  REMOVEO                                              P0010525
C*****                                                                  P0010530
C=     INTEGER GTVI                                                     P0010535
C*****                                                                  P0010540
       INTEGER GTVI                                                     P022A1
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0220200
C*****                                                                  P0070400
C*****  WHEN EXECUTING ONLY SEGMENT 022, THE STATEMENT  NUVI = 6        P0070405
C*****  MUST HAVE THE C= IN COL 1 AND 2 REMOVED.                        P0070410
C*****                                                                  P0070415
C=     NUVI = 6                                                         P0070420
C*****                                                                  P0070425
       NUVI = 6                                                         P022B1
       WRITE (NUVI,220)                                                 P0220210
220    FORMAT (1H1,1X,28HCGOTO - (022) COMPUTED GO TO//2X,              P0220220
     120HASA REF. - 7.1.2.1.3//2X,7HRESULTS)                            P0220230
C*****    HEAOER FOR SEGMENT 022 WRITTEN                                P0220240
C*****    TEST FORWARD BRANCHING GO TO WITH ONLY ONE                    P0220250
C*****    LABEL IN BRANCH LIST                                          P0220260
       IGVI = 1                                                         P0220270
       GO TO (221), IGVI                                                P0220280
C*****    TEST FORWARO BRANCHING GO TO WHICH BRANCHES                   P0220290
C*****    TO IMMEOIATELY FOLLOWING STATEMENT                            P0220300
222    MRRVI = 2                                                        P0220310
       WRITE (NUVI,8222) MRRVI                                          P0220320
       GO TO (223), GTVI                                                P0220330
C*****                                                                  P0220340
C*****    TEST FORWARO BRANCHING GO TO WHERE SOME BRANCHES               P0220350
C*****    ARE IOENTICAL                                                 P0220360
223    MRRVI = 3                                                        P0220370
       WRITE (NUVI,8222) MRRVI                                          P0220380
       GTVI = 2                                                         P0220390
       GO TO (225,224,225), GTVI                                        P0220400
C*****    TEST FORWARO BRANCHING GO TO WITH SEVERAL UNIQUE              P0220410
C*****    BRANCHES IN LIST                                              P0220420
225    MRRVI = 5                                                        P0220430
       WRITE (NUVI,8222) MRRVI                                          P0220440
       KGVI = 1                                                         P0220450
       IGVI = 3                                                         P0220460
       GO TO (227,228,226,229), IGVI                                    P0220470
C*****    TEST BACKWARO BRANCHING GO TO WHERE SOME                      P0220480
C*****    BRANCHES ARE IDENTICAL                                        P0220490
224    MRRVI = 4                                                        P0220500
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      WRITE (NUVI,8222) MRRVI                                          P0220510
      IGVI = 4                                                         P0220520
      GO TO (226,226,226,225), IGVI                                    P0220530
C*****    TEST BACKWARD BRANCHING GO TO WITH ONLY ONE                  P0220540
C*****    LABEL IN BRANCH LIST                                         P0220550
221   MRRVI = 1                                                        P0220560
      WRITE (NUVI, 8222) MRRVI                                         P0220570
      GTVI = 1                                                         P0220580
      GO TO (222), GTVI                                                P0220590
C*****    IN THE FIRST PART OF THIS TEST, ALL GO TO STATEMENTS         P0220600
C*****    WERE EXECUTED ONLY ONCE, IMMEDIATELY AFTER THE               P0220610
C*****    INTEGER VARIABLE WAS DEFINED.  ALL GO TO STATEMENTS          P0220620
C*****    WHICH FOLLOW WILL BE EXECUTED MORE THAN ONCE.                P0220630
C*****    VALUE OF IGVI IS ALWAYS 1 IN THIS PART OF THE TEST           P0220640
C*****    UNTIL THE FINAL MESSAGE IS TO BE WRITTEN                     P0220650
226   MRRVI = 6                                                        P0220660
      IGVI = 1                                                         P0220670
      WRITE (NUVI,8222) MRRVI                                          P0220680
8226  GO TO (227,229,7220,7224,8220), KGVI                             P0220690
227   MRRVI = 7                                                        P0220700
      GTVI = 1                                                         P0220710
      GO TO 8221                                                       P0220720
228   MRRVI = 8                                                        P0220730
      KGVI = 2                                                         P0220740
      GO TO 8223                                                       P0220750
229   MRRVI = 9                                                        P0220760
      KGVI = 3                                                         P0220770
      GO TO 8223                                                       P0220780
7220  MRRVI = 10                                                       P0220790
      GTVI = 2                                                         P0220800
      GO TO 8221                                                       P0220810
7221  MRRVI = 11                                                       P0220820
      GTVI = 5                                                         P0220830
      GO TO 8221                                                       P0220840
7222  MRRVI = 12                                                       P0220850
      GTVI = 4                                                         P0220860
      GO TO 8221                                                       P0220870
7223  MRRVI = 13                                                       P0220880
      KGVI = 4                                                         P0220890
      GO TO 8223                                                       P0220900
7224  MRRVI = 14                                                       P0220910
      GTVI = 6                                                         P0220920
      GO TO 8221                                                       P0220930
7225  MRRVI = 15                                                       P0220940
      GTVI = 7                                                         P0220950
      GO TO 8221                                                       P0220960
7226  MRRVI = 16                                                       P0220970
      GTVI = 9                                                         P0220980
      GO TO 8221                                                       P0220990
7227  MRRVI = 17                                                       P0221000
      GTVI = 8                                                         P0221010
      GO TO 8221                                                       P0221020
7228  MRRVI = 18                                                       P0221030
      GTVI = 3                                                         P0221040
      GO TO 8221                                                       P0221050
7229  MRRVI = 19                                                       P0221060
      KGVI = 5                                                         P0221070
      GO TO 8223                                                       P0221080
8220  MRRVI = 20                                                       P0221090
      IGVI = 2                                                         P0221100
      GO TO 8223                                                       P0221110
8221  WRITE (NUVI,8222) MRRVI                                          P0221120
8222  FORMAT(/6X,I2)                                                   P0221130
C*****    TEST GO TO STATEMENT WITH CONTINUATION LINE                  P0221140
      GO TO (228, 7221, 7229, 7223, 7222, 7225, 7226, 7228,            P0221150
     1       7227), GTVI                                               P0221160
8223  WRITE (NUVI,8222) MRRVI                                          P0221170
      GO TO (8226,8224), IGVI                                          P0221180
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8224  WRITE (NUVI,8225)                                                 P0221190
8225  FORMAT (1H0,2X,35HTHIS TEST IS SUCCESSFUL ONLY IF THE/            P0221200
     12X,37HNUMBERS LISTEO ABOVE ARE SEQUENTIALLY/                      P0221210
     22X,21HIN ORDER FROM 1 TO 20)                                      P0221220
C*****    END OF TEST SEGMENT 022                                       P0221230
C*****                                                                  P0221240
C*****  WHEN EXECUTING ONLY SEGMENT 022, THE  STOP  AND  END            P0221250
C*****  CAROS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=              P0221260
C*****  IN COL  1  AND  2  REMOVEO.                                     P0221270
C=    STOP                                                              P0221280
C=    END                                                               P0221290
      STOP                                                              P022C1
      END                                                               P022C2
C*************************************************************************P0300010
C*****                                                                  P0300020
C*****                          ARBAO - (030)                           P0300030
C*****                                                                  P0300040
C*************************************************************************P0300050
C*****  GENERAL PURPOSE                                          ASA REF P0300060
C*****    TEST THAT EXPRESSIONS INVOLVING THE ADDITION             6.1   P0300070
C*****    OF INTEGER OR REAL VALUES MAY BE FORMED                        P0300080
C*****  GENERAL COMMENTS                                                 P0300090
C*****    TYPES ARE NEVER MIXEO.                                         P0300100
C*****    VARIABLES, ARRAY ELEMENTS AND CONSTANTS ARE USED               P0300110
C*****    IN A VARIETY OF COMBINATIONS.                                  P0300120
C*****                                                                   P0300130
C*****  S P E C I F I C A T I O N S   SEGMENT 030                        P0300140
C*****                                                                  P0010550
C*****  WHEN EXECUTING ONLY SEGMENT 030, THE SPECIFICATION STATEMENTS   P0010555
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE C= IN COL               P0010560
C*****  1  AND  2  REMOVED                                              P0010565
C*****                                                                  P0010570
C=    DIMENSION A1S(5),A2S(2,2),IAC1I(5),IAC2I(2,7)                     P0010575
C*****                                                                  P0010580
      DIMENSION A1S(5),A2S(2,2),IAC1I(5),IAC2I(2,7)                     P030A1
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0300150
C*****                                                                  P0070430
C*****  WHEN EXECUTING ONLY SEGMENT 030, THE STATEMENT  NUVI = 6        P0070435
C*****  MUST HAVE THE C= IN COL 1 AND 2 REMOVEO.                        P0070440
C*****                                                                  P0070445
C=    NUVI = 6                                                          P0070450
C*****                                                                  P0070455
      NUVI = 6                                                          P030B1
      WRITE (NUVI,301)                                                  P0300160
301   FORMAT (1H1,1X,28HARBAD - (030) BASIC ADDITION//2X,               P0300170
     -14HASA REF. - 6.1//2X,7HRESULTS)                                  P0300180
C*****    HEADER FOR SEGMENT 030 WRITTEN                                P0300190
      WRITE (NUVI,302)                                                  P0300200
302   FORMAT (//2X,16HINTEGER AODITION)                                 P0300210
C*****    TEST 1 - AOO 2 INTEGER VARIABLES (ONE CONTAINS MINUS VALUE)   P0300220
      MRRVI=1                                                           P0300230
      JACVI=2                                                           P0300240
      KBCVI = -2                                                        P0300250
      IHOVI=JACVI+KBCVI                                                 P0300260
      WRITE (NUVI,303) MRRVI, IHDVI                                     P0300270
303   FORMAT (/6H  TEST,I3,I6)                                          P0300280
C*****    TEST 2 - REVERSE VARIABLES IN TEST 1                          P0300290
      MRRVI = 2                                                         P0300300
      IGOVI=KBCVI+JACVI                                                 P0300310
      WRITE (NUVI,303) MRRVI, IGDVI                                     P0300320
C*****    TEST 3 - AOO 2 CONSTANTS                                      P0300330
      MRRVI = 3                                                         P0300340
      IAC1I(1) = 2+(-2)                                                 P0300350
      WRITE (NUVI,303) MRRVI, IAC1I(1)                                  P0300360
C*****    TEST 4 - AOO 2 ARRAY ELEMENTS (ONE CONTAINS MINUS VALUE)      P0300370
      MRRVI = 4                                                         P0300380
      IAC1I(3) = 3                                                      P0300390
      IAC2I(1,3) = - 3                                                  P0300400
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      IAC2I(2,2) = IAC1I(3)+IAC2I(1,3)                                  P0300410
      WRITE (NUVI,303) MRRVI, IAC2I(2,2)                                P0300420
C*****    TEST 5 - ADD 8 INTEGER VARIABLES                              P0300430
      MRRVI = 5                                                         P0300440
      LCCVI = -6                                                        P0300450
      MDCVI=-2                                                          P0300460
      NECVI = +18                                                       P0300470
      IFDVI = JACVI+KBCVI+LCCVI+MDCVI+MDCVI+LCCVI+KBCVI+NECVI           P0300480
      WRITE (NUVI,303) MRRVI, IFDVI                                     P0300490
C*****    TEST 6 - ADD COMBINATION OF VARIABLES, ARRAY ELEMENTS         P0300500
C*****    AND CONSTANTS                                                 P0300510
      MRRVI = 6                                                         P0300520
      IAC2I(2,2) = -2                                                   P0300530
      IFDVI = IAC1I(3)+IAC2I(1,3)+IAC2I(2,2)+JACVI+KBCVI+LCCVI+7+1      P0300540
      WRITE (NUVI,303) MRRVI, IFDVI                                     P0300550
C*****    TEST 7 - ADD 2 REAL VARIABLES                                 P0300560
      WRITE (NUVI,304)                                                  P0300570
304   FORMAT (//15H  REAL ADDITION)                                     P0300580
      MRRVI = 7                                                         P0300590
      ACVS = -2.0                                                       P0300600
      BCVS = 2.0E0                                                      P0300610
      HHCVS = ACVS+BCVS                                                 P0300620
      WRITE (NUVI,305) MRRVI, HHCVS                                     P0300630
305   FORMAT (/6H  TEST,I3,F7.1)                                        P0300640
C*****    TEST 8 - REVERSE ORDER OF VARIABLES IN TEST 7                 P0300650
      MRRVI = 8                                                         P0300660
      GGCVS = BCVS + ACVS                                               P0300670
      WRITE (NUVI,305) MRRVI, GGCVS                                     P0300680
C*****    TEST 9 - ADD 4 REAL VARIABLES                                 P0300690
      MRRVI = 9                                                         P0300700
      FFCVS = ACVS + BCVS + ACVS + BCVS                                 P0300710
      WRITE (NUVI,305) MRRVI, FFCVS                                     P0300720
C*****    TEST 10 - ADD 2 REAL CONSTANTS                                P0300730
      MRRVI = 10                                                        P0300740
      A2S(1,2) = 3.5 + (-3.5)                                           P0300750
      WRITE (NUVI,305) MRRVI, A2S(1,2)                                  P0300760
C*****    TEST 11 - ADD REAL ARRAY ELEMENTS                             P0300770
      MRRVI = 11                                                        P0300780
      A1S(1) = -25.E-1                                                  P0300790
      ACVS  = 2.5                                                       P0300800
      A2S  (1,1) = -7.0                                                 P0300810
      FFCVS = A1S(1) + A2S(1,1) + 9.5                                   P0300820
      WRITE ( NUVI,305) MRRVI, FFCVS                                    P0300830
C*****    TEST 12 - ADD COMBINATION OF VARIABLES, ARRAY ELEMENTS        P0300840
C*****    AND CONSTANTS                                                 P0300850
      MRRVI = 12                                                        P0300860
      FFCVS = A1S(1) + ACVS + 7.0 + A2S(1,1)                            P0300870
      WRITE (NUVI,305) MRRVI, FFCVS                                     P0300880
      WRITE (NUVI,306)                                                  P0300890
306   FORMAT (//35H  ALL ABOVE ANSWERS SHOULD BE 0 FOR/                 P0300900
     1 31H  THIS SEGMENT TO BE SUCCESSFUL)                              P0300910
C*****    END OF TEST SEGMENT 030                                       P0300920
C*****                                                                  P0300930
C*****  WHEN EXECUTING ONLY SEGMENT 030, THE  STOP  AND  END            P0300940
C*****  CARDS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=              P0300950
C*****  IN COL  1  AND  2  REMOVED.                                     P0300960
C=    STOP                                                              P0300970
C=    END                                                               P0300980
      STOP                                                              P030C1
      END                                                               P030C2
C*******************************************************************************P0310010
C*****                                                                  P0310020
C*****                          ARFAD - (031)                           P0310030
C*****                                                                  P0310040
C*******************************************************************************P0310050
C*****  GENERAL PURPOSE                                        ASA REF  P0310060
C*****    TEST THAT EXPRESSIONS INVOLVING THE ADDITION OF        6.1    P0310070
C*****    DOUBLE PRECISION VALUES MAY BE FORMED                         P0310080
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C*****  GENERAL COMMENTS                                                P0310090
C*****    VARIABLES, ARRAY ELEMENTS AND CONSTANTS ARE USED IN A         P0310100
C*****   VARIETY OF COMBINATIONS                                        P0310110
C*****                                                                  P0310120
C*****  S P E C I F I C A T I O N S   SEGMENT 031                       P0310130
C*****                                                                  P0010590
C*****  WHEN EXECUTING ONLY SEGMENT 031, THE SPECIFICATION STATEMENTS   P0010595
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE C= IN COL               P0010600
C*****  1  AND  2  REMOVED                                             P0010605
C*****                                                                  P0010610
C=     DOUBLE PRECISION ACVD,BCVD,FFCVD,GGCVD,HHCVD                    P0010615
C=    1,EP1D(43),BC2D(7,4),CC3D(7,2,2)                                 P0010620
C*****                                                                  P0010625
      DOUBLE PRECISION ACVD,BCVD,FFCVD,GGCVD,HHCVD                     P031A1
     1,EP1D(43),BC2D(7,4),CC3D(7,2,2)                                  P031A2
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0310140
C*****                                                                  P0070460
C*****  WHEN EXECUTING ONLY SEGMENT 031, THE STATEMENT  NUVI = 6        P0070465
C*****  MUST HAVE THE C= IN COL 1 AND 2 REMOVED.                        P0070470
C*****                                                                  P0070475
C=     NUVI = 6                                                         P0070480
C*****                                                                  P0070485
      NUVI = 6                                                         P031B1
      WRITE (NUVI,310)                                                 P0310150
310   FORMAT (1H1,1X,27HARFAD - (031) D.P. ADDITION//                  P0310160
     -16H  ASA REF. - 6.1//9H  RESULTS)                                P0310170
C*****    HEADER FOR SEGMENT 031 WRITTEN                               P0310180
      ACVD =  -.0141421356237309502                                    P0310190
      BCVD = 14.142135623730950-1                                      P0310200
      EP1D(20) = -4.1231056256176600                                   P0310210
      BC2D(6,3) =     .20615528128088301                               P0310220
      HHCVD=ACVD+BCVD                                                  P0310230
      GGCVD=BCVD+ACVD                                                  P0310240
      EP1D(34) = .00303 + (-300.0D-2)                                  P0310250
      FFCVD = BCVD+ACVD+ACVD+BCVD                                      P0310260
      CC3D(7,1,1)=EP1D(20)+BC2D(6,3)+206.15528128088300-2 +41.23105625617P0310270
     166D-1 + EP1D(20)                                                 P0310280
      WRITE (NUVI,312) HHCVD, GGCVD, FFCVD, EP1D(34), CC3D(7,1,1)      P0310290
312   FORMAT (//5(D22.10//)//38H  THE 5 ANSWERS ABOVE SHOULD BE 0 PLUS/ P0310300
     137H  OR MINUS AN ERROR FACTOR OF 0.1D-13)                        P0310310
C*****    END OF TEST SEGMENT 031                                      P0310320
C*****                                                                  P0310330
C*****  WHEN EXECUTING ONLY SEGMENT 031, THE  STOP  AND  END            P0310340
C*****  CARDS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=              P0310350
C*****  IN COL  1  AND  2  REMOVED.                                     P0310360
C=     END                                                              P0310370
C=     STOP                                                             P0310380
      STOP                                                             P031C1
      END                                                              P031C2
C*******************************************************************************P0320010
C*****                                                                  P0320020
C*****                          ARBSB - (032)                           P0320030
C*****                                                                  P0320040
C*******************************************************************************P0320050
C*****  GENERAL PURPOSE                                        ASA REF  P0320060
C*****    TEST THAT EXPRESSIONS INVOLVING THE SUBTRACTION OF     6.1    P0320070
C*****    INTEGER OR REAL VALUES MAY BE FORMED                          P0320080
C*****  GENERAL COMMENTS                                                P0320090
C*****    TYPES ARE NEVER MIXED                                         P0320100
C*****    VARIABLES, ARRAY ELEMENTS AND CONSTANTS ARE USED IN A         P0320110
C*****    VARIETY OF COMBINATIONS.                                      P0320120
C*****  S P E C I F I C A T I O N S   SEGMENT 032                       P0320130
C*****                                                                  P0010630
C*****  WHEN EXECUTING ONLY SEGMENT 032, THE SPECIFICATION STATEMENTS   P0010635
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE C= IN COLUMNS           P0010640
C*****  1  AND  2  REMOVED                                             P0010645
C*****                                                                  P0010650
C=     DIMENSION A1S(5),A2S(2,2),IAC1I(5),IAC2I(2,7)                    P0010655
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C*****                                                                  P0010660
      DIMENSION A1S(5),A2S(2,2),IAC1I(5),IAC2I(2,7)                     P032A1
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0320140
C*****                                                                  P0070490
C*****  WHEN EXECUTING ONLY SEGMENT 032, THE STATEMENT  NUVI = 6        P0070495
C*****  MUST HAVE THE C= IN COL 1 AND 2 REMOVED.                        P0070500
C*****                                                                  P0070505
C=    NUVI = 6                                                          P0070510
C*****                                                                  P0070515
      NUVI = 6                                                          P032B1
      WRITE (NUVI,320)                                                  P0320150
320   FORMAT (1H1,1X,31HARBSB - (032) BASIC SUBTRACTION//               P0320160
     1 17H  ASA REFS. - 6.1//2X,7HRESULTS)                              P0320170
C*****    HEAOER FOR SEGMENT 032 WRITTEN                                P0320180
      MRRVI = 1                                                         P0320190
      WRITE (NUVI,321)MRRVI                                             P0320200
321   FORMAT (//2X,4HTEST,I1,1X,19HINTEGER SUBTRACTION)                 P0320210
      JACVI=3                                                           P0320220
      IAC1I(1)=3                                                        P0320230
      IHDVI=JACVI-IAC1I(1)                                              P0320240
      IGOVI=IAC1I(1)-JACVI                                              P0320250
      IFOVI=JACVI-IAC1I(1)-IAC1I(1)+JACVI                               P0320260
      IAC2I(2,3) = 3-2-1                                                P0320270
      IAC2I(1,1) = 6 - JACVI - IAC1I(1)                                 P0320280
      WRITE (NUVI,323) IHOVI,IGDVI, IFDVI, IAC2I(2,3), IAC2I(1,1)       P0320290
323   FORMAT (/5(I11/))                                                 P0320300
      MRRVI = 2                                                         P0320310
328   WRITE (NUVI,329)MRRVI                                             P0320320
329   FORMAT (//2X,4HTEST,I1,1X,16HREAL SUBTRACTION)                    P0320330
      ACVS=5.1E1                                                        P0320340
      BCVS=.51E2                                                        P0320350
      HHCVS=ACVS-BCVS                                                   P0320360
      GGCVS=BCVS-ACVS                                                   P0320370
      FFCVS=ACVS-BCVS+BCVS-ACVS                                         P0320380
      A2S(1,2) = 2.1E1                                                  P0320390
      A1S(1) = ACVS - A2S(1,2) - 30.0                                   P0320400
      WRITE (NUVI,324) HHCVS, GGCVS, FFCVS, A1S(1)                      P0320410
324   FORMAT (/4(F11.1/)/34H ALL ABOVE ANSWERS SHOULO BE 0 FOR/         P0320420
     1 31H  THIS SEGMENT TO BE SUCCESSFUL)                              P0320430
C*****    ENO OF TEST SEGMENT 032                                       P0320440
C*****                                                                  P0320450
C*****  WHEN EXECUTING ONLY SEGMENT 032, THE  STOP  AND  END            P0320460
C*****  CAROS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=              P0320470
C*****  IN COL  1  AND  2  REMOVED.                                     P0320480
C=    STOP                                                              P0320490
C=    END                                                               P0320500
      STOP                                                              P032C1
      ENO                                                               P032C2
C*********************************************************************P0330010
C*****                                                                  P0330020
C*****                          ARFSB - (033)                           P0330030
C*****                                                                  P0330040
C*********************************************************************P0330050
C*****  GENERAL PURPOSE                                        ASA REF P0330060
C*****    TEST THAT EXPRESSIONS INVOLVING THE SUBTRACTION OF     6.1   P0330070
C*****    DOUBLE PRECISION VALUES MAY BE FORMEO                        P0330080
C*****  GENERAL COMMENTS                                               P0330090
C*****    VARIABLES, ARRAY ELEMENTS AND CONSTANTS ARE USEO IN A        P0330100
C*****    VARIETY OF COMBINATIONS                                      P0330110
C*****                                                                 P0330120
C*****  S P E C I F I C A T I O N S   SEGMENT 033                       P0330130
C*****                                                                 P0010670
C*****  WHEN EXECUTING ONLY SEGMENT 033, THE SPECIFICATION STATEMENTS  P0010675
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE C= IN COLUMNS          P0010680
C*****  1  AND  2  REMOVED                                            P0010685
C*****                                                                 P0010690
C=    OOUBLE PRECISION ACVO,BCVO,CCVO,OCVO,GGCVO,HHCVD,DPCVO,FFCVO     P0010695
C=   1,AC1D(10),A2O(2,2),A3D(2,2,2)                                    P0010700
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C*****                                                                  P0010705
      DDUBLE PRECISIDN ACVD,BCVD,CCVD,DCVD,GGCVD,HHCVD,DPCVD,FFCVD      P033A1
     1,AC1D(10),A2D(2,2),A3D(2,2,2)                                     P033A2
C*****  D U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0330140
C*****                                                                  P0070520
C*****  WHEN EXECUTING DNLY SEGMENT 033, THE STATEMENT  NUVI = 6        P0070525
C*****  MUST HAVE THE C= IN CDL 1 AND 2 REMDVED.                        P0070530
C*****                                                                  P0070535
C=    NUVI = 6                                                          P0070540
C*****                                                                  P0070545
      NUVI = 6                                                          P033B1
      WRITE (NUVI,330)                                                  P0330150
330   FORMAT (1H1,1X,30HARFSB - (033) D.P. SUBTRACTION//                P0330160
     -16H  ASA REF. - 6.1//2X,7HRESULTS)                                P0330170
C*****    HEADER FDR SEGMENT 033 WRITTEN                                P0330180
      ACVD=1.0D2                                                        P0330190
      BCVD=.3D1                                                         P0330200
      CCVD=15.D0                                                        P0330210
      AC1D(1) = 60.D-1                                                  P0330220
      A2D(1,1) = -.02D2                                                 P0330230
      A3D(1,2,1) = 4000.D-3                                             P0330240
C*****    TWD TERM SUBTRACTION                                          P0330250
      HHCVD= ACVD-BCVD                                                  P0330260
      HHCVD= HHCVD-97.0D0                                               P0330270
      GGCVD=1.0D0-AC1D(1)                                               P0330280
      GGCVD=GGCVD+5.0D0                                                 P0330290
      DCVD = 4.0D0 - A3D(1,2,1)                                         P0330300
      WRITE (NUVI,331) HHCVD, GGCVD, DCVD                               P0330310
C*****    THREE TERM SUBTRACTIDN                                        P0330320
      HHCVD= ACVD-BCVD-97.0D0                                           P0330330
      GGCVD = 16.0D0 - CCVD - 1.0D0                                     P0330340
      DCVD = A3D(1,2,1)-A2D(1,1) -6.0D0                                 P0330350
      WRITE (NUVI,331) HHCVD, GGCVD, DCVD                               P0330360
C*****    FOUR TERM SUBTRACTIDN                                         P0330370
      DPCVD = 6.855654600401040D0                                       P0330380
      FFCVD = (+.342782730020052D1)                                     P0330390
      GGCVD = DPCVD - FFCVD - 42.782730020052D-2 - 300D-2               P0330400
      HHCVD=ACVD-AC1D(1)-AC1D(1)-8.8D1                                  P0330410
      DCVD = CCVD - A2D(1,1) - 110.D-1 - AC1D(1)                        P0330420
      WRITE (NUVI,332) HHCVD, DCVD   , GGCVD                            P0330430
331   FDRMAT (//3(D22.10/))                                            P0330440
332   FDRMAT (//3(D22.10/)//36H  THE ANSWERS ABDVE SHDULD BE 0 PLUS/    P0330450
     137H  OR MINUS AN ERRDR FACTDR DF 0.1D-13)                         P0330460
C*****    END DF TEST SEGMENT 033                                       P0330470
C*****                                                                  P0330480
C*****  WHEN EXECUTING ONLY SEGMENT 033, THE  STDP  AND  END            P0330490
C*****  CARDS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=              P0330500
C*****  IN CDL  1  AND  2  REMDVED.                                     P0330510
C=    STDP                                                              P0330520
C=    END                                                               P0330530
      STDP                                                              P033C1
      END                                                               P033C2
C*****************************************************************************P0340010
C*****                                                                  P0340020
C*****                          ARBAS - (034)                           P0340030
C*****                                                                  P0340040
C*****************************************************************************P0340050
C*****  GENERAL PURPOSE                                          ASA REF P0340060
C*****    TEST THAT EXPRESSIDNS INVDLVING THE ADDITION AND         6.1   P0340070
C*****    SUBTRACTIDN (CDMBINED) DF INTEGER DR REAL VALUES MAY BE       P0340080
C*****    FDRMED.                                                       P0340090
C*****  GENERAL CDMMENTS                                                P0340100
C*****    TYPES ARE NEVER MIXED.                                        P0340110
C*****    VARIABLES, ARRAY ELEMENTS AND CDNSTANTS ARE USED IN           P0340120
C*****    A VARIETY OF COMBINATIONS.                                    P0340130
C*****                                                                  P0340140
C*****  S P E C I F I C A T I O N S   SEGMENT 034                       P0340150
C*****                                                                  P0010710
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C*****  WHEN EXECUTING ONLY SEGMENT 034, THE SPECIFICATION STATEMENTS   P0010715
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE C= IN COLUMNS           P0010720
C*****  1  AND  2  REMOVED                                              P0010725
C*****                                                                  P0010730
C=     DIMENSION A2S(2,2),A3S(3,3,3)                                    P0010735
C=    1,IAC1I(5),IAC2I(2,7),AC1S(25)                                    P0010740
C=     INTEGER MCA3I(2,3,3)                                             P0010745
C*****                                                                  P0010750
      DIMENSION A2S(2,2),A3S(3,3,3)                                     P034A1
     1,IAC1I(5),IAC2I(2,7),AC1S(25)                                     P034A2
      INTEGER MCA3I(2,3,3)                                              P034A3
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0340160
C*****                                                                  P0070550
C*****  WHEN EXECUTING ONLY SEGMENT 034, THE STATEMENT  NUVI = 6        P0070555
C*****  MUST HAVE THE C= IN COL 1 AND 2 REMOVED.                        P0070560
C*****                                                                  P0070565
C=     NUVI = 6                                                         P0070570
C*****                                                                  P0070575
      NUVI = 6                                                          P034B1
      WRITE (NUVI,340)                                                  P0340170
340   FORMAT (1H1,1X,32HARBAS - (034) BASIC ADDITION AND/14X,           P0340180
     113H- SUBTRACTION//16H  ASA REF. - 6.4//                           P0340190
     22X,7HRESULTS)                                                     P0340200
C*****    HEADER FOR SEGMENT 034 WRITTEN                                P0340210
      WRITE (NUVI,341)                                                  P0340220
341   FORMAT    (//2X,26HTEST1 INTEGER ADD AND SUBT)                    P0340230
      JACVI = 5                                                         P0340240
      KBCVI = 1                                                         P0340250
      LCCVI = 10                                                        P0340260
      MDCVI = -2                                                        P0340270
      IAC1I(2) = 3                                                      P0340280
      IAC2I(2,2) = -3                                                   P0340290
      IHDVI = JACVI+KBCVI-LCCVI+MDCVI-IAC1I(2)+9                        P0340300
      IGDVI = (JACVI+KBCVI) - (MDCVI-IAC1I(2)) - 11                     P0340310
      IFDVI =(6 + (KBCVI - (LCCVI+MDCVI))) + 1                          P0340320
      MCA3I(1,1,1) = IAC2I(2,2) - JACVI - MDCVI - KBCVI + 7 + 0         P0340330
      WRITE (NUVI,342) IHDVI,IGDVI, IFDVI, MCA3I(1,1,1)                 P0340340
342   FORMAT (/4(I11/))                                                 P0340350
C*****    HEADER FOR TEST2                                              P0340360
      WRITE (NUVI,344)                                                  P0340370
344   FORMAT    (/2X,24HTEST2 REAL ADD AND SUBTR)                       P0340380
      ACVS = 5.0                                                        P0340390
      BCVS = 1.0                                                        P0340400
      CCVS = 10.0                                                       P0340410
      DCVS = -.2E+1                                                     P0340420
      AC1S(1) = 30.E-1                                                  P0340430
      A2S  (2,1) = 6.0                                                  P0340440
      HHDVS= ACVS + BCVS - CCVS + DCVS +9.0-AC1S(1)                     P0340450
      GGDVS= (ACVS + 1.0) -11.0  - ( DCVS-AC1S(1))                      P0340460
      FFDVS= (6.0 + (BCVS-(CCVS+DCVS))) + 1.0                           P0340470
      A3S(1,1,2) = A2S(2,1) - CCVS + 8.0 - 4.0                          P0340480
      WRITE (NUVI,343) HHDVS, GGDVS, FFDVS, A3S(1,1,2)                  P0340490
343   FORMAT (//4(F11.1/)/35H  ALL ABOVE ANSWERS SHOULD BE 0 FOR/       P0340500
     1 31H  THIS SEGMENT TO BE SUCCESSFUL)                              P0340510
C*****    END OF TEST SEGMENT 034                                       P0340520
C*****                                                                  P0340530
C*****  WHEN EXECUTING ONLY SEGMENT 034, THE  STOP  AND  END            P0340540
C*****  CARDS WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=           P0340550
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0340560
C=     STOP                                                             P0340570
C=     END                                                              P0340580
      STOP                                                              P034C1
      END                                                               P034C2
C*******************************************************************************P0350010
C*****                                                                  P0350020
C*****                          ARFAS - (035)                           P0350030
C*****                                                                  P0350040
C*******************************************************************************P0350050
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C*****  GENERAL PURPDSE                                          ASA REF P0350060
C*****    TEST THAT EXPRESSIDNS INVDLVING THE ADDITIDN AND         6.1   P0350070
C*****    SUBTRACTIDN (CDMBINED) DF DDUBLE PRECISION VALUES              P0350080
C*****    MAY BE FDRMED                                                  P0350090
C*****  GENERAL CDMMENTS                                                 P0350100
C*****    VARIABLES, ARRAY ELEMENTS AND CDNSTANTS ARE USED IN A          P0350110
C*****    VARIETY DF CDMBINATIDNS                                        P0350120
C*****                                                                   P0350130
C*****  S P E C I F I C A T I D N S  SEGMENT 035                         P0350140
C*****                                                                   P0010760
C*****  WHEN EXECUTING DNLY SEGMENT 035, THE SPECIFICATIDN STATEMENTS    P0010765
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0010770
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0010775
C*****                                                                   P0010780
C=     DOUBLE PRECISION ACVD,BCVD,CCVD,DCVD,FFDVD,GGDVD,HHDVD           P0010785
C=    1,AC1D(10),BC2D(7,4),CC3D(7,2,2)                                  P0010790
       DDUBLE PRECISIDN ACVD,BCVD,CCVD,DCVD,FFDVD,GGDVD,HHDVD          P035A1
      1,AC1D(10),BC2D(7,4),CC3D(7,2,2)                                 P035A2
C*****                                                                   P0010795
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  ND INPUT TAPE.      P0350150
C*****  WHEN EXECUTING DNLY SEGMENT 035, THE FDLLDWING STATEMENT         P0070580
C*****  NUVI = 6  MUST HAVE THE C=  IN CDLUMNS 1 AND 2 REMDVED.          P0070585
C*****                                                                   P0070590
C=     NUVI = 6                                                          P0070595
       NUVI = 6                                                        P035B1
       WRITE (NUVI,350)                                                P0350160
350    FDRMAT (1H1,1X,32HARFAS - (035) D.P. ADD AND SUBTR//2X,          P0350170
      -14HASA REF. - 6.1//2X,7HRESULTS)                                P0350180
C*****    HEADER FDR SEGMENT 035 WRITTEN                               P0350190
       ACVD = 5.0D0                                                    P0350200
       BCVD = 10.0D-1                                                  P0350210
       CCVD = 10.0D0                                                   P0350220
       DCVD = -0.2D1                                                   P0350230
       AC1D(1)= 300.0D-2                                               P0350240
       BC2D(6,3) = 400.D-2                                             P0350250
       AC1D(2) = .2481632642481 6D5                                    P0350260
       BC2D(5,3) = -.12408163212408D5                                  P0350270
       HHDVD = ACVD + BCVD - CCVD + DCVD + 9.0D0 - AC1D(1)             P0350280
       GGDVD = (ACVD + 1.0E0) - 11.0E0 -(DCVD - AC1D(1))               P0350290
       FFDVD = (6.0D0+(BCVD-(CCVD+DCVD))) + 10.0D-1                    P0350300
       CC3D(6,1,1) = CCVD-DCVD+BC2D(6,3)-ACVD-11.0D0                   P0350310
       CC3D(5,1,2) = AC1D(2) + BC2D(5,3) - 12408.163212408D0           P0350320
       WRITE (NUVI,351) HHDVD, GGDVD, FFDVD, CC3D(6,1,1), CC3D(5,1,2)  P0350330
351    FDRMAT (//5(D22.10/)//35H  THE ANSWERS ABDVE SHDULD BE 0 FDR/    P0350340
      1 32H  THIS SEGMENT TD BE SUCCESSFUL./36H  VALUES WITH EXPDNENTS LEP0350350
      2SS THAN   /31H  10**(-14) ARE CDNSIDERED ZERD)                  P0350360
C*****    END DF TEST SEGMENT 035                                      P0350370
C*****                                                                 P0350380
C*****  WHEN EXECUTING ONLY SEGMENT 035, THE  STOP  AND  END           P0350390
C*****  CARDS, WHICH APPEAR AS CDMMENTS, MUST HAVE THE  C=             P0350400
C*****  IN COL  1  AND  2  REMDVED.                                    P0350410
C=     STDP                                                            P0350420
C=     END                                                             P0350430
       STOP                                                          P035C1
       END                                                           P035C2
C*************************************************************************P0360010
C*****                                                                  P0360020
C*****                          ARBMI - (036)                           P0360030
C*****                                                                  P0360040
C*************************************************************************P0360050
C*****  GENERAL PURPDSE                                          ASA REF P0360060
C*****    TEST THAT EXPRESSIDNS INVDLVING MULTIPLICATIDN DF        6.1   P0360070
C*****    INTEGER VALUES MAY BE FORMED.                                  P0360080
C*****  GENERAL CDMMENTS                                                 P0360090
C*****    INTEGER SUBTRACTIDN ASSUMED WDRKING                            P0360100
C*****  * VARIABLES, ARRAY ELEMENTS AND CDNSTANTS ARE USED               P0360110
C*****    IN A VARIETY DF CDMBINATIDNS.                                  P0360120
C*****                                                                   P0360130
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C*****  S P E C I F I C A T I O N S  SEGMENT 036                          P0360140
C*****                                                                   P0010800
C*****  WHEN EXECUTING ONLY SEGMENT 036, THE SPECIFICATION STATEMENTS    P0010805
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS          P0010810
C*****  1  AND  2  REMOVED.                                              P0010815
C*****                                                                   P0010820
C=     DIMENSION IAC1I(5), IAC2I(2,7)                                    P0010825
       DIMENSION IAC1I(5), IAC2I(2,7)                                    P036A1
C*****                                                                   P0010830
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0360150
C*****                                                                   P0070600
C*****  WHEN EXECUTING ONLY SEGMENT 036, THE FOLLOWING STATEMENT         P0070605
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.         P0070610
C*****                                                                   P0070615
C=     NUVI = 6                                                          P0070620
       NUVI = 6                                                          P036B1
C*****                                                                   P0070625
       WRITE (NUVI,360)                                                  P0360160
360    FORMAT (1H1, 1X,36HARBMI - (036) INTEGER MULTIPLICATION//         P0360170
      116H  ASA REF. - 6.1//2X,7HRESULTS)                                P0360180
C*****    HEADER FOR SEGMENT 036 WRITTEN                                 P0360190
       JACVI=1                                                           P0360200
       KBCVI=2                                                           P0360210
       LCCVI=0                                                           P0360220
       MDCVI=-5                                                          P0360230
       IAC1I(2) = -10                                                    P0360240
       IAC2I(1,2) = 3                                                    P0360250
       IHDVI=JACVI*KBCVI                                                 P0360260
       IGDVI=KBCVI*MDCVI*LCCVI                                           P0360270
       IFDVI = MDCVI*JACVI*IAC1I(2)*3                                    P0360280
       IEDVI=-3*JACVI*(-MDCVI)*JACVI*KBCVI                               P0360290
       IDDVI=KBCVI*KBCVI*KBCVI*KBCVI*KBCVI*JACVI                         P0360300
       ICDVI = (-IAC1I(2))*JACVI*KBCVI*JACVI*KBCVI*JACVI*1               P0360310
       IAC2I(1,1)=IAC2I(1,2)*MDCVI*IAC1I(2)*2                            P0360320
       IHDVI = IHDVI - 2                                                 P0360330
       IFDVI = IFDVI - 150                                               P0360340
       IEDVI = IEDVI + 30                                                P0360350
       IDDVI = IDDVI - 32                                                P0360360
       ICDVI = ICDVI - 40                                                P0360370
       IAC2I(1,1) = IAC2I(1,1) - 300                                     P0360380
       WRITE (NUVI,361) IHDVI, IGDVI, IFDVI, IEDVI, IDDVI, ICDVI,       P0360390
      1                 IAC2I(1,1)                                       P0360400
361    FORMAT (///7(I10/)//35H  ALL ABOVE ANSWERS SHOULD BE 0 FOR/       P0360410
      1  31H  THIS SEGMENT TO BE SUCCESSFUL)                             P0360420
C*****    END OF TEST SEGMENT 036                                        P0360430
C*****                                                                   P0360440
C*****  WHEN EXECUTING ONLY SEGMENT 036, THE  STOP  AND  END             P0360450
C*****  CARDS, WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=               P0360460
C*****  IN COL  1  AND  2  REMOVED.                                      P0360470
C=     STOP                                                              P0360480
C=     END                                                               P0360490
       STOP                                                              P036C1
       END                                                               P036C2
C*****************************************************************************P0370010
C*****                                                                   P0370020
C*****                          ARBMR - (037)                            P0370030
C*****                                                                   P0370040
C*****************************************************************************P0370050
C*****  GENERAL PURPOSE                                        ASA REF  P0370060
C*****    TEST THAT EXPRESSIONS INVOLVING MULTIPLICATION OF      6.1    P0370070
C*****    REAL VALUES MAY BE FORMED                                     P0370080
C*****  GENERAL COMMENTS                                                P0370090
C*****    REAL SUBTRACTION ASSUMED WORKING                              P0370100
C*****  * VARIABLES, ARRAY ELEMENTS AND CONSTANTS ARE USED IN A         P0370110
C*****    VARIETY OF COMBINATIONS.                                      P0370120
C*****                                                                   P0370130
C*****  S P E C I F I C A T I O N S  SEGMENT 037                         P0370140
C*****                                                                   P0010840
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C*****  WHEN EXECUTING ONLY SEGMENT 037, THE SPECIFICATION STATEMENTS   P0010845
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS        P0010850
C*****  1  AND  2  REMOVED.                                            P0010855
C*****                                                                 P0010860
C=     DIMENSION A2S(2,2),AC1S(25)                                     P0010865
       DIMENSION A2S(2,2),AC1S(25)                                     P037A1
C*****                                                                 P0010870
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0370150
C*****                                                                 P0070630
C*****  WHEN EXECUTING ONLY SEGMENT 037, THE FOLLOWING STATEMENT       P0070635
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.       P0070640
C*****                                                                 P0070645
C=     NUVI = 6                                                        P0070650
       NUVI = 6                                                        P037B1
C*****                                                                 P0070655
       WRITE (NUVI,370)                                                P0370160
370    FORMAT (1H1,1X,33HARBMR - (037) REAL MULTIPLICATION//2X,        P0370170
      114HASA REF. - 6.1//2X,7HRESULTS)                                P0370180
C*****    HEADER FOR SEGMENT 037 WRITTEN                               P0370190
       ACVS = 1.0                                                      P0370200
       BCVS = 0.2E2                                                    P0370210
       CCVS = -1.0                                                     P0370220
       DCVS = 0.0                                                      P0370230
       AC1S(1) = .5E+1                                                 P0370240
       HHDVS=ACVS*BCVS                                                 P0370250
       GGDVS=BCVS*BCVS*1.0                                             P0370260
       FFDVS=2.0*AC1S(1)*ACVS*ACVS                                     P0370270
       EEDVS=ACVS*BCVS*CCVS*DCVS*AC1S(1)                               P0370280
       DDDVS=AC1S(1)*ACVS*BCVS*1.0E1*ACVS*ACVS                         P0370290
       CCDVS=CCVS*CCVS*CCVS*3.E0*ACVS*ACVS*ACVS                        P0370300
       A2S(1,1) = ACVS*CCVS*2.                                         P0370310
       HHDVS = HHDVS - 20.0                                            P0370320
       GGDVS = GGDVS - 400.0                                           P0370330
       FFDVS = FFDVS - 10.0                                            P0370340
       DDDVS = DDDVS - 1000.0                                          P0370350
       CCDVS = CCDVS + 3.0                                             P0370360
       A2S(1,1) = A2S(1,1) + 2.                                        P0370370
       WRITE (NUVI,371) HHDVS, GGDVS, FFDVS, EEDVS, DDDVS, CCDVS,      P0370380
      1                 A2S(1,1)                                       P0370390
371    FORMAT (///7(F11.1/)//35H  ALL ABOVE ANSWERS SHOULD BE 0 FOR/   P0370400
     1 31H  THIS SEGMENT TO BE SUCCESSFUL)                             P0370410
C*****    END OF TEST SEGMENT 037                                      P0370420
C*****  WHEN EXECUTING ONLY SEGMENT 037, THE STOP AND END CARDS        P0370430
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS    P0370440
C*****  1  AND  2  REMOVED.                                            P0370450
C=     STOP                                                            P0370460
C=     END                                                             P0370470
       STOP                                                            P037C1
       END                                                             P037C2
C*********************************************************************P0380010
C*****                                                                 P0380020
C*****                          ARFMD - (038)                          P0380030
C*****                                                                 P0380040
C*********************************************************************P0380050
C*****  GENERAL PURPOSE                                        ASA REF P0380060
C*****    TEST THAT EXPRESSIONS INVOLVING THE MULTIPLICATION     6.1   P0380070
C*****    OF DOUBLE PRECISION VALUES MAY BE FORMED                     P0380080
C*****  GENERAL COMMENTS                                               P0380090
C*****  * DP ADDITION AND SUBTRACTION ASSUMED WORKING.                 P0380100
C*****  * VARIABLES, ARRAY ELEMENTS AND CONSTANTS ARE USED IN A        P0380110
C*****    VARIETY OF COMBINATIONS.                                     P0380120
C*****                                                                 P0380130
C*****  S P E C I F I C A T I O N S  SEGMENT 038                       P0380140
C*****                                                                 P0010880
C*****  WHEN EXECUTING ONLY SEGMENT 038, THE SPECIFICATION STATEMENTS  P0010885
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS        P0010890
C*****  1  AND  2  REMOVED.                                            P0010895
C*****                                                                 P0010900
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C=     DOUBLE PRECISION ACVD,BCVD,CCVD,DCVD,EEDVD,DDDVD,CCDVD                P0010905
C=    1,FFDVD, GGDVD,HHDVD,AC1D(10),BC2D(7,4), CC3D(7,2,2)                   P0010910
       DOUBLE PRECISION ACVD,BCVD,CCVD,DCVD,EEDVD,DDDVD,CCDVD                P038A1
      1,FFDVD, GGDVD,HHDVD,AC1D(10),BC2D(7,4), CC3D(7,2,2)                   P038A2
C*****                                                                       P0010915
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.          P0380150
C*****                                                                       P0070660
C*****  WHEN EXECUTING ONLY SEGMENT 038, THE FOLLOWING STATEMENT             P0070665
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.             P0070670
C*****                                                                       P0070675
C=     NUVI = 6                                                              P0070680
       NUVI = 6                                                              P038B1
C*****                                                                       P0070685
       WRITE (NUVI,380)                                                      P0380160
380    FORMAT (1H1,1X,33HARFMD - (038) D.P. MULTIPLICATION//  2X,            P0380170
      -15H ASA REF. - 6.1//2X,7HRESULTS)                                     P0380180
C*****    HEADER FOR SEGMENT 038 WRITTEN                                     P0380190
       ACVD=1.0D0                                                            P0380200
       BCVD=2.0                                                              P0380210
       CCVD=-30.0D-1                                                         P0380220
       DCVD=1.0D1                                                            P0380230
       AC1D(1) = 1.1D1                                                       P0380240
       CC3D(3,1,2) = .262144D6                                               P0380250
       CC3D(6,1,2) = -2000.D-3                                               P0380260
       CC3D(3,2,2) = 409.6D1                                                 P0380270
       HHDVD=ACVD*BCVD                                                       P0380280
       GGDVD=ACVD*0.0D0*CCVD                                                 P0380290
       FFDVD = AC1D(1)*ACVD*ACVD*ACVD                                        P0380300
       EEDVD=CCVD*CCVD*ACVD*1.0D0*BCVD                                       P0380310
       DDDVD=ACVD*2.0D1*ACVD*DCVD*1.0E0*CCVD                                 P0380320
       CCDVD=ACVD*BCVD*CCVD*CCVD*CCVD*BCVD*ACVD                              P0380330
       BC2D(3,4) = DCVD*(400.D-2)*CC3D(6,1,2)                                P0380340
       BC2D(2,3) = CC3D(3,1,2) * CC3D(3,2,2)                                 P0380350
       HHDVD = HHDVD - 2.0D0                                                 P0380360
       FFDVD = FFDVD - 11.0D0                                                P0380370
       EEDVD = EEDVD - 18.0D0                                                P0380380
       DDDVD = DDDVD + 600.0D0                                               P0380390
       CCDVD = CCDVD + 108.0D0                                               P0380400
       BC2D(3,4) = BC2D(3,4) -(-80.D0)                                       P0380410
       BC2D(2,3) = BC2D(2,3) - 1.07374182 4D9                                P0380420
       WRITE (NUVI,381) HHDVD, GGDVD, FFDVD, EEDVD, DDDVD, CCDVD,            P0380430
      1                 BC2D(3,4) , BC2D(2,3)                                P0380440
381    FORMAT (//8(D22.10/)//35H  THE ANSWERS ABOVE SHOULD BE 0 FOR/          P0380450
     1 31H  THIS SEGMENT TO BE SUCCESSFUL)                                   P0380460
C*****    END OF TEST SEGMENT 038                                            P0380470
C*****  WHEN EXECUTING ONLY SEGMENT 038, THE STOP AND END CARDS              P0380480
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS          P0380490
C*****  1  AND  2  REMOVED.                                                  P0380500
C=     STOP                                                                  P0380510
C=     END                                                                   P0380520
       STOP                                                                  P038C1
       END                                                                   P038C2
C*******************************************************************************P0390010
C*****                                                                       P0390020
C*****                          ARBDV - (039)                                P0390030
C*****                                                                       P0390040
C*******************************************************************************P0390050
C*****                                                                       P0390060
C*****  GENERAL PURPOSE                                          ASA REF     P0390070
C*****    TEST BASIC DIVISION,                                   6.1         P0390080
C*****    INTEGER AND REAL (SP) TYPES ONLY                                   P0390090
C*****                                                                       P0390100
C*****  S P E C I F I C A T I O N S  SEGMENT 039                              P0390110
C*****                                                                       P0010920
C*****  WHEN EXECUTING ONLY SEGMENT 039, THE SPECIFICATION STATEMENTS        P0010925
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS              P0010930
C*****  1  AND  2  REMOVED.                                                  P0010935
C*****                                                                       P0010940
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C=    DIMENSION A2S(2,2),IAC1I(5),IAC2I(2,7),AC1S(25)                    P0010945
      DIMENSION A2S(2,2),IAC1I(5),IAC2I(2,7),AC1S(25)                    P039A1
C*****                                                                   P0010950
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0390120
C*****                                                                   P0070690
C*****  WHEN EXECUTING ONLY SEGMENT 039, THE FOLLOWING STATEMENT         P0070695
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.         P0070700
C*****                                                                   P0070705
C=    NUVI = 6                                                           P0070710
      NUVI = 6                                                           P039B1
C*****                                                                   P0070715
      WRITE (NUVI,390)                                                   P0390130
390   FORMAT (1H1,1X,30HARBDV - (039) INTEGER AND REAL/15X,              P0390140
     -9H DIVISION//2X,14HASA REF. - 6.1/ /2X,7HRESULTS)                  P0390150
C*****    HEADER FOR SEGMENT 039 WRITTEN                                 P0390160
      WRITE (NUVI,391)                                                   P0390170
391   FORMAT   (//2X,22HTEST1 INTEGER DIVISION)                          P0390180
      JACVI=1                                                            P0390190
      KBCVI=2                                                            P0390200
      LCCVI=0                                                            P0390210
      MDCVI=10                                                           P0390220
      IAC1I(2) = 1                                                       P0390230
      IAC2I(1,4) = -8                                                    P0390240
      IHDVI=KBCVI/JACVI                                                  P0390250
      IGDVI=MDCVI/KBCVI/JACVI                                            P0390260
      IFDVI=LCCVI/JACVI/JACVI/1                                          P0390270
      IEDVI = MDCVI/KBCVI/IAC1I(2)/IAC1I(2)/JACVI                        P0390280
      IAC2I(1,2)=IAC2I(1,4)/4/KBCVI                                      P0390290
      IHDVI = IHDVI - 2                                                  P0390300
      IGDVI = IGDVI - 5                                                  P0390310
      IEDVI = IEDVI - 5                                                  P0390320
      IAC2I(1,2) = IAC2I(1,2) + 1                                        P0390330
      WRITE (NUVI,392) IHDVI, IGDVI, IFDVI, IEDVI, IAC2I(1,2)            P0390340
392   FORMAT (//5(I10/))                                                 P0390350
      WRITE (NUVI, 393)                                                  P0390360
393   FORMAT  (//2X,19HTEST2 REAL DIVISION)                              P0390370
      ACVS=1.0                                                           P0390380
      BCVS=0.0                                                           P0390390
      CCVS=1.0E1                                                         P0390400
      DCVS=20.0E-1                                                       P0390410
      AC1S(1)=100.0E-2                                                   P0390420
      A2S(1,1) = -200.E-2                                                P0390430
      HHDVS= ACVS/ACVS                                                   P0390440
      GGDVS = CCVS/ACVS/(-ACVS)                                          P0390450
      FFDVS= BCVS/CCVS/DCVS/ACVS                                         P0390460
      EEDVS= CCVS/AC1S(1)/DCVS/(-1.0)/ACVS                               P0390470
      A2S(1,2) = A2S(1,1)/AC1S(1)/ACVS/(-2.0E0)                          P0390480
      HHDVS = HHDVS - 1.0                                                P0390490
      GGDVS = GGDVS + 10.0                                               P0390500
      EEDVS = EEDVS + 5.0                                                P0390510
      A2S(1,2) = A2S(1,2) - 1.                                           P0390520
      WRITE (NUVI,394) HHDVS , GGDVS, FFDVS, EEDVS, A2S(1,2)             P0390530
394   FORMAT (//5(F11.1/)//35H  ALL ABOVE ANSWERS SHOULD BE 0 FOR/       P0390540
     12X,29HTHIS SEGMENT TO BE SUCCESSFUL)                               P0390550
C*****    END OF TEST SEGMENT 039                                        P0390560
C*****  WHEN EXECUTING ONLY SEGMENT 039, THE STOP AND END CARDS          P0390570
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS      P0390580
C*****  1  AND  2  REMOVED.                                              P0390590
C=    STOP                                                               P0390600
C=    END                                                                P0390610
      STOP                                                               P039C1
      END                                                                P039C2
C*******************************************************************************P0400010
C*****                                                                   P0400020
C*****                          ARFDV - (040)                            P0400030
C*****                                                                   P0400040
C*******************************************************************************P0400050
C*****  GENERAL PURPOSE                                          ASA REFP0400060
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C*****    TEST THAT EXPRESSIONS INVOLVING DIVISION OF DOUBLE      6.1   P0400070
C*****    PRECISION VALUES MAY BE FORMED                                P0400080
C*****  GENERAL COMMENTS                                                P0400090
C*****  * DP SUBTRACTION ASSUMED WORKING.                               P0400100
C*****  * VARIABLES, ARRAY ELEMENTS AND CONSTANTS ARE USED IN A         P0400110
C*****    VARIETY OF COMBINATIONS.                                      P0400120
C*****                                                                  P0400130
C*****  S P E C I F I C A T I O N S  SEGMENT 040                        P0400140
C*****                                                                  P0010960
C*****  WHEN EXECUTING ONLY SEGMENT 040, THE SPECIFICATION STATEMENTS   P0010965
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS         P0010970
C*****  1  AND  2  REMOVED.                                            P0010975
C*****                                                                  P0010980
C=     DOUBLE PRECISION ACVD,BCVD,CCVD,DCVD,EEDVD,FFDVD,GGDVD,HHDVD     P0010985
C=    1,AC1D(10),BC2D(7,4),CC3D(7,2,2)                                  P0010990
       DOUBLE PRECISION ACVD,BCVD,CCVD,DCVD,EEDVD,FFDVD,GGDVD,HHDVD     P040A1
      1,AC1D(10),BC2D(7,4),CC3D(7,2,2)                                  P040A2
C*****                                                                  P0010995
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0400150
C*****                                                                  P0070720
C*****  WHEN EXECUTING ONLY SEGMENT 040, THE FOLLOWING STATEMENT        P0070725
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.        P0070730
C*****                                                                  P0070735
C=     NUVI = 6                                                         P0070740
       NUVI = 6                                                         P040B1
C*****                                                                  P0070745
       WRITE (NUVI,400)                                                 P0400160
  400  FORMAT (1H1,1X,27HARFDV - (040) D.P. DIVISION//                  P0400170
     -16H  ASA REF. - 6.1//2X,7HRESULTS)                                P0400180
C*****    HEADER FDR SEGMENT 040 WRITTEN                                P0400190
       ACVD = 1.0D0                                                     P0400200
       BCVD = 20.0D-1                                                   P0400210
       CCVD = .1D2                                                      P0400220
       DCVD = -10.0                                                     P0400230
       AC1D(1)= 0.0                                                     P0400240
       CC3D(1,2,2) = -.004D3                                            P0400250
       CC3D(1,1,2) = .244140625D-3                                      P0400260
       HHDVD  = BCVD/ACVD                                               P0400270
       CC3D(3,1,2) = .125D0                                             P0400280
       GGDVD  = DCVD/DCVD/ACVD                                          P0400290
       FFDVD  = AC1D(1)/BCVD/ACVD/1.D0/1.D0                             P0400300
       EEDVD = DCVD/BCVD/(-5.0E0)/ACVD/ACVD                             P0400310
       BC2D(4,4) = CC3D(1,2,2)/BCVD/DCVD/.002D2                         P0400320
       BC2D(4,3) = CC3D(1,1,2) / CC3D(3,1,2)                            P0400330
       HHDVD = HHDVD - 2.0D0                                            P0400340
       GGDVD = GGDVD - 1.0D0                                            P0400350
       EEDVD = EEDVD - 1.0D0                                            P0400360
       BC2D(4,4) = BC2D(4,4) - 1.0D0                                    P0400370
       BC2D(4,3) = BC2D(4,3) - 195.3125D-5                              P0400380
       WRITE (NUVI,401) HHDVD,GGDVD,FFDVD,EEDVD,BC2D(4,4) , BC2D(4,3)   P0400390
401    FORMAT (//6(D22.10)//35H  THE ANSWERS ABOVE SHOULD BE 0 FDR/      P0400400
      1 31H  THIS SEGMENT TO BE SUCCESSFUL)                             P0400410
C*****    END OF TEST SEGMENT 040                                       P0400420
C*****  WHEN EXECUTING DNLY SEGMENT 040, THE STDP AND END CARDS         P0400430
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS     P0400440
C*****  1  AND  2  REMDVED.                                            P0400450
C=     STOP                                                             P0400460
C=     END                                                              P0400470
       STOP                                                             P040C1
       END                                                              P040C2
C*******************************************************************************P0410010
C*****                                                                  P0410020
C*****                          ARBEX - (041)                           P0410030
C*****                                                                  P0410040
C*******************************************************************************P0410050
C*****                                                                  P0410060
C*****  GENERAL PURPOSE                                        ASA REF P0410070
C*****    TEST THAT EXPRESSIONS INVOLVING INTEGER AND REAL      6.1     P0410080
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C*****    EXPONENTIATION MAY BE FORMED                                  P0410090
C*****  GENERAL COMMENTS                                                P0410100
C*****    THE FOLLOWING TESTS ARE MADE -                                P0410110
C*****    INTEGER BY INTEGER GIVING INTEGER                    6.1      P0410120
C*****    REAL (SP) BY INTEGER GIVING REAL (SP)                         P0410130
C*****    REAL (SP) BY REAL (SP) GIVING REAL (SP)                       P0410140
C*****  RESTRICTIONS OBSERVED                                           P0410150
C*****                                                                  P0410160
C*****  S P E C I F I C A T I O N S  SEGMENT 041                        P0410170
C*****                                                                  P0011000
C*****  WHEN EXECUTING ONLY SEGMENT 041, THE SPECIFICATION STATEMENTS   P0011005
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS         P0011010
C*****  1  AND  2  REMOVED.                                            P0011015
C*****                                                                  P0011020
C=     DIMENSION A2S(2,2),IAC1I(5),IAC2I(2,7),AC1S(25)                  P0011025
       DIMENSION A2S(2,2),IAC1I(5),IAC2I(2,7),AC1S(25)                  P041A1
C*****                                                                  P0011030
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0410180
C*****                                                                  P0070750
C*****  WHEN EXECUTING ONLY SEGMENT 041, THE FOLLOWING STATEMENT        P0070755
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.        P0070760
C*****                                                                  P0070765
C=     NUVI = 6                                                         P0070770
       NUVI = 6                                                         P041B1
C*****                                                                  P0070775
       WRITE (NUVI,410)                                                 P0410190
410    FORMAT (1H1,1X,34HARBEX - (041) BASIC EXPONENTIATION//           P0410200
     -  2X,15HASA REFS. - 6.1//2X, 7HRESULTS)                           P0410210
C*****    HEADER FOR SEGMENT 041 WRITTEN                                P0410220
       WRITE (NUVI,411)                                                 P0410230
411    FORMAT   (//2X,18HINTEGER BY INTEGER)                            P0410240
       JACVI=1                                                          P0410250
       KBCVI=0                                                          P0410260
       LCCVI=2                                                          P0410270
       MDCVI=-1                                                         P0410280
       IAC1I(2) = 3                                                     P0410290
       IAC2I(1,4) = 3                                                   P0410300
       IHDVI = LCCVI**IAC1I(2)                                          P0410310
       IGDVI=KBCVI**JACVI                                               P0410320
       IFDVI=JACVI**KBCVI                                               P0410330
       IEDVI = MDCVI**IAC1I(2)                                          P0410340
       IDDVI=(LCCVI**LCCVI)**(JACVI**MDCVI)                             P0410350
       IAC2I(1,2) = (LCCVI**IAC2I(1,4))**JACVI                          P0410360
       IHDVI = IHDVI - 8                                                P0410370
       IFDVI = IFDVI - 1                                                P0410380
       IEDVI = IEDVI + 1                                                P0410390
       IDDVI = IDDVI- 4                                                 P0410400
       IAC2I(1,2) = IAC2I(1,2) - 8                                      P0410410
       WRITE (NUVI, 412) IHDVI, IGDVI, IFDVI, IEDVI, IAC2I(1,2)         P0410420
412    FORMAT (//6(I10/))                                               P0410430
       WRITE (NUVI, 413)                                                P0410440
413    FORMAT  (//2X,25HREAL BY INT, REAL BY REAL)                      P0410450
       ACVS=1.0                                                         P0410460
       BCVS=0.0                                                         P0410470
       CCVS=0.5E0                                                       P0410480
       DCVS = 20.0E-1                                                   P0410490
       AC1S(1)=1.21E0                                                   P0410500
       A2S(1,1) = 300.E-2                                               P0410510
       HHDVS=ACVS**JACVI                                                P0410520
       GGDVS=BCVS**JACVI                                                P0410530
       FFDVS=DCVS**IAC1I(2)                                             P0410540
       EEDVS=ACVS**ACVS                                                 P0410550
       DDDVS=AC1S(1)**CCVS                                              P0410560
       CCDVS=(DCVS**1)**(2.0**ACVS)                                     P0410570
       A2S(2,1) = (A2S(1,1)**DCVS)**BCVS                                P0410580
       HHDVS = HHDVS - 1.0                                              P0410590
       FFDVS = FFDVS - 8.0                                              P0410600
       EEDVS = EEDVS - 1.0                                              P0410610
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      DDDVS = DDDVS - 1.1                                                P0410620
      CCDVS = CCDVS - 4.0                                                P0410630
      A2S(2,1) = A2S(2,1) - 1.0                                          P0410640
      WRITE (NUVI,414) HHDVS, GGDVS, FFDVS, EEDVS, DDDVS, CCDVS,A2S(2,1)P0410650
414   FORMAT (///7(F11.1/)//35H  ALL ABOVE ANSWERS SHOULD BE 0 FOR/      P0410660
     12X, 29HTHIS SEGMENT TO BE SUCCESSFUL)                              P0410670
C*****    END OF TEST SEGMENT 041                                        P0410680
C*****  WHEN EXECUTING ONLY SEGMENT 041, THE STOP AND END CARDS          P0410690
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS      P0410700
C*****  1  AND  2  REMOVED.                                              P0410710
C=    STOP                                                               P0410720
C=    END                                                                P0410730
      STOP                                                               P041C1
      END                                                                P041C2
C*************************************************************************P0420010
C*****                                                                   P0420020
C*****                          ARFEX - (042)                            P0420030
C*****                                                                   P0420040
C*************************************************************************P0420050
C*****  GENERAL PURPOSE                                        ASA REF  P0420060
C*****    TEST EXPONENTIATION OF DOUBLE PRECISION ITEMS          6.1     P0420070
C*****    THE FOLLOWING TYPES OF DP EXPONENTIATION ARE TESTED -          P0420080
C*****      DP BY REAL GIVING DP                                         P0420090
C*****      REAL BY DP GIVING DP                                         P0420100
C*****      DP BY DP GIVING DP                                           P0420110
C*****  GENERAL COMMENTS                                                 P0420120
C*****  * DP ADDITION AND SUBTRACTION ASSUMED WORKING.                   P0420130
C*****  * VARIABLES, ARRAY ELEMENTS AND CONSTANTS ARE USED IN A          P0420140
C*****    VARIETY OF COMBINATIONS.                                       P0420150
C*****  RESTRICTION OBSERVED                                             P0420160
C*****    NEGATIVE VALUED ITEMS ARE NEVER RAISED TO A REAL OR    6.4/12P0420170
C*****    DP EXPONENT                                                    P0420180
C*****                                                                   P0420190
C*****  S P E C I F I C A T I O N S  SEGMENT 042                         P0420200
C*****                                                                   P0011040
C*****  WHEN EXECUTING ONLY SEGMENT 042, THE SPECIFICATION STATEMENTS    P0011045
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS          P0011050
C*****  1  AND  2  REMOVED.                                              P0011055
C*****                                                                   P0011060
C=    DOUBLE PRECISION ACVD,BCVD,CCVD,EEDVD,FFDVD,GGDVD,HHDVD            P0011065
C=    DOUBLE PRECISION AC1D(10),BC2D(7,4),CC3D(7,2,2)                    P0011070
      DOUBLE PRECISION ACVD,BCVD,CCVD,EEDVD,FFDVD,GGDVD,HHDVD            P042A1
      DOUBLE PRECISION AC1D(10),BC2D(7,4),CC3D(7,2,2)                    P042A2
C*****                                                                   P0011075
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0420210
C*****                                                                   P0070780
C*****  WHEN EXECUTING ONLY SEGMENT 042, THE FOLLOWING STATEMENT         P0070785
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.         P0070790
C*****                                                                   P0070795
C=    NUVI = 6                                                           P0070800
      NUVI = 6                                                           P042B1
C*****                                                                   P0070805
      WRITE (NUVI,420)                                                   P0420220
420   FORMAT (1H1,1X,28HARFEX - (042) EXPONENTIATION//                   P0420230
     -16H  ASA REF. - 6.1//2X,7HRESULTS)                                 P0420240
C*****    HEADER FOR SEGMENT 042 WRITTEN                                 P0420250
C*****    DEFINE VARIABLES AND ARRAY ELEMENTS                            P0420260
      ACVS=1.0                                                           P0420270
      BCVS=0.0                                                           P0420280
      CCVS=0.5                                                           P0420290
      DCVS=20.0E-1                                                       P0420300
      ACVD = 1.0D0                                                       P0420310
      BCVD = 80.0D-1                                                     P0420320
      CCVD = 0.0                                                         P0420330
      AC1D(1) = 1.0                                                      P0420340
      BC2D(2,4) =  3000.D-3                                              P0420350
      HHDVD = ACVD**BCVS                                                 P0420360
      GGDVD = ACVS**ACVD                                                 P0420370
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      FFDVD = AC1D(1)**BCVD                                              P0420380
      EEDVD = (DCVS**ACVD)** (2.0D0**ACVS)                               P0420390
      CC3D(5,1,2) = BC2D(2,4)**(DCVS**BCVS)                              P0420400
      HHDVD = HHDVD - 1.0D0                                              P0420410
      GGDVD = GGDVD - 1.0D0                                              P0420420
      FFDVD = FFDVD - 1.0D0                                              P0420430
      EEDVD = EEDVD - 4.0D0                                              P0420440
      CC3D(5,1,2) = CC3D(5,1,2) - 3.0D0                                  P0420450
      WRITE (NUVI,421) HHDVD, GGDVD, FFDVD, EEDVD, CC3D(5,1,2)           P0420460
421   FORMAT (//5(D22.10/)//35H  THE ANSWERS ABOVE SHOULD BE 0 FOR/      P0420470
     1 32H  THIS SEGMENT TO BE SUCCESSFUL./36H  VALUES WITH EXPONENTS LEP0420480
     2SS THAN   /31H  10**(-14) ARE CONSIDERED ZERO)                     P0420490
C*****    END OF TEST SEGMENT 042                                       P0420500
C*****  WHEN EXECUTING ONLY SEGMENT 042, THE STOP AND END CARDS         P0420510
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS     P0420520
C*****  1  AND  2  REMOVED.                                            P0420530
C=    STOP                                                             P0420540
C=    END                                                              P0420550
      STOP                                                             P042C1
      END                                                              P042C2
C*******************************************************************************P0430010
C*****                                                                 P0430020
C*****                          ARBHI - (043)                          P0430030
C*****                                                                 P0430040
C*******************************************************************************P0430050
C*****  GENERAL PURPOSE                                          ASA REF P0430060
C*****    TESTS THAT HIERARCHY OF OPERATORS AND PARENTHESES       6.1/07P0430070
C*****    ARE HANDLED CORRECTLY. OPERATORS SHOULD FOLLOW                P0430080
C*****    THIS ORDER - **            (EXPONENTIATION)             6.4/41P0430090
C*****                 * AND /     (MULTIPLICATION,DIVISION)            P0430100
C*****                 + AND -     (ADDITION,SUBTRACTION)               P0430110
C*****  GENERAL COMMENTS                                               P0430120
C*****  * ONLY INTEGER EXPRESSIONS ARE USED SINCE THIS TEST IS         P0430130
C*****    CONCENTRATING ON OPERATORS AND PARENTHESES                   P0430140
C*****  * ADDITION, SUBTRACTION, MULTIPLICATION, DIVISION,      6.4/49P0430150
C*****    EXPONENTIATION ASSUMED TO FOLLOW LAWS OF                     P0430160
C*****    ASSOCIATION AND COMMUTATION UNLESS PARENTHESES               P0430170
C*****    REGROUP EXPRESSIONS                                          P0430180
C*****  * INTEGER DIVISION MUST BE EVALUATED FROM LEFT TO       6.4/56P0430190
C*****    RIGHT                                                        P0430200
C*****  RESTRICTIONS OBSERVED                                          P0430210
C*****  * ALL ELEMENTS EVALUATED ARE MATHEMATICALLY DEFINED     6.4/16P0430220
C*****  * NO NEGATIVE VALUES ARE RAISED TO A REAL               6.4/12P0430230
C*****    EXPONENT                                                     P0430240
C*****  * NO ZERO VALUED PRIMARY IS RAISED TO A ZERO            6.4/14P0430250
C*****    VALUED EXPONENT                                              P0430260
C*****                                                                 P0430270
C*****  S P E C I F I C A T I O N S  SEGMENT 043                       P0430280
C*****                                                                 P0011080
C*****  WHEN EXECUTING ONLY SEGMENT 043, THE SPECIFICATION STATEMENTS  P0011085
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS        P0011090
C*****  1  AND  2  REMOVED.                                            P0011095
C*****                                                                 P0011100
C=    DIMENSION IAC1I(5),IAC2I(2,7)                                    P0011105
      DIMENSION IAC1I(5),IAC2I(2,7)                                    P043A1
C*****                                                                 P0011110
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0430290
C*****                                                                 P0070810
C*****  WHEN EXECUTING ONLY SEGMENT 043, THE FOLLOWING STATEMENT       P0070815
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.       P0070820
C*****                                                                 P0070825
C=    NUVI = 6                                                         P0070830
      NUVI = 6                                                         P043B1
C*****                                                                 P0070835
      WRITE   (NUVI,430)                                               P0430300
430   FORMAT (1H1,1X,36HARBHI - (043) HIERARCHY, PARENTHESES//2X,      P0430310
     1 23HASA REFS. - 6.1 AND 6.4//                                    P0430320
     2 2X, 7HRESULTS)                                                  P0430330
```

```
      JACVI = 1                                                         P0430340
      KBCVI = 2                                                         P0430350
      LCCVI = -5                                                        P0430360
      MDCVI = 0                                                         P0430370
      NECVI = 36                                                        P0430380
      IAC1I(2) = 10                                                     P0430390
C*****    TEST THAT ADDITION IS COMMUTATIVE (TEST 1)                    P0430400
      MRRVI = 1                                                         P0430410
      IHDVI = JACVI + KBCVI                                             P0430420
      IGDVI = KBCVI + JACVI                                             P0430430
      IFDVI = IHDVI - IGDVI                                             P0430440
      WRITE (NUVI,431) MRRVI, IFDVI                                     P0430450
C*****    TEST THAT MULTIPLICATION IS COMMUTATIVE (TEST 2)              P0430460
      MRRVI = 2                                                         P0430470
      IHDVI = JACVI * KBCVI                                             P0430480
      IGDVI = KBCVI * JACVI                                             P0430490
      IFDVI = IHDVI - IGDVI                                             P0430500
      WRITE (NUVI,431) MRRVI, IFDVI                                     P0430510
C*****    TEST THAT SUBTRACTION IS COMMUTATIVE (TEST 3)                 P0430520
      MRRVI = 3                                                         P0430530
      IHDVI = KBCVI - JACVI                                             P0430540
      IGDVI = -JACVI + KBCVI                                            P0430550
      IFDVI = IHDVI - IGDVI                                             P0430560
      WRITE (NUVI,431) MRRVI, IFDVI                                     P0430570
C*****    TEST THAT ADDITION IS ASSOCIATIVE (TEST 4)                    P0430580
      MRRVI = 4                                                         P0430590
      IHDVI = (IAC1I(2) + JACVI) + KBCVI                                P0430600
      IGDVI = IAC1I(2) + (JACVI + KBCVI)                                P0430610
      IFDVI = IHDVI - IGDVI                                             P0430620
      WRITE (NUVI,431) MRRVI, IFDVI                                     P0430630
C*****    TEST THAT MULTIPLICATION IS ASSOCIATIVE (TEST 5)              P0430640
      MRRVI = 5                                                         P0430650
      IHDVI = (IAC1I(2) * LCCVI) * KBCVI                                P0430660
      IGDVI = IAC1I(2) * (LCCVI * KBCVI)                                P0430670
      IFDVI = IHDVI - IGDVI                                             P0430680
      WRITE (NUVI,431) MRRVI, IFDVI                                     P0430690
C*****    TEST THAT MULTIPLICATION IS DONE BEFORE ADDITION              P0430700
C*****    OR SUBTRACTION (TEST 6). ANSWER SHOULD BE ZERO                P0430710
      MRRVI = 6                                                         P0430720
      IHDVI = JACVI + KBCVI * LCCVI - 1 + IAC1I(2)                      P0430730
      WRITE (NUVI,431) MRRVI, IHDVI                                     P0430740
C*****    REGROUP TEST 6 EXPRESSION (SLIGHTLY CHANGED) WITH             P0430750
C*****    PARENTHESES.  ANSWERS SHOULD BE NON-ZERO (TEST7).             P0430760
      MRRVI = 7                                                         P0430770
      IGDVI = (JACVI + KBCVI) * LCCVI + 9                               P0430780
      IFDVI = JACVI + KBCVI * (LCCVI + 9)                               P0430790
      IEDVI = (JACVI + KBCVI) * (LCCVI + 9)                             P0430800
      IAC1I(1) = IGDVI + 6                                              P0430810
      IAC1I(3) = IFDVI - 9                                              P0430820
      IAC1I(4) = IEDVI - 12                                             P0430830
      WRITE (NUVI,432) MRRVI, IAC1I(1), IAC1I(3), IAC1I(4)              P0430840
C*****    TEST THAT DIVISION IS DONE BEFORE ADDITION                    P0430850
C*****    AND SUBTRACTION (TEST 8). ANSWER SHOULD BE ZERO.              P0430860
      MRRVI = 8                                                         P0430870
      LCCVI = - 6                                                       P0430880
      IAC1I(2) = 12                                                     P0430890
      IHDVI = LCCVI + IAC1I(2) / KBCVI - LCCVI - 6                      P0430900
      WRITE (NUVI,431) MRRVI, IHDVI                                     P0430910
C*****    REGROUP TEST 8 EXPRESSION WITH PARENTHESES (TEST 9). SECOND   P0430920
C*****    ANSWER SHOULD BE ZERO, OTHERS NON-ZERO.                       P0430930
      MRRVI = 9                                                         P0430940
      IGDVI = (LCCVI + IAC1I(2)) / KBCVI - LCCVI - 6                    P0430950
      IFDVI = LCCVI + IAC1I(2) / (KBCVI - LCCVI - 6)                    P0430960
      IEDVI = (LCCVI + IAC1I(2)) / (KBCVI - LCCVI - 6)                  P0430970
      IAC1I(1) = IGDVI - 3                                              P0430980
      IAC1I(4) = IEDVI - 3                                              P0430990
      WRITE (NUVI,432) MRRVI, IAC1I(1), IAC1I(3), IAC1I(4)              P0431000
C*****    TEST THAT EXPONENTIATION IS DONE BEFORE                       P0431010
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C*****     ANY OTHER OPERATION (TEST 10). ANSWERS SHOULO                    P0431020
C*****     BE ZERO.                                                         P0431030
      MRRVI = 10                                                            P0431040
      IHOVI = KBCVI + 3 ** 2 - 11                                           P0431050
      IGOVI = IAC1I(2) * KBCVI ** 3 - 96                                    P0431060
      IFOVI = NECVI / LCCVI ** KBCVI - 1                                    P0431070
      WRITE (NUVI,432) MRRVI, IHOVI, IGDVI, IFOVI                           P0431080
C*****     REGROUP TEST 10 EXPRESSIONS WITH PARENTHESES (TEST 11)           P0431090
C*****     ANSWERS SHOULO BE NON-ZERO                                       P0431100
      MRRVI = 11                                                            P0431110
      IHDVI = (KBCVI + 3) ** 2 - 11                                         P0431120
      IGDVI = (IAC1I(2) * KBCVI) ** 3 - 80                                  P0431130
      IFDVI = (NECVI / LCCVI) ** KBCVI - 1                                  P0431140
      IAC1I(1) = IHOVI - 14                                                 P0431150
      IAC1I(3) = IGDVI - 13744                                              P0431160
      IAC1I(4) = IFDVI - 35                                                 P0431170
      WRITE (NUVI,432) MRRVI, IAC1I(1), IAC1I(3), IAC1I(4)                  P0431180
C*****     THE FOLLOWING STATEMENTS INCLUOE AN ADOITIONAL TEST              P0431190
C*****     OF OPERATOR HIERARCHY. A VARIETY OF OPERATORS IS USEO            P0431200
C*****     BOTH VARIABLES AND ARRAY ELEMENTS ARE USEO.  ALL                 P0431210
C*****     ANSWERS SHOULO BE ZERO (TEST 12).                                P0431220
      MRRVI = 12                                                            P0431230
      LCCVI = -5                                                            P0431240
      IAC1I(2) = 10                                                         P0431250
      IEOVI = JACVI+KBCVI*LCCVI-IAC1I(2)/2-IAC1I(2)/2/5+15                  P0431260
      IOOVI = KBCVI**3*4 + 162/(3**(KBCVI*2)) + MDCVI-34                    P0431270
      IHDVI = KBCVI*(JACVI+KBCVI*(IAC1I(2)-KBCVI)) - 34                     P0431280
      IGDVI = IAC1I(2)/KBCVI+70/(LCCVI*(KBCVI**2+3))-3                      P0431290
      IFDVI = KBCVI*(KBCVI+IAC1I(2)*(KBCVI+3*(JACVI+KBCVI)))-224            P0431300
      IAC1I(1) = KBCVI*(KBCVI+KBCVI*(KBCVI+KBCVI*(KBCVI+KBCVI*              P0431310
     -(KBCVI+KBCVI)))) - 92                                                 P0431320
      IAC2I(1,4) = IAC1I(2)+LCCVI+JACVI+KBCVI+KBCVI-JACVI-9                 P0431330
      IAC2I(1,2) = IAC1I(2)/(LCCVI+JACVI+KBCVI)*(KBCVI**                    P0431340
     1(KBCVI-JACVI))+10                                                     P0431350
      WRITE (NUVI,433) MRRVI, IEDVI, IDDVI, IHDVI, IGDVI, IFDVI,           P0431360
     1                 IAC1I(1),IAC2I(1,4),IAC2I(1,2)                     P0431370
C*****  EVALUATION MAY PROCEEO ACCOROING TO ANY VALIO FORMATION SEQUENCE    P0431380
C*****  EVALUATION OF INTEGER TERM CONTAINING OIVISION                      P0431390
      MRRVI = 13                                                            P0431400
      NECVI = 7                                                             P0431410
      KBCVI = 2                                                             P0431420
      LCCVI = 4                                                             P0431430
      IGOVI = NECVI/KBCVI * LCCVI                                           P0431440
      IFDVI = LCCVI * NECVI / KBCVI                                         P0431450
      IAC1I(1) = IGDVI - 12                                                 P0431460
      IAC1I(2) = IFDVI - 14                                                 P0431470
      WRITE (NUVI,434) MRRVI,IAC1I(1), IAC1I(2)                             P0431480
C*****     FORMAT STATEMENTS FOR THIS SEGMENT                               P0431490
431   FORMAT ( /2X,4HTEST, I4, I6)                                          P0431500
432   FORMAT(/2X, 4HTEST, I4, I6/ I16/ I16)                                 P0431510
433   FORMAT(/2X, 4HTEST,I4,I6/6(I16/),I16)                                 P0431520
434   FORMAT(/2X,4HTEST,I4,I6/I16/2X,35H  THE ANSWERS ABOVE SHOULD BE 0     P0431530
     1FOR/31H  THIS SEGMENT TO BE SUCCESSFUL)                               P0431540
C*****     ENO OF TEST SEGMENT 043                                          P0431550
C*****  WHEN EXECUTING ONLY SEGMENT 043, THE STOP ANO ENO CARDS             P0431560
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS         P0431570
C*****  1  AND  2  REMOVED.                                                 P0431580
C=    STOP                                                                  P0431590
C=    ENO                                                                   P0431600
      STOP                                                                  P043C1
      END                                                                   P043C2
C*******************************************************************************P0500010
C******                                                                      P0500020
C******                          SBB67 - (050)                               P0500030
C******                                                                      P0500040
C*******************************************************************************P0500050
C******  GENERAL PURPOSE                                          ASA REFP0500060
C******    TEST FORMATION OF SUBSCRIPTS FOR INTEGER               5.1.3.3P0500070
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C******    AND SINGLE PRECISION ARRAYS  IN FORM V,K FORMS                P0500080
C******                                                                  P0500090
C******  S P E C I F I C A T I O N S  SEGMENT 050                        P0500100
C******                                                                  P0011120
C******  WHEN EXECUTING ONLY SEGMENT 050, THE SPECIFICATION STATEMENTS   P0011125
C******  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS         P0011130
C******  1  AND  2  REMOVED.                                            P0011135
C******                                                                  P0011140
C=     DIMENSION A3S(3,3,3)                                             P0011145
C=     DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6)                 P0011150
C=     INTEGER MCA3I(2,3,3)                                             P0011155
       DIMENSION A3S(3,3,3)                                             P050A1
       DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6)                 P050A2
       INTEGER MCA3I(2,3,3)                                             P050A3
C******                                                                 P0011160
C******  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0500110
C******                                                                 P0070840
C******  WHEN EXECUTING ONLY SEGMENT 050, THE FOLLOWING STATEMENT       P0070845
C******  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.       P0070850
C******                                                                 P0070855
C=     NUVI = 6                                                         P0070860
       NUVI = 6                                                         P050B1
C******                                                                 P0070865
        WRITE (NUVI,501)                                                P0500120
501    FORMAT (1H1,1X,36HSBB67 - (050) SUBSCRIPTS FOR INTEGER/          P0500130
      -16X,21HAND REAL ARRAYS, V, K//2X,14HASA REF. 5.1.3//2X,          P0500140
      -7HRESULTS)                                                       P0500150
        IAC1I(5) = 3                                                    P0500160
        IAC2I(1,3)=4                                                    P0500170
       MCA3I(2,2,1) = -7                                                P0500180
        AC1S(20)=1.0                                                    P0500190
       AC2S(4,1)=-2.1E1                                                 P0500200
       A3S(1,2,2) = -22.0                                               P0500210
       JACVI = IAC1I(5) + IAC2I(1,3) + MCA3I(2,2,1)                     P0500220
       HHCVS = AC1S(20) - AC2S( 4,1) + A3S(1,2,2)                       P0500230
       WRITE (NUVI, 502) JACVI, HHCVS                                   P0500240
502    FORMAT (// I9//F11.1)                                            P0500250
504     JACVI=1                                                         P0500260
        ACVS=1.0                                                        P0500270
        IAC1I(JACVI)=10                                                 P0500280
        IAC2I(JACVI,3)=12                                               P0500290
       IAC2I(2,JACVI)=-6                                                P0500300
       MCA3I(JACVI,JACVI,3) = -1                                        P0500310
       MCA3I(2,JACVI,JACVI) = -1                                        P0500320
       MCA3I(JACVI,3,JACVI) = -2                                        P0500330
        AC1S(JACVI)=ACVS                                                P0500340
        AC2S(JACVI,2)=3.0                                               P0500350
        AC2S(5,JACVI)=60.0E-1                                           P0500360
       A3S(JACVI,JACVI,3) = +1.0                                        P0500370
       A3S(2,JACVI,JACVI) = +1.0                                        P0500380
       A3S(JACVI,3,JACVI) = +0.0                                        P0500390
       NECVI = IAC1I(1) - IAC2I(1,3) - IAC2I(2,1) + MCA3I(1,1,3) +      P0500400
      1        MCA3I(2,1,1) + MCA3I(1,3,1)                              P0500410
       MDCVI = IAC1I(JACVI) - IAC2I(JACVI,3) - IAC2I(2,JACVI) +         P0500420
      1        MCA3I(JACVI,JACVI,3) + MCA3I(2,JACVI,JACVI) +           P0500430
      2        MCA3I(JACVI,3,JACVI)                                    P0500440
       HHCVS = AC1S(1) + AC2S(1,2) - AC2S(5,1) + A3S(1,1,3) + A3S(2,1,1) P0500450
      1      + A3S(1,3,1)                                              P0500460
       GGDVS = AC1S(JACVI) + AC2S(JACVI,2) - AC2S(5,JACVI) +            P0500470
      1        A3S(JACVI,JACVI,3) + A3S(2,JACVI,JACVI) +               P0500480
      2        A3S(JACVI,3,JACVI)                                      P0500490
       WRITE (NUVI,508) NECVI, MDCVI, HHCVS, GGDVS                      P0500500
508    FORMAT (// 2(I9/) / 2(F11.1/) / 35H  THE ANSWERS ABOVE SHOULD BE 0P0500510
      1 FOR/31H  THIS SEGMENT TO BE SUCCESSFUL)                         P0500520
C******    END OF TEST SEGMENT 050                                      P0500530
C******  WHEN EXECUTING ONLY SEGMENT 050, THE STOP AND END CARDS        P0500540
C******  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS    P0500550
C******  1  AND  2  REMOVED.                                           P0500560
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C=     STOP                                                                 P0500570
C=     END                                                                  P0500580
       STOP                                                                 P050C1
       END                                                                  P050C2
C*******************************************************************************P0510010
C******                                                                      P0510020
C******                          SBB45 - (051)                               P0510030
C******                                                                      P0510040
C*******************************************************************************P0510050
C******  GENERAL PURPOSE                                          ASA REF   P0510060
C******    TEST FORMATION OF SUBSCRIPTS FOR INTEGER               5.1.3.3P0510070
C******    AND SINGLE PRECISION ARRAYS IN FORM V+K AND V-K                   P0510080
C*****                                                                       P0510090
C*****  S P E C I F I C A T I O N S  SEGMENT 051                             P0510100
C*****                                                                       P0011170
C*****  WHEN EXECUTING ONLY SEGMENT 051, THE SPECIFICATION STATEMENTS        P0011175
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS              P0011180
C*****  1  AND  2  REMOVED.                                                 P0011185
C*****                                                                       P0011190
C=     DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6),A3S(3,3,3)          P0011195
C=     INTEGER MCA3I(2,3,3)                                                 P0011200
       DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6),A3S(3,3,3)          P051A1
       INTEGER MCA3I(2,3,3)                                                 P051A2
C*****                                                                       P0011205
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.          P0510110
C*****                                                                       P0070870
C*****  WHEN EXECUTING ONLY SEGMENT 051, THE FOLLOWING STATEMENT             P0070875
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.             P0070880
C*****                                                                       P0070885
C=     NUVI = 6                                                             P0070890
       NUVI = 6                                                             P051B1
C*****                                                                       P0070895
        WRITE (NUVI,511)                                                    P0510120
511    FORMAT (1H1,1X,36HSBB45 - (051) SUBSCRIPTS FOR INTEGER/              P0510130
      -16X,24HAND REAL ARRAYS,V+K, V-K//2X,16HASA REF. 5.1.3.3//2X,         P0510140
      -7HRESULTS)                                                           P0510150
        JACVI=4                                                             P0510160
        IAC1I(JACVI+1)=1                                                    P0510170
        IAC1I(JACVI-1)=2                                                    P0510180
       IAC2I(JACVI-2,1)=3                                                   P0510190
        IAC2I(JACVI-2,2)=4                                                  P0510200
        IAC2I(2,JACVI+  3 )=5                                               P0510210
        IAC2I(1,JACVI-0)=-3                                                 P0510220
        AC1S(JACVI+1)=1.0                                                   P0510230
       AC1S(JACVI-1)=2.0                                                    P0510240
        AC2S(JACVI+0,1)=3.0                                                 P0510250
        AC2S(JACVI-2,2)=4.0                                                 P0510260
       AC2S(2,JACVI+  2 )=5.0                                               P0510270
        AC2S(1,JACVI-0) = -3.0E0                                            P0510280
       NECVI=IAC1I(5)+IAC1I(3)+IAC2I(2,1)+IAC2I(2,2)                        P0510290
      -+IAC2I(2,7)+IAC2I(1,4)-12                                            P0510300
       KBCVI = IAC1I(JACVI+1) + IAC1I(JACVI-1) + IAC2I(JACVI-2,1) +         P0510310
      1        IAC2I(JACVI-2,2) + IAC2I(1,JACVI-0) + IAC2I(2,JACVI+3) -12P0510320
        HHCVS = AC1S(5) + AC1S(3) + AC2S(4,1) + AC2S(2,2) + AC2S(2,6) +     P0510330
      1        AC2S(1,4) - 12.0                                            P0510340
        GGDVS = AC1S(JACVI+1) + AC1S(JACVI-1) + AC2S(JACVI+0,1) +           P0510350
      1        AC2S(JACVI-2,2) + AC2S(2,JACVI+2) + AC2S(1,JACVI-0) - 12.0P0510360
       JACVI = 2                                                            P0510370
       MCA3I(JACVI,JACVI+1,1)  =  12                                        P0510380
       MCA3I(1,JACVI+1,3) = -4                                              P0510390
       MCA3I(1,2,JACVI+0) = +2                                              P0510400
       MCA3I(JACVI-1,1,JACVI-1) = -6                                        P0510410
       MCA3I(JACVI,JACVI-0,2) = 15                                          P0510420
       MCA3I(2,JACVI-1,JACVI-1) = -11                                       P0510430
       MCA3I(JACVI-0,JACVI+1,JACVI+0) = -8                                  P0510440
       MCA3I(JACVI,JACVI+1,JACVI+1) = MCA3I(JACVI,JACVI+1,1) +              P0510450
      1        MCA3I(1,JACVI+1,3) + MCA3I(1,2,JACVI+0) +                   P0510460
      2        MCA3I(JACVI-1,1,JACVI-1) + MCA3I(JACVI,JACVI-0,2) +         P0510470
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     3         MCA3I(2,JACVI-1,JACVI-1) + MCA3I(JACVI-0,JACVI+1,JACVI+0) P0510480
      A3S(JACVI+1,1,1) = 12.0                                           P0510490
      A3S(1,JACVI+1,3) = -4.0                                           P0510500
      A3S(1,2,JACVI+0) = +2.0                                           P0510510
      A3S(JACVI-1,1,JACVI-1) = -6.0                                     P0510520
      A3S(JACVI+1,JACVI-0,2) = 15.0                                     P0510530
      A3S(2,JACVI-1,JACVI-1) = -11.0                                    P0510540
      A3S(JACVI-0,JACVI+1,JACVI+0) = -8.0                               P0510550
      A3S(JACVI+1,JACVI+1,JACVI+1) = A3S(JACVI+1,1,1) +                 P0510560
     1         A3S(1,JACVI+1,3) + A3S(1,2,JACVI+0) +                    P0510570
     2         A3S(JACVI-1,1,JACVI-1) + A3S(JACVI+1,JACVI-0,2) +        P0510580
     3         A3S(2,JACVI-1,JACVI-1) + A3S(JACVI-0,JACVI+1,JACVI+0)    P0510590
      WRITE (NUVI,515) NECVI,KBCVI,MCA3I(2,3,3),HHCVS,GGDVS,A3S(3,3,3)  P0510600
515   FORMAT (//3(I9/)/3(F11.1/)/35H  THE ANSWERS ABOVE SHOULD BE 0 FOR/P0510610
     1 31H  THIS SEGMENT TO BE SUCCESSFUL)                              P0510620
C*****    END OF TEST SEGMENT 051                                       P0510630
C*****  WHEN EXECUTING ONLY SEGMENT 051, THE STOP AND END CARDS         P0510640
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS     P0510650
C*****  1  AND  2  REMOVED.                                             P0510660
C=    STOP                                                              P0510670
C=    END                                                               P0510680
      STOP                                                              P051C1
      END                                                               P051C2
C*******************************************************************************P0520010
C*****                                                                  P0520020
C*****                        SBB13 - (052)                             P0520030
C*****                                                                  P0520040
C*******************************************************************************P0520050
C*****  GENERAL PURPOSE                                          ASA REFSP0520060
C*****    TEST FORMATION OF SUBSCRIPTS FOR INTEGER                5.1.3.3P0520070
C*****    AND SINGLE PRECISION ARRAYS                                   P0520080
C*****    FORM C*V, C*V-K, C*V+K                                        P0520090
C*****                                                                  P0520100
C*****  S P E C I F I C A T I O N S  SEGMENT 052                        P0520110
C*****                                                                  P0011210
C*****  WHEN EXECUTING ONLY SEGMENT 052, THE SPECIFICATION STATEMENTS   P0011215
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS         P0011220
C*****  1  AND  2  REMOVED.                                            P0011225
C*****                                                                  P0011230
C=    DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),A3S(3,3,3),AC2S(5,6)       P0011235
C=    INTEGER MCA3I(2,3,3)                                              P0011240
      DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),A3S(3,3,3),AC2S(5,6)       P052A1
      INTEGER MCA3I(2,3,3)                                              P052A2
C*****                                                                  P0011245
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0520120
C*****                                                                  P0070900
C*****  WHEN EXECUTING ONLY SEGMENT 052, THE FOLLOWING STATEMENT        P0070905
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.        P0070910
C*****                                                                  P0070915
C=    NUVI = 6                                                          P0070920
      NUVI = 6                                                          P052B1
C*****                                                                  P0070925
      WRITE (NUVI,520)                                                  P0520130
520   FORMAT (1H1,1X,36HSBB13 - (052) SUBSCRIPTS INTEGER AND/           P0520140
     -16X,23HREAL, C*V, C*V-K, C*V+K//2X,16HASA REF. 5,1.3.3//2X,       P0520150
     -7HRESULTS)                                                        P0520160
      JACVI=2                                                           P0520170
      KACVI= 1                                                          P0520180
      LCCVI = -2                                                        P0520190
      IAC1I(2*JACVI)=1                                                  P0520200
      IAC2I(1*JACVI,1)=2                                                P0520210
      IAC2I(1,3*KACVI)=3                                                P0520220
      AC1S(2*JACVI)=1.0                                                 P0520230
      AC2S(1*JACVI,1)=2.0                                               P0520240
      AC2S(3, 3*KACVI)=30.E-1                                           P0520250
      MDCVI = IAC1I(2*JACVI) + IAC2I(1*JACVI,1) + IAC2I(1,3*KACVI) - 6  P0520260
      NECVI=IAC1I(4) +IAC2I(2,1) +IAC2I(1,3) - 6                        P0520270
      GGDVS = AC1S(2*JACVI) + AC2S(1*JACVI,1) + AC2S(3,3*KACVI) - 6.0   P0520280
```

```
      HHCVS = AC1S(4) + AC2S(2,1) + AC2S(3,3) - 6.0                     P0520290
      WRITE (NUVI,524) MDCVI, NECVI, GGDVS, HHCVS                       P0520300
524   FORMAT  (//2(I9/)/2(F11.1/))                                     P0520310
      IAC1I(2*JACVI+1) = -6                                             P0520320
      IAC1I(1*JACVI-1)=-4                                               P0520330
      IAC2I(1*JACVI-1,2)=3                                              P0520340
      IAC2I(2*JACVI-3,1)=4                                              P0520350
      IAC2I(2,1*JACVI+4)=2                                              P0520360
      IAC2I(1,3*JACVI-2)=1                                              P0520370
      AC1S(2*LCCVI+9) = -6.0                                            P0520380
      AC1S(1*LCCVI+3) = -4.0                                            P0520390
      AC2S(1*LCCVI+3,2) = 3.0                                           P0520400
      AC2S(2*JACVI+0,3)=4.0                                             P0520410
      AC2S(3,1*JACVI+3)=2.0                                             P0520420
      AC2S(3,3*JACVI-2)=1.0                                             P0520430
      MDCVI = IAC1I(2*JACVI+1) + IAC1I(1*JACVI-1) + IAC2I(1*JACVI-1,2) +P0520440
     1        IAC2I(1*KACVI+0,1) + IAC2I(2,2*JACVI+2) +                  P0520450
     2        IAC2I(1,3*JACVI-2)                                         P0520460
      NECVI = IAC1I(5) + IAC1I(1) + IAC2I(1,2)                          P0520470
     -+ IAC2I(1,1) + IAC2I(2,6) + IAC2I(1,4)                            P0520480
      GGDVS = AC1S(2*JACVI+1) + AC1S(1*JACVI-1) + AC2S(1*JACVI-1,2) +   P0520490
     1        AC2S(2*JACVI+0,3) + AC2S(3,1*JACVI+3) + AC2S(3,3*JACVI-2) P0520500
      HHCVS = AC1S(5) + AC1S(1) + AC2S(1,2)                             P0520510
     -+ AC2S(4,3) + AC2S(3,5) + AC2S(3,4)                               P0520520
      WRITE (NUVI,524) MDCVI, NECVI, GGDVS, HHCVS                       P0520530
      MCA3I(2*KACVI,1,1) = -1                                           P0520540
      MCA3I(2,2*KACVI,2) = -2                                           P0520550
      MCA3I(1,1,1*KACVI) = -3                                           P0520560
      MCA3I(1*KACVI+1,2,3) = 1                                          P0520570
      MCA3I(2,1*KACVI+2,2) = 2                                          P0520580
      MCA3I(1,2,3*KACVI+0) = 3                                          P0520590
      MCA3I(4*KACVI-2,1,3) = 40                                         P0520600
      MCA3I(1,6*KACVI-3,2) = 5                                          P0520610
      MCA3I(2,3,10*KACVI-9) = -40                                       P0520620
      MCA3I(2*KACVI,5*KACVI-4,2*KACVI+0)= -5                            P0520630
      MCA3I(1*KACVI-0,3,2*KACVI+1) = MCA3I(2*KACVI,1,1) +               P0520640
     1    MCA3I(2,2*KACVI,2) + MCA3I(1,1,1*KACVI) + MCA3I(1*KACVI+1,2,3)P0520650
     2  + MCA3I(2,1*KACVI+2,2) + MCA3I(1,2,3*KACVI+0)                   P0520660
     3  + MCA3I(4*KACVI-2,1,3) + MCA3I(1,6*KACVI-3,2)                   P0520670
     4  + MCA3I(2,3,10*KACVI-9) + MCA3I(2*KACVI,5*KACVI-4,2*KACVI+0)    P0520680
      A3S(3*KACVI,1,1) = -1.0                                           P0520690
      A3S(2,2*KACVI,2) = -2.0                                           P0520700
      A3S(1,1,1*KACVI) = -3.0                                           P0520710
      A3S(2*KACVI+1,2,3) = 1.0                                          P0520720
      A3S(3,1*KACVI+2,2) = 2.0                                          P0520730
      A3S(1,2,3*KACVI+0) = 3.0                                          P0520740
      A3S(4*KACVI-2,1,3) = 40.0                                         P0520750
      A3S(1,6*KACVI-3,2) = 5.0                                          P0520760
      A3S(2,3,10*KACVI-8) = -40.0                                       P0520770
      A3S(3*KACVI,5*KACVI-4,2*KACVI+0) = -5.0                           P0520780
      A3S(1*KACVI-0,3,2*KACVI+1) = A3S(3*KACVI,1,1) + A3S(2,2*KACVI,2) +P0520790
     1    A3S(1,1,1*KACVI) + A3S(2*KACVI+1,2,3) + A3S(3,1*KACVI+2,2) +  P0520800
     2    A3S(1,2,3*KACVI+0) + A3S(4*KACVI-2,1,3) + A3S(1,6*KACVI-3,2) +P0520810
     3    A3S(2,3,10*KACVI-8) + A3S(3*KACVI,5*KACVI-4,2*KACVI+0)        P0520820
      WRITE (NUVI,525) MCA3I(1,3,3), A3S(1,3,3)                         P0520830
525   FORMAT (//I9 // F11.1 )                                          P0520840
      WRITE (NUVI,527)                                                  P0520850
527   FORMAT (// 35H  THE ANSWERS ABOVE SHOULD BE 0 FOR/                P0520860
     1  31H  THIS SEGMENT TO BE SUCCESSFUL)                            P0520870
C*****    END OF TEST SEGMENT 052                                       P0520880
C*****  WHEN EXECUTING ONLY SEGMENT 052, THE STOP AND END CARDS         P0520890
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS     P0520900
C*****  1  AND  2  REMOVED.                                             P0520910
C=    STOP                                                            P0520920
C=    END                                                             P0520930
      STOP                                                            P052C1
      END                                                             P052C2
C*******************************************************************************P0530010
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C*****                                                                  P0530020
C*****                          SBF17 - (053)                           P0530030
C*****                                                                  P0530040
C***********************************************************************P0530050
C*****                                                                  P0530060
C*****    GENERAL PURPOSE                                       ASA REF P0530070
C*****      TEST FORMATION OF SUBSCRIPTS FOR DOUBLE PRECISION   5.1.3.3 P0530080
C*****      ARRAYS                                                      P0530090
C*****      FORMS V, K, C*V,       C*V-K, C*V+K, V+K, V-K               P0530100
C*****                                                                  P0530110
C*****  S P E C I F I C A T I O N S  SEGMENT 053                        P0530120
C*****                                                                  P0011250
C*****  WHEN EXECUTING ONLY SEGMENT 053, THE SPECIFICATION STATEMENTS   P0011255
C*****  WHICH APPEAR AS COMMENTS, MUST HAVE THE  C=  IN COLUMNS         P0011260
C*****  1  AND  2  REMOVED.                                            P0011265
C*****                                                                  P0011270
C=     DOUBLE PRECISION AC1D(10),BC2D(7,4),CC3D(7,2,2),EP1D(43),        P0011275
C=    1                 VTAVD, WTAVD, AADVD                           P0011280
       DOUBLE PRECISION AC1D(10),BC2D(7,4),CC3D(7,2,2),EP1D(43),        P053A1
      1                 VTAVD, WTAVD, AADVD                           P053A2
C*****                                                                  P0011285
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0530130
C*****                                                                  P0070930
C*****  WHEN EXECUTING ONLY SEGMENT 053, THE FOLLOWING STATEMENT        P0070935
C*****  NUVI = 6  MUST HAVE THE  C=  IN COLUMNS 1 AND 2 REMOVED.        P0070940
C*****                                                                  P0070945
C=     NUVI = 6                                                         P0070950
       NUVI = 6                                                         P053B1
C*****                                                                  P0070955
       WRITE (NUVI,530)                                                 P0530140
530    FORMAT (1H1,1X,33HSBF17 - (053) SUBSCRIPTS FOR D.P./             P0530150
      -16X,17HARRAYS, ALL FORMS//2X,18HASA REF. - 5.1.3.3//2X,7HRESULTS) P0530160
       NACVI = 10                                                       P0530170
       JACVI=1                                                          P0530180
       KACVI=+2                                                         P0530190
       LCCVI = -1                                                       P0530200
       EP1D(10)=1.00                                                    P0530210
       BC2D(6,3)=4.0D0                                                  P0530220
       CC3D(4,1,1)=-60.0D-1                                             P0530230
       AC1D(JACVI)=30.0D-1                                              P0530240
       BC2D(JACVI,3)=1.0D0                                              P0530250
       CC3D(JACVI,1,1)=2.0D0                                            P0530260
       BC2D(3,JACVI)=5.0D0                                              P0530270
       CC3D(2,JACVI,1)=-2.0D0                                           P0530280
       CC3D(3,2,JACVI)=.4D1                                             P0530290
       VTAVD = EP1D(10) + BC2D(6,3) + CC3D(4,1,1) + AC1D(1)             P0530300
      -+BC2D(1,3) + CC3D(1,1,1) + BC2D(3,1) + CC3D(2,1,1)               P0530310
      -+CC3D(3,2,1) - 12.0D0                                            P0530320
       AADVD = EP1D(10) + AC1D(JACVI) + BC2D(JACVI,3) + BC2D(6,3) +     P0530330
      1        CC3D(4,1,1) + CC3D(JACVI,1,1) + BC2D(3,JACVI) +          P0530340
      2        CC3D(2,JACVI,1) + CC3D(3,2,JACVI) - 12.0D0               P0530350
       AC1D(3*JACVI)=-0.6D+1                                            P0530360
       AC1D(3*JACVI-2)=70.0D-1                                          P0530370
       AC1D(5*JACVI+3) = 1.0D0                                          P0530380
       AC1D (JACVI+3) = 1.0D0                                           P0530390
       AC1D (NACVI-3) = -1.0D0                                          P0530400
       BC2D(6*JACVI,2*KACVI-1) =2.0D0                                   P0530410
       BC2D(8*JACVI-2,1*LCCVI+5) = 10.0D0                               P0530420
       CC3D (3*JACVI,2,4*KACVI-6) = -8.0D0                              P0530430
       CC3D(10*JACVI-3,1,1*LCCVI+3) = -6.0D0                            P0530440
       WTAVD = AC1D(3) + AC1D(1) + AC1D(8) + BC2D(6,3) +                P0530450
      -BC2D(6,4) + CC3D(3,2,2) + CC3D(7,1,2) + AC1D(4) + AC1D(7)        P0530460
       CC3D(2*KACVI+1,NACVI-8,2*JACVI) = AC1D(3*JACVI) +                P0530470
      1        AC1D(3*JACVI-2) + AC1D(5*JACVI+3) + AC1D(JACVI+3) +      P0530480
      2        AC1D(NACVI-3) + BC2D(6*JACVI,2*KACVI-1) +                P0530490
      3        BC2D(8*JACVI-2,1*JACVI+3) + CC3D(3*JACVI,2,4*KACVI-6 ) + P0530500
      4        CC3D(10*JACVI-3,1,1*JACVI+1)                             P0530510
       WRITE (NUVI,531) VTAVD, WTAVD, AADVD, CC3D(5,2,2)                P0530520
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531   FORMAT (//4(D18.5/)/ 35H  THE ANSWERS ABOVE SHOULD BE 0 FOR/      P0530530
     1 31H  THIS SEGMENT TO BE SUCCESSFUL)                              P0530540
C*****    END OF TEST SEGMENT 053                                       P0530550
C*****  WHEN EXECUTING ONLY SEGMENT 053, THE STOP AND END CARDS         P0530560
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=  IN COLUMNS     P0530570
C*****  1  AND  2  REMOVED.                                             P0530580
C=    STOP                                                             P0530590
C=    END                                                              P0530600
      STOP                                                             P053C1
      END                                                              P053C2
C*******************************************************************************P0540010
C*****                                                                 P0540020
C*****                          SIMIF - (054)                          P0540030
C*****                                                                 P0540040
C*******************************************************************************P0540050
C*****  GENERAL PURPOSE                                    ASA REFS   P0540060
C*****    TO TEST ARITHMETIC IF STATEMENT                  7.1.2.2    P0540070
C*****    AND LOGICAL IF FOLLOWED BY GO TO                 7.1.2.3    P0540080
C*****    SO THAT THESE STATEMENTS MAY BE USED             4.2        P0540090
C*****    IN SUBSEQUENT TEST SEGMENTS.                               P0540100
C*****                                                               P0540110
C*****    ARITHMETIC EXPRESSIONS ARE -                               P0540120
C*****    INTEGER VARIABLE                                           P0540130
C*****    INTEGER VARIABLE + OR - A CONSTANT                         P0540140
C*****    LOGICAL EXPRESSIONS ARE -                                  P0540150
C*****    LOGICAL VARIABLE                                           P0540160
C*****    .NOT. LOGICAL VARIABLE                                     P0540170
C*****                                                               P0540180
C*****  S P E C I F I C A T I O N S  SEGMENT 054                      P0540190
C*****                                                               P0011290
C*****  WHEN EXECUTING ONLY SEGMENT 054, THE SPECIFICATION STATEMENTS P0011295
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=               P0011300
C*****  IN COLUMNS  1  AND  2  REMOVED.                              P0011305
C*****                                                               P0011310
C=    LOGICAL LVB, L1B(10), LNVB                                     P0011315
      LOGICAL LVB, L1B(10), LNVB                                     P054A1
C*****                                                               P0011320
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.   P0540200
C*****  WHEN EXECUTING ONLY SEGMENT 054, THE FOLLOWING STATEMENT     P0070960
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.      P0070965
C*****                                                               P0070970
C=    NUVI = 6                                                       P0070975
      NUVI = 6                                                       P054B1
      WRITE(NUVI,7540)                                               P0540210
      IVI = -8                                                       P0540220
      JVI = 0                                                        P0540230
      KVI = 2                                                        P0540240
      MVI = -4                                                       P0540250
      LVB = .TRUE.                                                   P0540260
      LNVB = .FALSE.                                                 P0540270
C*****  LOGICAL ARRAY L1B SHOULD CONTAIN ALL .TRUE. IF TEST IS CORRECT. P0540280
      NVI = 1                                                        P0540290
      IF (IVI) 541, 542, 542                                         P0540300
  544 IF (JVI) 542, 541, 542                                         P0540310
  545 IF (KVI) 542,542, 541                                          P0540320
C*****  ZERO IS NEITHER POSITIVE NOR NEGATIVE                        P0540330
  546 NAVI = IVI * JVI                                               P0540340
      IF (NAVI) 542, 541, 542                                        P0540350
  547 NAVI = JVI * MVI                                               P0540360
      IF (NAVI) 542, 541, 542                                        P0540370
  548 NAVI = JVI / MVI                                               P0540380
      IF (NAVI) 542, 541, 542                                        P0540390
  549 IF (MVI + 4) 542, 541, 542                                     P0540400
 7543 IF (KVI - 2) 542, 541, 542                                     P0540410
C*****  LOGICAL IF FOLLOWED BY GO TO                                 P0540420
 7544 IF (LVB) GO TO 541                                            P0540430
      GO TO 542                                                      P0540440
 7545 IF (.NOT.LNVB) GO TO 541                                       P0540450
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 542  L1B(NVI) = .FALSE.                                                    P0540460
      GO TO 543                                                             P0540470
  541 L1B(NVI) = .TRUE.                                                     P0540480
  543 NVI = NVI + 1                                                         P0540490
      GO TO (544,544,545,546,547,548,549,7543,7544,7545,7546), NVI          P0540500
 7546 WRITE (NUVI,7541) L1B                                                 P0540510
      WRITE (NUVI,7542)                                                     P0540520
 7540 FORMAT (2H1 ,30HSIMIF - (054) SIMPLE ARITH. IF/19X,14HAND LOGICAL     P0540530
     -IF//20H  ASA REF. - 7.1.2.2/ 13X, 7H7.1.2.3 //9H  RESULTS)            P0540540
7541  FORMAT (/L4)                                                          P0540550
 7542 FORMAT  (/36H  THE TEN ANSWERS ABOVE MUST BE TRUE)                    P0540560
C*****  END OF TEST SEGMENT 054                                            P0540570
C*****  WHEN EXECUTING ONLY SEGMENT 054, THE STOP AND END CARDS            P0540580
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                    P0540590
C*****  IN COLUMNS  1  AND  2  REMOVED.                                    P0540600
C=    STOP                                                                P0540610
C=    END                                                                 P0540620
      STOP                                                                P054C1
      END                                                                 P054C2
C*******************************************************************************P0550010
C*****                                                                     P0550020
C*****                          IFABS - (055)                              P0550030
C*****                                                                     P0550040
C*******************************************************************************P0550050
C*****  GENERAL PURPOSE                                          ASA REF  P0550060
C*****    TEST INTRINSIC FUNCTION ABS,IABS (ABSOLUTE VALUE)        8.2    P0550070
C*****                                                                     P0550080
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.        P0550090
C*****                                                                     P0070980
C*****  WHEN EXECUTING ONLY SEGMENT 055, THE FOLLOWING STATEMENT           P0070985
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.             P0070990
C*****                                                                     P0070995
C=    NUVI = 6                                                            P0071000
      NUVI = 6                                                            P055B1
C*****                                                                    P0071005
      WRITE(NUVI,0550)                                                    P0550100
0550  FORMAT(37H1 IFABS - (055) INTRINSIC FUNCTIONS--/10X,26HABS, IABS (P0550110
     1ABSOLUTE VALUE)//17H  ASA REFS. - 8.2//9H  RESULTS)                 P0550120
C*****    HEADER FOR SEGMENT 055 WRITTEN                                  P0550130
C*****    SINGLE PRECISION REAL ARGUMENT                                  P0550140
      MCGVI = 1                                                           P0550150
      CMAVS = 1.000789                                                    P0550160
      CMBVS = -0.2E2                                                      P0550170
      CMCVS = -2.0                                                        P0550180
      CMDVS =  2.0                                                        P0550190
      CMFVS = -4.0                                                        P0550200
      CMEVS = ABS(CMAVS)                                                  P0550210
      CMEVS = CMEVS - 1.000789                                            P0550220
      WRITE (NUVI,0557) CMEVS                                             P0550230
      CMBVS = ABS(CMBVS)                                                  P0550240
      CMEVS = CMBVS - 0.2E2                                               P0550250
      WRITE (NUVI,0557) CMEVS                                             P0550260
      CMEVS = 2.0*CMCVS+ABS(2.0*CMFVS+ABS(CMCVS*CMDVS**MCGVI))            P0550270
      WRITE (NUVI,0557) CMEVS                                             P0550280
      CMEVS = CMFVS+CMDVS+ABS(CMCVS+ABS(CMFVS)-ABS(CMDVS-CMCVS))          P0550290
      WRITE (NUVI,0557) CMEVS                                             P0550300
0557  FORMAT  (/2X,F15.1)                                                 P0550310
0558  FORMAT  (/2X,37HTHE ABOVE ANSWERS SHOULD ALL BE 0 FOR/2X,           P0550320
     1 35HTHIS TEST SEGMENT TO BE SUCCESSFUL.)                            P0550330
C*****    INTEGER ARGUMENT                                                P0550340
      MCAVI = 25                                                          P0550350
      MCBVI = 4                                                           P0550360
      MCCVI = -129                                                        P0550370
      MCDVI = -2                                                          P0550380
      MCEVI = 2                                                           P0550390
      MCFVI = IABS(MCAVI)                                                 P0550400
      MCFVI = MCFVI -25                                                   P0550410
      WRITE (NUVI,0551) MCFVI                                             P0550420
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      MCFVI = IABS(MCDVI+IABS(MCBVI/MCDVI)-IABS(MCEVI**2))-MCBVI          P0550430
      WRITE (NUVI,0551) MCFVI                                             P0550440
      MCCVI = IABS(MCCVI)                                                 P0550450
      MCFVI = MCCVI - 129                                                 P0550460
      WRITE (NUVI,0551) MCFVI                                             P0550470
0551  FORMAT  (/10X,I5)                                                   P0550480
      WRITE (NUVI,0558)                                                   P0550490
C*****    END OF TEST SEGMENT 055                                         P0550500
C*****  WHEN EXECUTING ONLY SEGMENT 055, THE  STOP  AND  END  CARDS       P0550510
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                   P0550520
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P0550530
C=    STOP                                                                P0550540
C=    END                                                                 P0550550
      STOP                                                                P055C1
      END                                                                 P055C2
C*************************************************************************P0560010
C*****                                                                    P0560020
C*****                          IFFLT - (056)                             P0560030
C*****                                                                    P0560040
C*************************************************************************P0560050
C*****  GENERAL PURPOSE                                          ASA REF P0560060
C*****    TEST INTRINSIC FUNCTION FLOAT (CONVERSION FROM           8.2   P0560070
C*****    INTEGER TO REAL)                                      (TABLE 3)P0560080
C*****                                                                    P0560090
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0560100
C*****                                                                    P0071010
C*****  WHEN EXECUTING ONLY SEGMENT 056, THE FOLLOWING STATEMENT          P0071015
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.           P0071020
C*****                                                                    P0071025
C=    NUVI = 6                                                            P0071030
      NUVI = 6                                                            P056B1
C*****                                                                    P0071035
      WRITE (NUVI,0560)                                                   P0560110
0560  FORMAT  (1H1,1X,34HIFFLT - (056) INTRINSIC FUNCTION--/16X,          P0560120
     15HFLOAT/ 2X,14HASA REF. - 8.2/2X,7HRESULTS)                         P0560130
C*****    HEADER FOR SEGMENT 056                                          P0560140
C*****    ARGUMENT IS INTEGER, FUNCTION IS REAL                           P0560150
      MCAVI = 64                                                          P0560160
      MCBVI = -512                                                        P0560170
      MCCVI = 2                                                           P0560180
      MCDVI = 4                                                           P0560190
      MCEVI = 8                                                           P0560200
      CMAVS = FLOAT(MCAVI)                                                P0560210
      CMBVS = CMAVS - 64.0                                                P0560220
      WRITE (NUVI,0561) CMBVS                                             P0560230
      CMAVS = FLOAT(MCBVI)                                                P0560240
      CMBVS = CMAVS + 512.0                                               P0560250
      WRITE (NUVI,0561) CMBVS                                             P0560260
      CMBVS= FLOAT(-2*MCEVI)+FLOAT(MCCVI*MCDVI)*FLOAT(MCEVI/MCDVI)-       P0560270
     -  FLOAT(MCDVI**MCCVI) + 16.0                                         P0560280
      WRITE (NUVI,0561) CMBVS                                             P0560290
      WRITE (NUVI,0562)                                                   P0560300
      WRITE (NUVI,0563)                                                   P0560310
0561  FORMAT  (/2X,F15.1)                                                 P0560320
0562  FORMAT  (/2X,37HTHE ABOVE ANSWERS SHOULD ALL BE 0 FOR)              P0560330
0563  FORMAT  (2X,35HTHIS TEST SEGMENT TO BE SUCCESSFUL.)                 P0560340
C*****    END OF TEST SEGMENT 056                                         P0560350
C*****  WHEN EXECUTING ONLY SEGMENT 056, THE  STOP  AND  END  CARDS       P0560360
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                   P0560370
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P0560380
C=    STOP                                                                P0560390
C=    END                                                                 P0560400
      STOP                                                                P056C1
      END                                                                 P056C2
C*************************************************************************P0570010
C*****                                                                    P0570020
C*****                          IFFIX - (057)                             P0570030
C*****                                                                    P0570040
```

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C*******************************************************************************P0570050
C*****  GENERAL PURPOSE                                              ASA REF P0570060
C*****    TEST INTRINSIC FUNCTION - IFIX - (CONVERSION FROM            8.2   P0570070
C*****    REAL TO INTEGER)                                          (TABLE 3)P0570080
C*****                                                                       P0570090
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.          P0570100
C*****                                                                       P0071040
C*****  WHEN EXECUTING ONLY SEGMENT 057, THE FOLLOWING STATEMENT             P0071045
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.              P0071050
C*****                                                                       P0071055
C=     NUVI = 6                                                              P0071060
       NUVI = 6                                                              P057B1
C*****                                                                       P0071065
       WRITE (NUVI,0570)                                                     P0570110
0570   FORMAT  (1H1,1X,34HIFFIX - (057) INTRINSIC FUNCTION--/16X,           4P0570120
      1HIFIX//2X,14HASA REF. - 8.2//2X,7HRESULTS)                           P0570130
C*****    HEADER FOR SEGMENT 057                                           P0570140
C*****    SINGLE PRECISION ARGUMENT, INTEGER FUNCTION                      P0570150
       CMAVS = 2.4567                                                       P0570160
       CMBVS = -0.2001E2                                                    P0570170
       CMCVS = +5.61E-1                                                     P0570180
       CMDVS = -123.456E0                                                   P0570190
       CMEVS = 789.9876E-2                                                  P0570200
       CMFVS = 2.0                                                          P0570210
       CMGVS = -0.5                                                         P0570220
       MCAVI = IFIX(CMAVS)                                                  P0570230
       MCBVI = MCAVI -2                                                     P0570240
       WRITE (NUVI,0571) MCBVI                                              P0570250
       MCAVI = IFIX(CMBVS)                                                  P0570260
       MCBVI = MCAVI + 20                                                   P0570270
       WRITE (NUVI,0571) MCBVI                                              P0570280
       MCAVI = IFIX(CMCVS)                                                  P0570290
       WRITE (NUVI,0571) MCAVI                                              P0570300
       MCAVI = IFIX(CMDVS)                                                  P0570310
       MCBVI = MCAVI + 123                                                  P0570320
       WRITE (NUVI,0571) MCBVI                                              P0570330
       MCAVI = IFIX(CMEVS)                                                  P0570340
       MCBVI = MCAVI - 7                                                    P0570350
       WRITE (NUVI,0571) MCBVI                                              P0570360
       MCBVI = IFIX(CMBVS*CMGVS)*IFIX(CMDVS/CMFVS)-                         P0570370
     - IFIX(CMBVS**IFIX(CMFVS))+1010                                        P0570380
       WRITE(NUVI,0571) MCBVI                                               P0570390
       WRITE (NUVI,0572)                                                    P0570400
       WRITE (NUVI,0573)                                                    P0570410
0571   FORMAT    (/10X,I6)                                                  P0570420
0572   FORMAT     (/2X,37HTHE ABOVE ANSWERS SHOULD ALL BE 0 FOR)            P0570430
0573   FORMAT     (2X,35HTHIS TEST SEGMENT TO BE SUCCESSFUL.)               P0570440
C*****    END OF TEST SEGMENT 057                                          P0570450
C*****  WHEN EXECUTING ONLY SEGMENT 057, THE  STOP  AND  END  CARDS        P0570460
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                    P0570470
C*****  IN COLUMNS  1  AND  2  REMOVED.                                    P0570480
C=     STOP                                                                 P0570490
C=     END                                                                  P0570500
       STOP                                                                 P057C1
       END                                                                  P057C2
C*******************************************************************************P0580010
C*****                                                                       P0580020
C*****                          IFSGN - (058)                                P0580030
C*****                                                                       P0580040
C*******************************************************************************P0580050
C*****  GENERAL PURPOSE                                              ASA REF P0580060
C*****    TEST INTRINSIC FUNCTION - SIGN, ISIGN - (TRANSFER        8.2/31-32P0580070
C*****    OF SIGN - SIGN OF A2 TIMES ABS(A1)  )                     (TABLE 3)P0580080
C*****                                                                       P0580090
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.          P0580100
C*****                                                                       P0071070
C*****  WHEN EXECUTING ONLY SEGMENT 058, THE FOLLOWING STATEMENT             P0071075
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.              P0071080
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C*****                                                                  P0071085
C=    NUVI = 6                                                          P0071090
      NUVI = 6                                                          P058B1
C*****                                                                  P0071095
      WRITE (NUVI,0580)                                                 P0580110
0580  FORMAT  (1H1 ,1X,35HIFSGN - (058) INTRINSIC FUNCTIONS--/16X, 24   P0580120
     1  HSIGN, ISIGN (TRANSFER OF/16X,14HARGUMENT SIGN)//2X,14HASA REF. P0580130
     2- 8.2//2X,7HRESULTS)                                              P0580140
C*****    HEADER FOR SEGMENT 058                                        P0580150
C*****    ARGUMENTS AND FUNCTION ARE ALL REAL-TYPE (SIGN)               P0580160
      CMAVS = 1.078                                                     P0580170
      CMBVS = -23.0E1                                                   P0580180
      CMCVS = -5.4567                                                   P0580190
      CMDVS = 7.567E-1                                                  P0580200
      CMGVS = +2.0                                                      P0580210
      CMHVS = -4.0                                                      P0580220
      CMIVS = +8.0                                                      P0580230
      CMEVS = SIGN(CMAVS,CMBVS)                                         P0580240
      CMFVS = CMEVS + 1.078                                             P0580250
      WRITE (NUVI,0581) CMFVS                                           P0580260
      CMEVS = SIGN(CMAVS,CMDVS)                                         P0580270
      CMFVS = CMEVS - 1.078                                             P0580280
      WRITE (NUVI,0581) CMFVS                                           P0580290
      CMEVS = SIGN(CMBVS,CMCVS)                                         P0580300
      CMFVS = CMEVS + 23.0E1                                            P0580310
      WRITE (NUVI,0581) CMFVS                                           P0580320
      CMEVS = SIGN(CMBVS,CMDVS)                                         P0580330
      CMFVS = CMEVS - 23.0E1                                            P0580340
      WRITE (NUVI,0581) CMFVS                                           P0580350
      CMFVS = SIGN(CMGVS,CMHVS)*SIGN(CMHVS,CMIVS)+                      P0580360
     - SIGN(SIGN(CMIVS,CMBVS),SIGN(CMHVS,CMGVS))                        P0580370
      WRITE(NUVI,0581) CMFVS                                            P0580380
C*****    ARGUMENTS AND FUNCTION ARE ALL INTEGER-TYPE (ISIGN)           P0580390
      MCAVI = 24                                                        P0580400
      MCBVI = +167                                                      P0580410
      MCCVI = -5980                                                     P0580420
      MCDVI = -12345                                                    P0580430
      MCGVI = 2                                                         P0580440
      MCHVI = -4                                                        P0580450
      MCIVI = 8                                                         P0580460
      MCEVI = ISIGN(MCAVI,MCBVI)                                        P0580470
      MCFVI = MCEVI - 24                                                P0580480
      WRITE (NUVI,0582) MCFVI                                           P0580490
      MCEVI = ISIGN(MCBVI,MCCVI)                                        P0580500
      MCFVI = MCEVI + 167                                               P0580510
      WRITE (NUVI,0582) MCFVI                                           P0580520
      MCEVI = ISIGN(MCCVI,MCDVI)                                        P0580530
      MCFVI = MCEVI + 5980                                              P0580540
      WRITE (NUVI,0582) MCFVI                                           P0580550
      MCEVI = ISIGN(MCDVI,MCAVI)                                        P0580560
      MCFVI = MCEVI - 12345                                             P0580570
      WRITE (NUVI,0582) MCFVI                                           P0580580
      MCFVI = ISIGN(ISIGN(MCGVI*MCHVI+(2*MCIVI),MCIVI/MCGVI+MCCVI)+     P0580590
     1        ISIGN(+8,MCHVI/MCGVI+MCCVI),MCIVI) - MCHVI **2            P0580600
      WRITE(NUVI,0582)MCFVI                                             P0580610
      WRITE (NUVI,0583)                                                 P0580620
      WRITE(NUVI,0584)                                                  P0580630
0581  FORMAT      (/2X,F15.1)                                           P0580640
0582  FORMAT      (/10X,I5)                                             P0580650
0583  FORMAT      (/2X,37HTHE ABOVE ANSWERS SHOULD ALL BE 0 FOR)        P0580660
0584  FORMAT      (2X,35HTHIS TEST SEGMENT TO BE SUCCESSFUL.)           P0580670
C*****    END OF TEST SEGMENT 058                                       P0580680
C*****  WHEN EXECUTING ONLY SEGMENT 058, THE  STOP  AND  END  CARDS     P0580690
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0580700
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0580710
C=    STOP                                                              P0580720
C=    END                                                               P0580730
      STOP                                                              P058C1
```

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      END                                                                P058C2
C*************************************************************************P0590010
C*****                                                                   P0590020
C*****                          IFDAB - (059)                            P0590030
C*****                                                                   P0590040
C*************************************************************************P0590050
C*****  GENERAL PURPOSE                                        ASA REF  P0590060
C*****    TEST INTRINSIC FUNCTION DABS (ABSOLUTE VALUE OF        8.2    P0590070
C*****    A DOUBLE PRECISION ARGUMENT)                        (TABLE 3)P0590080
C*****                                                                   P0590090
C*****  S P E C I F I C A T I O N S  SEGMENT 059                         P0590100
C*****                                                                   P0011330
C*****  WHEN EXECUTING ONLY SEGMENT 059, THE SPECIFICATION STATEMENTS    P0011335
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                  P0011340
C*****  IN COLUMNS 1  AND  2  REMOVED.                                   P0011345
C*****                                                                   P0011350
C=    DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD,DPEVD,DPFVD,DPGVD        P0011355
      DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD,DPEVD,DPFVD,DPGVD        P059A1
C*****                                                                   P0011360
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0590110
C*****                                                                   P0071100
C*****  WHEN EXECUTING ONLY SEGMENT 059, THE FOLLOWING STATEMENT         P0071105
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.          P0071110
C*****                                                                   P0071115
C=    NUVI = 6                                                           P0071120
      NUVI = 6                                                           P059B1
C*****                                                                   P0071125
      WRITE (NUVI,0590)                                                  P0590120
0590  FORMAT (1H1,1X,34HIFDAB - (059) INTRINSIC FUNCTION--/16X,           P0590130
     123HDABS (ABSOLUTE VALUE OF/16X,16HA D.P. ARGUMENT)/  2X,           P0590140
     214HASA REF. - 8.2//                                                P0590150
     32X,7HRESULTS)                                                      P0590160
C*****    HEADER FOR SEGMENT 059 WRITTEN                                 P0590170
C*****    ARGUMENT AND FUNCTION ARE DOUBLE PRECISION                     P0590180
      DPAVD = 1.234567890123 4D0                                         P0590190
      DPBVD = -2.0D0                                                     P0590200
      DPCVD = -39.468024681357D-1                                        P0590210
      DPDVD = 2.0D0                                                      P0590220
      DPGVD = -4.0D0                                                     P0590230
      DPEVD = 1.0D0                                                      P0590240
      DPEVD = DABS(DPAVD)                                                P0590250
      DPFVD = DPEVD - 1.234567890123 4D0                                 P0590260
      WRITE (NUVI,0591) DPFVD                                            P0590270
      DPEVD = 2.0D0*DPBVD+DABS(DPDVD*DPGVD+DABS(DPGVD/(2.0D0*DPDVD)      P0590280
     - *DPDVD**2))                                                       P0590290
      WRITE (NUVI,0591) DPEVD                                            P0590300
      DPEVD = 3.0D0                                                      P0590310
      DPEVD = DABS(DPCVD)                                                P0590320
      DPFVD = DPEVD - 39.468024681357D-1                                 P0590330
      WRITE (NUVI,0591) DPFVD                                            P0590340
      DPEVD = 4.0D0                                                      P0590350
      DPEVD = DPGVD +DPDVD+DABS(DPBVD+DABS(DPGVD)-DABS(DPDVD-DPBVD))     P0590360
      WRITE (NUVI,0591) DPEVD                                            P0590370
      WRITE (NUVI,0592)                                                  P0590380
      WRITE (NUVI,0593)                                                  P0590390
0591  FORMAT (/ D22.10)                                                  P0590400
0592  FORMAT (/ 39H  THE ABOVE ANSWERS SHOULD ALL BE 0 FOR)              P0590410
0593  FORMAT (36H  THIS TEST SEGMENT TO BE SUCCESSFUL)                   P0590420
C*****    END OF TEST SEGMENT 059                                        P0590430
C*****  WHEN EXECUTING ONLY SEGMENT 059, THE  STOP  AND  END  CARDS      P0590440
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P0590450
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0590460
C=    STOP                                                               P0590470
C=    END                                                                P0590480
      STOP                                                               P059C1
      END                                                                P059C2
C*************************************************************************P0600010
C*****                                                                   P0600020
```

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C*****                          IFTRN - (060)                                  P0600030
C*****                                                                         P0600040
C*************************************************************************** P0600050
C*****  GENERAL PURPOSE                                              ASA REF  P0600060
C*****     TEST INTRINSIC FUNCTIONS AINT,INT, AND IDINT --             8.2     P0600070
C*****     TRUNCATION (SIGN OF A * LARGEST INTEGER LE ABS(A) )  (TABLE 3)P0600080
C*****                                                                         P0600090
C*****  S P E C I F I C A T I O N S  SEGMENT 060                               P0600100
C*****                                                                         P0011370
C*****  WHEN EXECUTING ONLY SEGMENT 060, THE SPECIFICATION STATEMENTS          P0011375
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                        P0011380
C*****  IN COLUMNS 1  AND  2  REMOVED.                                        P0011385
C*****                                                                         P0011390
C=     DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD                                P0011395
       DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD                                P060A1
C*****                                                                         P0011400
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.            P0600110
C*****                                                                         P0071130
C*****  WHEN EXECUTING ONLY SEGMENT 060, THE FOLLOWING STATEMENT               P0071135
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.                P0071140
C*****                                                                         P0071145
C=     NUVI = 6                                                                P0071150
       NUVI = 6                                                                P060B1
C*****                                                                         P0071155
       WRITE (NUVI,0600)                                                       P0600120
0600   FORMAT (1H1, 1X,34HIFTRN - (060) INTRINSIC FUNCTION--/10X,29HAINT,      P0600130
     1 INT, IDINT (TRUNCATION)//16H  ASA REF. - 8.2//2X,7HRESULTS)             P0600140
C*****     HEADER FOR SEGMENT 060 WRITTEN                                      P0600150
C*****     TEST OF AINT - REAL ARGUMENT AND REAL FUNCTION                      P0600160
       CMAVS = 1.999                                                           P0600170
       CMBVS = 999.001                                                         P0600180
       CMCVS = -0.45678                                                        P0600190
       CMDVS = -9876.0                                                         P0600200
       CMEVS = 1.0                                                             P0600210
       CMEVS = AINT(CMAVS)                                                     P0600220
       CMFVS = CMEVS - 1.0                                                     P0600230
       WRITE (NUVI,0601) CMFVS                                                 P0600240
       CMEVS = 2.0                                                             P0600250
       CMEVS = AINT(CMBVS)                                                     P0600260
       CMFVS = CMEVS - 999.0                                                   P0600270
       WRITE (NUVI,0601) CMFVS                                                 P0600280
       CMEVS = 3.0                                                             P0600290
       CMEVS = AINT(CMCVS)                                                     P0600300
       CMFVS = CMEVS                                                           P0600310
       WRITE (NUVI,0601) CMFVS                                                 P0600320
       CMEVS = 4.0                                                             P0600330
       CMEVS = AINT(CMDVS)                                                     P0600340
       CMFVS = CMEVS + 9876.0                                                  P0600350
       WRITE (NUVI,0601) CMFVS                                                 P0600360
       WRITE (NUVI,0603)                                                       P0600370
C*****     TEST OF INT - REAL ARGUMENT BUT INTEGER FUNCTION                    P0600380
       MCAVI = 5                                                               P0600390
       MCAVI = INT(CMAVS)                                                      P0600400
       MCBVI = MCAVI - 1                                                       P0600410
       WRITE (NUVI,0604) MCBVI                                                 P0600420
       MCAVI = 6                                                               P0600430
       MCAVI = INT(CMBVS)                                                      P0600440
       MCBVI = MCAVI - 999                                                     P0600450
       WRITE (NUVI,0604) MCBVI                                                 P0600460
       MCAVI = 7                                                               P0600470
       MCAVI = INT(CMCVS)                                                      P0600480
       WRITE (NUVI,0604) MCAVI                                                 P0600490
       MCAVI = 8                                                               P0600500
       MCAVI = INT(CMDVS)                                                      P0600510
       MCBVI = MCAVI + 9876                                                    P0600520
       WRITE (NUVI,0604) MCBVI                                                 P0600530
       WRITE (NUVI,0605)                                                       P0600540
C*****     TEST OF IDINT - DOUBLE PRECISION ARGUMENT AND FUNCTION              P0600550
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      DPAVD = 1.999999999999D1                                          P0600560
      DPBVD = +99.00050018912 3D0                                       P0600570
      DPCVD = -0.987654321019 8D0                                       P0600580
      DPDVD = -456.7890987651 4D1                                       P0600590
      MCAVI = 9                                                         P0600600
      MCAVI = IDINT(DPAVD)                                              P0600610
      MCBVI = MCAVI - 19                                                P0600620
      WRITE (NUVI,0606) MCBVI                                           P0600630
      MCAVI = 10                                                        P0600640
      MCAVI = IDINT(DPBVD)                                              P0600650
      MCBVI = MCAVI - 99                                                P0600660
      WRITE (NUVI,0606) MCBVI                                           P0600670
      MCAVI = 11                                                        P0600680
      MCAVI = IDINT(DPCVD)                                              P0600690
      WRITE (NUVI,0606) MCAVI                                           P0600700
      MCAVI = 12                                                        P0600710
      MCAVI = IDINT(DPDVD)                                              P0600720
      MCBVI = MCAVI + 4567                                              P0600730
      WRITE (NUVI,0606) MCBVI                                           P0600740
      WRITE (NUVI,0607)                                                 P0600750
      WRITE (NUVI,0608)                                                 P0600760
0601  FORMAT (/F11.1)                                                   P0600770
0603  FORMAT (  2X,16HEND OF AINT TEST)                                 P0600780
0604  FORMAT (/I10)                                                     P0600790
0605  FORMAT (  2X,15HEND OF INT TEST)                                  P0600800
0606  FORMAT (/I10)                                                     P0600810
0607  FORMAT (  2X,17HEND OF IDINT TEST)                                P0600820
0608  FORMAT (  40H  ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS/            P0600830
     1 31H  TEST SEGMENT TO BE SUCCESSFUL)                              P0600840
C*****    END OF TEST SEGMENT 060                                       P0600850
C*****  WHEN EXECUTING ONLY SEGMENT 060, THE  STOP  AND  END  CARDS     P0600860
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0600870
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0600880
C=    STOP                                                            P0600890
C=    END                                                             P0600900
      STOP                                                            P060C1
      END                                                             P060C2
C*******************************************************************************P0610010
C*****                                                                 P0610020
C*****                          IFMOD - (061)                          P0610030
C*****                                                                 P0610040
C*******************************************************************************P0610050
C*****  GENERAL PURPOSE                                        ASA REF P0610060
C*****    TEST INTRINSIC FUNCTION AMOD AND MOD - REMAINDERING,   8.2   P0610070
C*****    WHICH IS DEFINED AS A1-(A1/A2)A2 WHERE (X) IS AN    (TABLE 3)P0610080
C*****    INTEGER WHOSE MAGNITUDE IS LE ABS(X) AND WHOSE SIGN           P0610090
C*****    IS THE SAME AS X.                                             P0610100
C*****                                                                  P0610110
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0610120
C*****                                                                  P0071160
C*****  WHEN EXECUTING ONLY SEGMENT 061, THE FOLLOWING STATEMENT        P0071165
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.         P0071170
C*****                                                                  P0071175
C=    NUVI = 6                                                        P0071180
      NUVI = 6                                                        P061B1
C*****                                                                P0071185
      WRITE (NUVI,0610)                                               P0610130
0610  FORMAT (1H1, 1X,34HIFMOD - (061) INTRINSIC FUNCTION--/16X,24HAMOD,P0610140
     1 MOD (REMAINDERING)//16H  ASA REF. - 8.2//2X,                   P0610150
     2 7HRESULTS)                                                     P0610160
C*****    HEADER FOR SEGMENT 061 WRITTEN                              P0610170
C*****    TEST OF AMOD - REAL ARGUMENTS AND REAL FUNCTION             P0610180
      CMAVS = 16.0625                                                 P0610190
      CMBVS = -4.0                                                    P0610200
      CMCVS = -8.125                                                  P0610210
      CMDVS = 2.5                                                     P0610220
      CMEVS = -1.0                                                    P0610230
      CMFVS = 1.0                                                     P0610240
```

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      CMFVS = AMOD(CMAVS,CMBVS)                                          P0610250
      CMGVS = CMFVS - 0.0625                                             P0610260
      WRITE (NUVI,0611) CMGVS                                            P0610270
      CMFVS = 2.0                                                        P0610280
      CMFVS = AMOD(CMCVS,CMDVS)                                          P0610290
      CMGVS = CMFVS + 0.625                                              P0610300
      WRITE (NUVI,0611) CMGVS                                            P0610310
      CMFVS = 3.0                                                        P0610320
      CMFVS = AMOD(CMBVS,CMEVS)                                          P0610330
      CMGVS = CMFVS + 0.0                                                P0610340
      WRITE (NUVI,0611) CMGVS                                            P0610350
      CMFVS = 4.0                                                        P0610360
      CMFVS = AMOD(CMBVS,CMAVS)                                          P0610370
      CMGVS = CMFVS + 4.0                                                P0610380
      WRITE (NUVI,0611) CMGVS                                            P0610390
      WRITE (NUVI,0612)                                                  P0610400
C*****    TEST OF MOD - INTEGER ARGUMENTS AND INTEGER FUNCTION           P0610410
      MCAVI = 35                                                         P0610420
      MCBVI = -5                                                         P0610430
      MCCVI = -998                                                       P0610440
      MCDVI = 9                                                          P0610450
      MCEVI = 10                                                         P0610460
      MCFVI = 1                                                          P0610470
      MCFVI = MOD(MCAVI,MCBVI)                                           P0610480
      MCGVI = MCFVI + 0                                                  P0610490
      WRITE (NUVI,0613) MCGVI                                            P0610500
      MCFVI = 2                                                          P0610510
      MCFVI = MOD(MCCVI,MCDVI)                                           P0610520
      MCGVI = MCFVI + 8                                                  P0610530
      WRITE (NUVI,0613) MCGVI                                            P0610540
      MCFVI = 3                                                          P0610550
      MCFVI = MOD(MCAVI,MCDVI)                                           P0610560
      MCGVI = MCFVI - 8                                                  P0610570
      WRITE (NUVI,0613) MCGVI                                            P0610580
      MCFVI = 4                                                          P0610590
      MCFVI = MOD(MCBVI,MCEVI)                                           P0610600
      MCGVI = MCFVI + 5                                                  P0610610
      WRITE (NUVI,0613) MCGVI                                            P0610620
      WRITE (NUVI,0614)                                                  P0610630
0611  FORMAT (/F11.1)                                                    P0610640
0612  FORMAT    (//2X,17HEND OF AMOD TEST.)                              P0610650
0613  FORMAT (/I10)                                                      P0610660
0614  FORMAT (//2X,16HEND OF MOD TEST.//2X,                              P0610670
     138HALL ABOVE ANSWERS SHOULD BE 0 FOR THIS/2X,                      P0610680
     230HTEST SEGMENT TO BE SUCCESSFUL.)                                 P0610690
C*****    END OF TEST SEGMENT 061                                        P0610700
C*****  WHEN EXECUTING ONLY SEGMENT 061, THE  STOP  AND  END  CARDS      P0610710
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P0610720
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0610730
C=    STOP                                                               P0610740
C=    END                                                                P0610750
      STOP                                                               P061C1
      END                                                                P061C2
C*******************************************************************************P0620010
C*****                                                                   P0620020
C*****                          IFMAX - (062)                            P0620030
C*****                                                                   P0620040
C*******************************************************************************P0620050
C*****  GENERAL PURPOSE                                        ASA REF  P0620060
C*****    TEST OF INTRINSIC FUNCTION AMAX0,AMAX1,MAX0,MAX1 AND    8.2   P0620070
C*****    DMAX1 -- CHOOSING LARGEST VALUE                     (TABLE 3)P0620080
C*****                                                                   P0620090
C*****  S P E C I F I C A T I O N S  SEGMENT 062                         P0620100
C*****                                                                   P0011410
C*****  WHEN EXECUTING ONLY SEGMENT 062, THE SPECIFICATION STATEMENTS    P0011415
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                  P0011420
C*****  IN COLUMNS 1  AND  2  REMOVED.                                   P0011425
C*****                                                                   P0011430
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C=    DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD                P0011435
      DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD                P062A1
C*****                                                                     P0011440
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.         P0620110
C*****                                                                     P0071190
C*****  WHEN EXECUTING ONLY SEGMENT 062, THE FOLLOWING STATEMENT           P0071195
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.            P0071200
C*****                                                                     P0071205
C=    NUVI = 6                                                             P0071210
      NUVI = 6                                                             P062B1
C*****                                                                     P0071215
      WRITE (NUVI,0620)                                                    P0620120
0620  FORMAT (1H1, 1X,35HIFMAX - (062) INTRINSIC FUNCTIONS--/13X,28HAMAXP0620130
     10,AMAX1,MAX0, MAX1,DMAX1    / 2X,14HASA REF. - 8.2//2X,7HRESULTS) P0620140
C*****    TEST OF AMAX0 - INTEGER ARGUMENTS, REAL FUNCTION          8.2/19P0620150
C*****    TWO ARGUMENTS FOR AMAX0                                          P0620160
      WRITE (NUVI,0625)                                                    P0620170
      MCAVI = 128                                                          P0620180
      MCBVI = 64                                                           P0620190
      MCCVI = -8                                                           P0620200
      MCDVI = -4096                                                        P0620210
      CMEVS = 1.0                                                          P0620220
      CMEVS = AMAX0(MCAVI,MCBVI)                                           P0620230
      CMFVS = CMEVS - 128.0                                                P0620240
      WRITE (NUVI,0621) CMFVS                                              P0620250
      CMEVS = 2.0                                                          P0620260
      CMEVS = AMAX0(MCCVI,MCCVI)                                           P0620270
      CMFVS = CMEVS + 8.0                                                  P0620280
      WRITE (NUVI,0621) CMFVS                                              P0620290
      CMEVS = 3.0                                                          P0620300
      CMEVS = AMAX0(MCAVI,MCCVI)                                           P0620310
      CMFVS = CMEVS - 128.0                                                P0620320
      WRITE (NUVI,0621) CMFVS                                              P0620330
      CMEVS = 4.0                                                          P0620340
      CMEVS = AMAX0(MCCVI,MCDVI)                                           P0620350
      CMFVS = CMEVS + 8.0                                                  P0620360
      WRITE (NUVI,0621) CMFVS                                              P0620370
      CMEVS = 5.0                                                          P0620380
      CMEVS = AMAX0(MCDVI,MCBVI)                                           P0620390
      CMFVS = CMEVS - 64.0                                                 P0620400
      WRITE (NUVI,0621) CMFVS                                              P0620410
      MCGVI = 2                                                            P0620420
      WRITE (NUVI,0622) MCGVI                                              P0620430
C*****    THREE ARGUMENTS FOR AMAX0                                        P0620440
      CMEVS = 6.0                                                          P0620450
      CMEVS = AMAX0(MCCVI,MCBVI,MCAVI)                                     P0620460
      CMFVS = CMEVS - 128.0                                                P0620470
      WRITE (NUVI,0621) CMFVS                                              P0620480
      CMEVS = 7.0                                                          P0620490
      CMEVS = AMAX0(MCDVI,MCBVI,MCCVI)                                     P0620500
      CMFVS = CMEVS - 64.0                                                 P0620510
      WRITE (NUVI,0621) CMFVS                                              P0620520
      CMEVS = 8.0                                                          P0620530
      CMEVS = AMAX0(MCDVI,MCCVI,MCCVI)                                     P0620540
      CMFVS = CMEVS + 8.0                                                  P0620550
      WRITE (NUVI,0621) CMFVS                                              P0620560
      MCGVI = 3                                                            P0620570
      WRITE (NUVI,0622) MCGVI                                              P0620580
C*****    FOUR OR FIVE ARGUMENTS FOR AMAX0                                 P0620590
      CMEVS = 9.0                                                          P0620600
      CMEVS = AMAX0(MCAVI,MCBVI,MCCVI,MCDVI)                               P0620610
      CMFVS = CMEVS - 128.0                                                P0620620
      WRITE (NUVI,0621) CMFVS                                              P0620630
      CMEVS = 10.0                                                         P0620640
      CMEVS = AMAX0(MCAVI,MCBVI,MCCVI,MCDVI,MCAVI)                         P0620650
      CMFVS = CMEVS - 128.0                                                P0620660
      WRITE (NUVI,0621) CMFVS                                              P0620670
      WRITE (NUVI,0623)                                                    P0620680
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C*****     TEST OF AMAX1 - REAL ARGUMENTS AND FUNCTION          8.2/20P0620690
C*****     TWO ARGUMENTS FOR AMAX1                                    P0620700
      WRITE (NUVI,0624)                                               P0620710
      CMAVS = 102.0E0                                                 P0620720
      CMBVS = +76.12                                                  P0620730
      CMCVS = -85.43E1                                                P0620740
      CMDVS = -0.986                                                  P0620750
      CMEVS = AMAX1(CMAVS,CMBVS)                                      P0620760
      CMFVS = CMEVS - 102.0E0                                         P0620770
      WRITE (NUVI,0621) CMFVS                                         P0620780
      CMEVS = AMAX1(CMBVS,CMCVS)                                      P0620790
      CMFVS = CMEVS - 76.12                                           P0620800
      WRITE (NUVI,0621) CMFVS                                         P0620810
      CMEVS = AMAX1(CMDVS,CMCVS)                                      P0620820
      CMFVS = CMEVS + 0.986                                           P0620830
      WRITE (NUVI,0621) CMFVS                                         P0620840
      MCGVI = 2                                                       P0620850
      WRITE (NUVI,0622) MCGVI                                         P0620860
C*****     THREE ARGUMENTS FOR AMAX1                                  P0620870
      CMEVS = AMAX1(CMCVS,CMBVS,CMAVS)                                P0620880
      CMFVS = CMEVS - 102.0E0                                         P0620890
      WRITE (NUVI,0621) CMFVS                                         P0620900
      CMEVS = AMAX1(CMDVS,CMBVS,CMCVS)                                P0620910
      CMFVS = CMEVS - 76.12                                           P0620920
      WRITE (NUVI,0621) CMFVS                                         P0620930
      CMEVS = AMAX1(CMCVS,CMCVS,CMCVS)                                P0620940
      CMFVS = CMEVS - CMCVS                                           P0620950
      WRITE (NUVI,0621) CMFVS                                         P0620960
      MCGVI = 3                                                       P0620970
      WRITE (NUVI,0622) MCGVI                                         P0620980
C*****     FOUR OR FIVE ARGUMENTS FOR AMAX1                           P0620990
      CMEVS = AMAX1(CMAVS,CMBVS,CMCVS,CMDVS)                          P0621000
      CMFVS = CMEVS - 102.0E0                                         P0621010
      WRITE (NUVI,0621) CMFVS                                         P0621020
      CMEVS = AMAX1(CMAVS,CMCVS,CMDVS,CMBVS,CMAVS)                    P0621030
      CMFVS = CMEVS - 102.0E0                                         P0621040
      WRITE (NUVI,0621) CMFVS                                         P0621050
      WRITE (NUVI,0623)                                               P0621060
C*****     TEST OF MAX0 - INTEGER ARGUMENTS AND FUNCTION        8.2/21P0621070
C*****     TWO ARGUMENTS FOR MAX0                                     P0621080
      WRITE (NUVI,0628)                                               P0621090
      MCEVI = MAX0(MCAVI,MCBVI)                                       P0621100
      MCFVI = MCEVI - 128                                             P0621110
      WRITE (NUVI,0626) MCFVI                                         P0621120
      MCEVI = MAX0(MCCVI,MCDVI)                                       P0621130
      MCFVI = MCEVI + 8                                               P0621140
      WRITE (NUVI,0626) MCFVI                                         P0621150
      MCEVI = MAX0(MCBVI,MCCVI)                                       P0621160
      MCFVI = MCEVI - 64                                              P0621170
      WRITE (NUVI,0626) MCFVI                                         P0621180
      MCEVI = MAX0(MCCVI,MCCVI)                                       P0621190
      MCFVI = MCEVI - MCCVI                                           P0621200
      WRITE (NUVI,0626) MCFVI                                         P0621210
      MCGVI = 2                                                       P0621220
      WRITE (NUVI,0622) MCGVI                                         P0621230
C*****     THREE ARGUMENTS FOR MAX0                                   P0621240
      MCEVI = MAX0(MCCVI,MCBVI,MCAVI)                                 P0621250
      MCFVI = MCEVI - 128                                             P0621260
      WRITE (NUVI,0626) MCFVI                                         P0621270
      MCEVI = MAX0(MCDVI,MCDVI,MCCVI)                                 P0621280
      MCFVI = MCEVI + 8                                               P0621290
      WRITE (NUVI,0626) MCFVI                                         P0621300
      MCGVI = 3                                                       P0621310
      WRITE (NUVI,0622) MCGVI                                         P0621320
C*****     FOUR OR FIVE ARGUMENTS FOR MAX0                            P0621330
      MCEVI = MAX0(MCDVI,MCCVI,MCBVI,MCAVI)                           P0621340
      MCFVI = MCEVI - 128                                             P0621350
      WRITE (NUVI,0626) MCFVI                                         P0621360
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      MCEVI = MAX0(MCAVI,MCCVI,MCBVI,MCDVI,MCBVI)                       P0621370
      MCFVI = MCEVI - 128                                               P0621380
      WRITE (NUVI,0626) MCFVI                                           P0621390
      WRITE (NUVI,0623)                                                 P0621400
C*****    TEST DF MAX1 - REAL ARGUMENTS AND INTEGER FUNCTION      8.2/22P0621410
C*****    TWD ARGUMENTS FOR MAX1                                        P0621420
      WRITE (NUVI,0629)                                                 P0621430
      MCEVI = MAX1(CMAVS,CMBVS)                                         P0621440
      MCFVI = MCEVI - 102                                               P0621450
      WRITE (NUVI,0626) MCFVI                                           P0621460
      MCEVI = MAX1(CMBVS,CMCVS)                                         P0621470
      MCFVI = MCEVI - 76                                                P0621480
      WRITE (NUVI,0626) MCFVI                                           P0621490
      MCEVI = MAX1(CMDVS,CMCVS)                                         P0621500
      MCFVI = MCEVI + 0                                                 P0621510
      WRITE (NUVI,0626) MCFVI                                           P0621520
      MCGVI = 2                                                         P0621530
      WRITE (NUVI,0622) MCGVI                                           P0621540
C*****    THREE ARGUMENTS FDR MAX1                                      P0621550
      MCEVI = MAX1(CMCVS,CMBVS,CMAVS)                                   P0621560
      MCFVI = MCEVI - 102                                               P0621570
      WRITE (NUVI,0626) MCFVI                                           P0621580
      MCEVI = MAX1(CMDVS,CMCVS,CMBVS)                                   P0621590
      MCFVI = MCEVI - 76                                                P0621600
      WRITE (NUVI,0626) MCFVI                                           P0621610
      MCGVI = 3                                                         P0621620
      WRITE (NUVI,0622) MCGVI                                           P0621630
C*****    FDUR DR FIVE ARGUMENTS FOR MAX1                               P0621640
      MCEVI = MAX1(CMAVS,CMBVS,CMCVS,CMDVS)                             P0621650
      MCFVI = MCEVI - 102                                               P0621660
      WRITE (NUVI,0626)  MCFVI                                          P0621670
      MCEVI = MAX1(CMAVS,CMCVS,CMBVS,CMAVS,CMDVS)                       P0621680
      MCFVI = MCEVI - 102                                               P0621690
      WRITE (NUVI,0626) MCFVI                                           P0621700
      WRITE (NUVI,0623)                                                 P0621710
C*****    TEST OF DMAX1 - DOUBLE PRECISIDN ARGUMENTS AND FUNCTIDN 8.2/23P0621720
C*****    TWD ARGUMENTS FOR DMAX1                                       P0621730
      WRITE (NUVI,9999)                                                 P0621740
      MCAVD = 23.0D-1                                                   P0621750
      MCBVD = 111.789789D0                                              P0621760
      MCCVD = -99.66D-1                                                 P0621770
      MCDVD = -456.123D0                                                P0621780
      MCEVD = DMAX1(MCAVD,MCBVD)                                        P0621790
      MCFVD = MCEVD - 111.789789D0                                      P0621800
      WRITE (NUVI,0627) MCFVD                                           P0621810
      MCEVD = DMAX1( MCAVD, MCCVD)                                      P0621820
      MCFVD = MCEVD - 23.0D-1                                           P0621830
      WRITE (NUVI,0627) MCFVD                                           P0621840
      MCEVD = DMAX1(MCDVD,MCCVD)                                        P0621850
      MCFVD = MCEVD + 99.66D-1                                          P0621860
      WRITE (NUVI,0627) MCFVD                                           P0621870
      MCEVD = DMAX1(MCDVD,MCDVD)                                        P0621880
      MCFVD = MCEVD - MCDVD                                             P0621890
      WRITE (NUVI,0627) MCFVD                                           P0621900
      MCGVI = 2                                                         P0621910
      WRITE (NUVI,0622) MCGVI                                           P0621920
C*****    THREE ARGUMENTS FOR DMAX1                                     P0621930
      MCEVD = DMAX1(MCAVD,MCCVD,MCBVD)                                  P0621940
      MCFVD = MCEVD - 111.789789D0                                      P0621950
      WRITE (NUVI,0627) MCFVD                                           P0621960
      MCEVD = DMAX1(MCCVD,MCDVD,MCAVD)                                  P0621970
      MCFVD = MCEVD - 23.0D-1                                           P0621980
      WRITE (NUVI,0627) MCFVD                                           P0621990
      MCEVD = DMAX1(MCCVD,MCCVD,MCDVD)                                  P0622000
      MCFVD = MCEVD + 99.66D-1                                          P0622010
      WRITE (NUVI,0627) MCFVD                                           P0622020
      MCGVI = 3                                                         P0622030
      WRITE (NUVI,0622) MCGVI                                           P0622040
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C*****    FOUR OR FIVE ARGUMENTS FOR DMAX1                                  P0622050
      MCEVD = DMAX1(MCAVD,MCCVD,MCBVD,MCDVD)                                P0622060
      MCFVD = MCEVD - 111.789789D0                                          P0622070
      WRITE (NUVI,0627) MCFVD                                               P0622080
      MCEVD = DMAX1(MCCVD,MCCVD,MCDVD,MCBVD,MCAVD)                          P0622090
      MCFVD = MCEVD - 111.789789D0                                          P0622100
      WRITE (NUVI,0627) MCFVD                                               P0622110
      WRITE (NUVI,0623)                                                     P0622120
      WRITE (NUVI,9998)                                                     P0622130
0621  FORMAT ( F11.1)                                                       P0622140
0622  FORMAT (  15X,9H  END OF ,I2,15H-ARGUMENT TEST.)                      P0622150
0623  FORMAT (  15X,31H  END OF 4- OR 5-ARGUMENT TEST.)                     P0622160
0624  FORMAT ( /2X,15HTEST OF AMAX1--)                                      P0622170
0625  FORMAT ( /2X,15HTEST OF AMAX0--)                                      P0622180
0626  FORMAT ( I10)                                                         P0622190
0627  FORMAT ( D22.10)                                                      P0622200
0628  FORMAT (2H1 ,14HTEST OF MAX0--)                                       P0622210
0629  FORMAT ( /2X,14HTEST OF MAX1--)                                       P0622220
9998  FORMAT (/ 39H  THE ABOVE ANSWERS SHOULD ALL BE 0 FOR/2X,              P0622230
     135HTHIS TEST SEGMENT TO BE SUCCESSFUL.)                               P0622240
9999  FORMAT ( /2X,15HTEST OF DMAX1--)                                      P0622250
C*****    END OF TEST SEGMENT 062                                           P0622260
C*****  WHEN EXECUTING ONLY SEGMENT 062, THE  STOP  AND  END  CARDS         P0622270
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                     P0622280
C*****  IN COLUMNS  1  AND  2  REMOVED.                                     P0622290
C=    STOP                                                                  P0622300
C=    END                                                                   P0622310
      STOP                                                                  P062C1
      END                                                                   P062C2
C*************************************************************************P0630010
C*****                                                                     P0630020
C*****                          IFMIN - (063)                              P0630030
C*****                                                                     P0630040
C*************************************************************************P0630050
C*****  GENERAL PURPOSE                                          ASA REF  P0630060
C*****    TEST INTRINSIC FUNCTIONS AMIN0,AMIN1,MIN0,MIN1 AND       8.2    P0630070
C*****    DMIN1 -- CHOOSING SMALLEST VALUE.                    (TABLE 3)P0630080
C*****                                                                     P0630090
C*****  S P E C I F I C A T I O N S  SEGMENT 063                           P0630100
C*****                                                                     P0011450
C*****  WHEN EXECUTING ONLY SEGMENT 063, THE SPECIFICATION STATEMENTS      P0011455
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                    P0011460
C*****  IN COLUMNS 1  AND  2  REMOVED.                                     P0011465
C*****                                                                     P0011470
C=    DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD               P0011475
C*****                                                                     P0011480
      DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD               P063A1
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.        P0630110
C*****                                                                     P0071220
C*****  WHEN EXECUTING ONLY SEGMENT 063, THE FOLLOWING STATEMENT           P0071225
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.            P0071230
C*****                                                                     P0071235
C=    NUVI = 6                                                            P0071240
      NUVI = 6                                                            P063B1
C*****                                                                     P0071245
      WRITE (NUVI,0630)                                                   P0630120
0630  FORMAT (1H1,1X,35HIFMIN - (063) INTRINSIC FUNCTIONS--/13X,27HAMIN0P0630130
     1,AMIN1,MIN0,MIN1,DMIN1/ 2X,14HASA REF. - 8.2//2X,7HRESULTS)        P0630140
C*****    TEST OF AMIN0 - INTEGER ARGUMENTS, REAL FUNCTION       8.2/24P0630150
C*****    TWO ARGUMENTS FOR AMIN0                                        P0630160
      WRITE (NUVI,0635)                                                   P0630170
      MCAVI = 128                                                         P0630180
      MCBVI = 64                                                          P0630190
      MCCVI = -8                                                          P0630200
      MCDVI = -4096                                                       P0630210
      CMEVS = AMIN0(MCAVI,MCBVI)                                          P0630220
      CMFVS = CMEVS - 64.0                                                P0630230
      WRITE (NUVI,0631) CMFVS                                             P0630240
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      CMEVS = AMIN0(MCDVI,MCCVI)                                        P0630250
      CMFVS = CMEVS + 4096.0                                            P0630260
      WRITE (NUVI,0631) CMFVS                                           P0630270
      CMEVS = AMIN0(MCBVI,MCCVI)                                        P0630280
      CMFVS = CMEVS + 8.0                                               P0630290
      WRITE (NUVI,0631) CMFVS                                           P0630300
      MCGVI = 2                                                         P0630310
      WRITE (NUVI,0632) MCGVI                                           P0630320
C*****    THREE-ARGUMENT TEST FOR AMIN0                                 P0630330
      CMEVS = AMIN0(MCAVI,MCCVI,MCBVI)                                  P0630340
      CMFVS = CMEVS + 8.0                                               P0630350
      WRITE (NUVI,0631) CMFVS                                           P0630360
      CMEVS = AMIN0(MCBVI,MCBVI,MCDVI)                                  P0630370
      CMFVS = CMEVS + 4096.0                                            P0630380
      WRITE (NUVI,0631) CMFVS                                           P0630390
      MCGVI = 3                                                         P0630400
      WRITE (NUVI,0632) MCGVI                                           P0630410
C*****    FOUR OR FIVE ARGUMENTS FOR AMIN0                              P0630420
      CMEVS = AMIN0(MCAVI,MCCVI,MCDVI,MCBVI)                            P0630430
      CMFVS = CMEVS + 4096.0                                            P0630440
      WRITE (NUVI,0631) CMFVS                                           P0630450
      CMEVS = AMIN0(MCCVI,MCBVI,MCCVI,MCAVI,MCDVI)                      P0630460
      CMFVS = CMEVS + 4096.0                                            P0630470
      WRITE (NUVI,0631) CMFVS                                           P0630480
      WRITE (NUVI,0633)                                                 P0630490
C*****    TEST OF AMIN1 - REAL ARGUMENTS, REAL FUNCTION          8.2/25P0630500
C*****    TWO ARGUMENTS TEST FOR AMIN1                                  P0630510
      WRITE (NUVI,0634)                                                 P0630520
      CMAVS = 26.5                                                      P0630530
      CMBVS = 9.6666                                                    P0630540
      CMCVS = -1.65                                                     P0630550
      CMDVS = -10.001                                                   P0630560
      CMEVS = AMIN1(CMBVS,CMDVS)                                        P0630570
      CMFVS = CMEVS + 10.001                                            P0630580
      WRITE (NUVI,0631) CMFVS                                           P0630590
      CMEVS = AMIN1(CMAVS,CMBVS)                                        P0630600
      CMFVS = CMEVS - 9.6666                                            P0630610
      WRITE (NUVI,0631) CMFVS                                           P0630620
      CMEVS = AMIN1(CMCVS,CMDVS)                                        P0630630
      CMFVS = CMEVS + 10.001                                            P0630640
      WRITE (NUVI,0631) CMFVS                                           P0630650
      CMEVS = AMIN1(CMCVS,CMCVS)                                        P0630660
      CMFVS = CMEVS + 1.65                                              P0630670
      WRITE (NUVI,0631) CMFVS                                           P0630680
      MCGVI = 2                                                         P0630690
      WRITE (NUVI,0632) MCGVI                                           P0630700
C*****    THREE-ARGUMENT TEST FOR AMIN1                                 P0630710
      CMEVS = AMIN1(CMBVS,CMCVS,CMDVS)                                  P0630720
      CMFVS = CMEVS + 10.001                                            P0630730
      WRITE (NUVI,0631) CMFVS                                           P0630740
      CMEVS = AMIN1(CMBVS,CMBVS,CMBVS)                                  P0630750
      CMFVS = CMEVS - 9.6666                                            P0630760
      WRITE (NUVI,0631) CMFVS                                           P0630770
      CMEVS = AMIN1(CMAVS,CMBVS,CMCVS)                                  P0630780
      CMFVS = CMEVS + 1.65                                              P0630790
      WRITE (NUVI,0631) CMFVS                                           P0630800
      MCGVI = 3                                                         P0630810
      WRITE (NUVI,0632) MCGVI                                           P0630820
C*****    FOUR OR FIVE-ARGUMENT TEST FOR AMIN1                          P0630830
      CMEVS = AMIN1(CMAVS,CMBVS,CMCVS,CMDVS)                            P0630840
      CMFVS = CMEVS + 10.001                                            P0630850
      WRITE (NUVI,0631) CMFVS                                           P0630860
      CMEVS = AMIN1(CMAVS,CMCVS,CMBVS,CMCVS,CMDVS)                      P0630870
      CMFVS = CMEVS + 10.001                                            P0630880
      WRITE (NUVI,0631) CMFVS                                           P0630890
      WRITE (NUVI,0633)                                                 P0630900
C*****    TEST OF MIN0 - INTEGER ARGUMENTS, INTEGER FUNCTION     8.2/26P0630910
C*****    TWO-ARGUMENT TEST FOR MIN0                                    P0630920
```

```
      WRITE (NUVI,0636)                                                 P0630930
      MCEVI = MIN0(MCBVI,MCAVI)                                         P0630940
      MCFVI = MCEVI - 64                                                P0630950
      WRITE (NUVI,0639) MCFVI                                           P0630960
      MCEVI = MIN0(MCBVI,MCCVI)                                         P0630970
      MCFVI = MCEVI + 8                                                 P0630980
      WRITE (NUVI,0639) MCFVI                                           P0630990
      MCEVI = MIN0(MCCVI,MCDVI)                                         P0631000
      MCFVI = MCEVI + 4096                                              P0631010
      WRITE (NUVI,0639) MCFVI                                           P0631020
      MCEVI = MIN0(MCAVI,0)                                             P0631030
      WRITE (NUVI,0639) MCEVI                                           P0631040
      MCGVI = 2                                                         P0631050
      WRITE (NUVI,0632) MCGVI                                           P0631060
C*****    THREE-ARGUMENT TEST FOR MIN0                                  P0631070
      MCEVI = MIN0(MCAVI,MCCVI,MCBVI)                                   P0631080
      MCFVI = MCEVI + 8                                                 P0631090
      WRITE (NUVI,0639) MCFVI                                           P0631100
      MCEVI = MIN0(MCCVI,MCAVI,MCDVI)                                   P0631110
      MCFVI = MCEVI + 4096                                              P0631120
      WRITE (NUVI,0639) MCFVI                                           P0631130
      MCGVI = 3                                                         P0631140
      WRITE (NUVI,0632) MCGVI                                           P0631150
C*****    FOUR OR FIVE-ARGUMENT TEST FOR MIN0                           P0631160
      MCEVI = MIN0(MCBVI,MCAVI,MCCVI,MCDVI)                             P0631170
      MCFVI = MCEVI + 4096                                              P0631180
      WRITE (NUVI,0639) MCFVI                                           P0631190
      MCEVI = MIN0(MCAVI,MCBVI,MCAVI,MCCVI,MCDVI)                       P0631200
      MCFVI = MCEVI + 4096                                              P0631210
      WRITE (NUVI,0639) MCFVI                                           P0631220
      WRITE (NUVI,0633)                                                 P0631230
C*****    TEST OF MIN1 - REAL ARGUMENTS, INTEGER FUNCTION        8.2/27P0631240
C*****    TWO-ARGUMENT TEST FOR MIN1                                    P0631250
      WRITE (NUVI,0637)                                                 P0631260
      MCEVI = MIN1(CMAVS,CMBVS)                                         P0631270
      MCFVI = MCEVI - 9                                                 P0631280
      WRITE (NUVI,0639) MCFVI                                           P0631290
      MCEVI = MIN1(CMCVS,CMDVS)                                         P0631300
      MCFVI = MCEVI + 10                                                P0631310
      WRITE (NUVI,0639) MCFVI                                           P0631320
      MCEVI = MIN1(CMAVS,CMCVS)                                         P0631330
      MCFVI = MCEVI + 1                                                 P0631340
      WRITE (NUVI,0639) MCFVI                                           P0631350
      MCGVI = 2                                                         P0631360
      WRITE (NUVI,0632) MCGVI                                           P0631370
C*****    THREE-ARGUMENT TEST FOR MIN1                                  P0631380
      MCEVI = MIN1(CMAVS,CMCVS,CMBVS)                                   P0631390
      MCFVI = MCEVI + 1                                                 P0631400
      WRITE (NUVI,0639) MCFVI                                           P0631410
      MCEVI = MIN1(CMAVS,CMCVS,CMDVS)                                   P0631420
      MCFVI = MCEVI + 10                                                P0631430
      WRITE (NUVI,0639) MCFVI                                           P0631440
      MCGVI = 3                                                         P0631450
      WRITE (NUVI,0632) MCGVI                                           P0631460
C*****    FOUR OR FIVE-ARGUMENT TEST FOR MIN1                           P0631470
      MCEVI = MIN1(CMAVS,CMBVS,CMDVS,CMCVS)                             P0631480
      MCFVI = MCEVI + 10                                                P0631490
      WRITE (NUVI,0639) MCFVI                                           P0631500
      MCEVI = MIN1(CMAVS,CMBVS,CMCVS,CMCVS,CMDVS)                       P0631510
      MCFVI = MCEVI + 10                                                P0631520
      WRITE (NUVI,0639) MCFVI                                           P0631530
      WRITE (NUVI,0633)                                                 P0631540
C*****    TEST OF DMIN1 - DOUBLE PRECISION ARGUMENTS, FUNCTION   8.2/28P0631550
C*****    TWO-ARGUMENT TEST FOR DMIN1                                   P0631560
      WRITE (NUVI,0638)                                                 P0631570
      MCAVD = 61.1234D0                                                 P0631580
      MCBVD = 2.0D1                                                     P0631590
      MCCVD = -999.009D-1                                               P0631600
```

```
      MCDVD = -1.9D0                                                    P0631610
      MCEVD = DMIN1(MCAVD,MCBVD)                                        P0631620
      MCFVD = MCEVD - 2.0D1                                             P0631630
      WRITE (NUVI,9996) MCFVD                                           P0631640
      MCEVD = DMIN1(MCCVD,MCDVD)                                        P0631650
      MCFVD = MCEVD + 999.009D-1                                        P0631660
      WRITE (NUVI,9996) MCFVD                                           P0631670
      MCEVD = DMIN1(MCAVD,MCDVD)                                        P0631680
      MCFVD = MCEVD + 1.9D0                                             P0631690
      WRITE (NUVI,9996) MCFVD                                           P0631700
      MCGVI = 2                                                         P0631710
      WRITE (NUVI,0632) MCGVI                                           P0631720
C*****    THREE-ARGUMENT TEST FOR DMIN1                                 P0631730
      MCEVD = DMIN1(MCAVD,MCBVD,MCDVD)                                  P0631740
      MCFVD = MCEVD + 1.9D0                                             P0631750
      WRITE (NUVI,9996) MCFVD                                           P0631760
      MCEVD = DMIN1(MCAVD,MCCVD,MCBVD)                                  P0631770
      MCFVD = MCEVD + 999.009D-1                                        P0631780
      WRITE (NUVI,9996) MCFVD                                           P0631790
      MCGVI = 3                                                         P0631800
      WRITE (NUVI,0632) MCGVI                                           P0631810
C*****    FOUR OR FIVE-ARGUMENT TEST FOR DMIN1                          P0631820
      MCEVD = DMIN1(MCAVD,MCCVD,MCBVD,MCDVD)                            P0631830
      MCFVD = MCEVD + 999.009D-1                                        P0631840
      WRITE (NUVI,9996) MCFVD                                           P0631850
      MCEVD = DMIN1(MCBVD,MCAVD,MCBVD,MCDVD,MCCVD)                      P0631860
      MCFVD = MCEVD + 999.009D-1                                        P0631870
      WRITE (NUVI,9996) MCFVD                                           P0631880
      WRITE (NUVI,0633)                                                 P0631890
      WRITE (NUVI,9997)                                                 P0631900
0631  FORMAT ( F11.1)                                                   P0631910
0632  FORMAT( 15X, 8H  END OF,I2,15H-ARGUMENT TEST.)                    P0631920
0633  FORMAT (  15X, 30H  END OF 4 OR 5-ARGUMENT TEST.)                 P0631930
0634  FORMAT ( /16H  TEST OF AMIN1 )                                    P0631940
0635  FORMAT ( /16H  TEST OF AMIN0 )                                    P0631950
0636  FORMAT ( /16H  TEST OF MIN0  )                                    P0631960
0637  FORMAT (  16H1 TEST OF MIN1  )                                    P0631970
0638  FORMAT ( /16H  TEST OF DMIN1 )                                    P0631980
0639  FORMAT ( I10)                                                     P0631990
9996  FORMAT ( D22.10)                                                  P0632000
9997  FORMAT ( /39H  THE ABOVE ANSWERS SHOULD ALL BE 0 FOR/1X,          P0632010
     1 36H THIS TEST SEGMENT TO BE SUCCESSFUL.)                         P0632020
C*****   END OF TEST SEGMENT 063                                       P0632030
C*****  WHEN EXECUTING ONLY SEGMENT 063, THE  STOP  AND  END  CARDS    P0632040
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                P0632050
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0632060
C=    STOP                                                            P0632070
C=    END                                                             P0632080
      STOP                                                            P063C1
      END                                                             P063C2
C*******************************************************************************P0640010
C*****                                                                P0640020
C*****                          IFDSG - (064)                        P0640030
C*****                                                               P0640040
C*******************************************************************************P0640050
C*****  GENERAL PURPOSE                                    ASA REF  P0640060
C*****    TEST INTRINSIC FUNCTION DSIGN (TRANSFER OF SIGN WITH    8.2/33P0640070
C*****    DOUBLE PRECISION ARGUMENTS AND FUNCTION)          (TABLE 3)P0640080
C*****                                                               P0640090
C*****  S P E C I F I C A T I O N S  SEGMENT 064                     P0640100
C*****                                                               P0011490
C*****  WHEN EXECUTING ONLY SEGMENT 064, THE SPECIFICATION STATEMENTS P0011495
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=              P0011500
C*****  IN COLUMNS 1  AND  2  REMOVED.                               P0011505
C*****                                                               P0011510
C=    DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD          P0011515
      DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD          P064A1
C*****                                                               P0011520
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C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0640110
C*****                                                                   P0071250
C*****  WHEN EXECUTING ONLY SEGMENT 064, THE FOLLOWING STATEMENT         P0071255
C*****  NUVI = 6  MUST HAVE THE  C= IN COLUMNS 1 AND 2 REMOVED.          P0071260
C*****                                                                   P0071265
C=     NUVI = 6                                                          P0071270
       NUVI = 6                                                          P064B1
C*****                                                                   P0071275
       WRITE (NUVI,0640)                                                 P0640120
0640   FORMAT (1H1,1X,34HIFDSG - (064) INTRINSIC FUNCTION--/16X,24HDSIGN P0640130
      1(TRANSFER OF SIGN)/ 2X,14HASA REF. - 8.2//2X,7HRESULTS)           P0640140
C*****     HEADER FOR SEGMENT 064 WRITTEN                                P0640150
       MCAVD = +9.5D0                                                    P0640160
       MCBVD = 123.4567D1                                                P0640170
       MCCVD = -5.665D1                                                  P0640180
       MCDVD = -75.57D-0                                                 P0640190
       MCEVD = DSIGN(MCAVD,MCBVD)                                        P0640200
       MCFVD = MCEVD - 9.5D0                                             P0640210
       WRITE (NUVI,0641) MCFVD                                           P0640220
       MCEVD = DSIGN(MCBVD,MCCVD)                                        P0640230
       MCFVD = MCEVD + 123.4567D1                                        P0640240
       WRITE (NUVI,0641) MCFVD                                           P0640250
       MCEVD = DSIGN(MCCVD,MCDVD)                                        P0640260
       MCFVD = MCEVD + 5.665D1                                           P0640270
       WRITE (NUVI,0641) MCFVD                                           P0640280
       MCEVD = DSIGN(MCDVD,MCDVD)                                        P0640290
       MCFVD = MCEVD +75.57D0                                            P0640300
       WRITE (NUVI,0641) MCFVD                                           P0640310
       WRITE (NUVI,0642)                                                 P0640320
0641   FORMAT (1H0,D30.18)                                               P0640330
0642   FORMAT (1H0,1X,38HALL ABOVE ANSWERS SHOULD BE 0 FOR THIS/         P0640340
      12X,30HTEST SEGMENT TO BE SUCCESSFUL.)                             P0640350
C*****     END OF TEST SEGMENT 064                                       P0640360
C*****  WHEN EXECUTING ONLY SEGMENT 064, THE  STOP  AND  END  CARDS      P0640370
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P0640380
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0640390
C=     STOP                                                              P0640400
C=     END                                                               P0640410
       STOP                                                              P064C1
       END                                                               P064C2
C******************************************************************************P0650010
C*****                                                                   P0650020
C*****                          IFDIM - (065)                            P0650030
C*****                                                                   P0650040
C******************************************************************************P0650050
C*****  GENERAL PURPOSE                                        ASA REF  P0650060
C*****     TEST INTRINSIC FUNCTION DIM AND IDIM--POSITIVE        8.2     P0650070
C*****     DIFFERENCE, WHICH IS DEFINED AS A1 - MIN(A1,A2)     (TABLE 3)P0650080
C*****                                                                   P0650090
C*****  NO  S P E C I F I C A T I O N S  SEGMENT 065                      P0650100
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0650110
C*****  WHEN EXECUTING ONLY SEGMENT 065, THE FOLLOWING STATEMENT         P0071280
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.          P0071285
C*****                                                                   P0071290
C=     NUVI = 6                                                          P0071295
       NUVI = 6                                                          P065B1
       WRITE (NUVI,0650)                                                 P0650120
0650   FORMAT (1H1,1X,39HIFDIM - (065) INTRINSIC FUNCTIONS - DIM/12X,    P0650130
      130HAND IDIM (POSITIVE DIFFERENCE)/ 2X,14HASA REF. - 8.2/          P0650140
      2/2X,7HRESULTS)                                                    P0650150
C*****     HEADER FOR SEGMENT 065 WRITTEN                                P0650160
C*****     TEST OF DIM - -EAL ARGUMENTS, REAL FUNCT+ON          C2/34    P0650170
       CMAVS = -4.0                                                      P0650180
       CMBVS = 4.0                                                       P0650190
       CMCVS = 16.25                                                     P0650200
       CMDVS = -64.25                                                    P0650210
       CMEVS = DIM(CMAVS,CMBVS)                                          P0650220
       CMFVS = CMEVS + 0.0                                               P0650230
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      WRITE (NUVI,0651) CMFVS                                          P0650240
      CMEVS = DIM(CMCVS,CMDVS)                                         P0650250
      CMFVS = CMEVS - 80.5                                             P0650260
      WRITE (NUVI,0651) CMFVS                                          P0650270
      CMEVS = DIM(CMCVS,CMBVS)                                         P0650280
      CMFVS = CMEVS - 12.25                                            P0650290
      WRITE (NUVI,0651) CMFVS                                          P0650300
      CMEVS = DIM(CMDVS,CMAVS)                                         P0650310
      CMFVS = CMEVS - 0.0                                              P0650320
      WRITE (NUVI,0651) CMFVS                                          P0650330
C*****    TEST OF IDIM - INTEGER ARGUMENTS, INTEGER FUNCTION      8.2/35P0650340
      MCAVI = 02468                                                    P0650350
      MCBVI = +36                                                      P0650360
      MCCVI = -3                                                       P0650370
      MCDVI = -23                                                      P0650380
      MCEVI = IDIM(MCAVI,MCBVI)                                        P0650390
      MCFVI = MCEVI - 2432                                             P0650400
      WRITE (NUVI,0652) MCFVI                                          P0650410
      MCEVI = IDIM(MCBVI,MCCVI)                                        P0650420
      MCFVI = MCEVI - 39                                               P0650430
      WRITE (NUVI,0652) MCFVI                                          P0650440
      MCEVI = IDIM(MCDVI,MCCVI)                                        P0650450
      MCFVI = MCEVI + 0                                                P0650460
      WRITE (NUVI,0652) MCFVI                                          P0650470
      MCEVI = IDIM(MCCVI,MCCVI)                                        P0650480
      WRITE (NUVI,0652) MCEVI                                          P0650490
      MCEVI = IDIM(MCCVI,MCBVI)                                        P0650500
      WRITE (NUVI,0652) MCEVI                                          P0650510
      WRITE (NUVI,0653)                                                P0650520
0651  FORMAT (1H0,F17.2)                                               P0650530
0652  FORMAT (1H0,10X,I5)                                              P0650540
0653  FORMAT (1H0,1X,34H ALL ABOVE ANSWERS SHOULD BE 0 FOR/2X,         P0650550
     135HTHIS TEST SEGMENT TO BE SUCCESSFUL.)                          P0650560
C*****    END OF TEST SEGMENT 065                                      P0650570
C*****  WHEN EXECUTING ONLY SEGMENT 065 THE STOP AND END CARDS         P0650580
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                 P0650590
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0650600
C=    STOP                                                             P0650610
C=    END                                                              P0650620
      STOP                                                             P065C1
      END                                                              P065C2
C*******************************************************************************P0660010
C*****                                                                 P0660020
C*****                        IFSGL - (066)                            P0660030
C*****                                                                 P0660040
C*******************************************************************************P0660050
C*****  GENERAL PURPOSE                                        ASA REF P0660060
C*****    TEST INTRINSIC FUNCTION SNGL - OBTAIN MOST SIGNIFICANT  8.2/36P0660070
C*****    PART OF DOUBLE PRECISION ARGUMENT.                  (TABLE 3)P0660080
C*****  GENERAL COMMENTS                                               P0660090
C*****    ASSIGNED GO TO STATEMENT ASSUMED WORKING.                    P0660100
C*****                                                                 P0660110
C*****  S P E C I F I C A T I O N S  SEGMENT 066                       P0660120
C*****                                                                 P0011530
C*****  WHEN EXECUTING ONLY SEGMENT 066, THE SPECIFICATION STATEMENTS  P0011535
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                 P0011540
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0011545
C*****                                                                 P0011550
C=    DOUBLE PRECISION MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD,            P0011555
C=   1                 CMAVD, CMBVD,CMCVD                            P0011560
      DOUBLE PRECISION MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD,            P066A1
     1                 CMAVD, CMBVD,CMCVD                            P066A2
C*****                                                                 P0011565
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0660130
C*****                                                                 P0071300
C*****  WHEN EXECUTING ONLY SEGMENT 066, THE FOLLOWING STATEMENT       P0071305
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.         P0071310
C=    NUVI = 6                                                         P0071315
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      NUVI = 6                                                          P066B1
C*****                                                                  P0071320
      WRITE (NUVI, 0660)                                                P0660140
0660  FORMAT (1H1,1X,39HIFSGL - (066) INTRINSIC FUNCTION SNGL--/16X,     P0660150
     126HOBTAIN MOST SIGNIFICANT PT/16X,                                P0660160
     218H OF D.P. ARGUMENT. //2X,15HASA REFS. - 8.2//2X,7HRESULTS)      P0660170
C*****    HEADER FOR SEGMENT 066 WRITTEN                                P0660180
      MCAVD = .48748748748748D3+.57D-5+.5604645D-6+.31786509547D-7      P0660190
      MCBVD =-39.689539609539D1-.57D-5-.5604645D-6-.31786509547D-7      P0660200
      MCCVD = .33333333333333D0+.57D-5+.5604645D-6+.31786509547D-7      P0660210
      MCDVD =-.66666666666666D0-.57D-5+.5604645D-6-.31786509547D-7      P0660220
      MCEVD = .48748748748748D3+.57D-5+.5604645D-6+.31786509547D-7      P0660230
      MCFVD = -39.689539609539D+1                                       P0660240
      AVS   = 0.0                                                       P0660250
      BVS   = 0.0                                                       P0660260
      CVS   = 0.0                                                       P0660270
      IVI   = 2                                                         P0660280
C*****  EXPRESSION RESULTS ASSIGNED TO D.P. RESULT FOR VISUAL COMPARISONP0660290
C*****  ARGUMENTS OF SNGL - VARIABLE, SIMPLE EXPRESSION                 P0660300
      CMAVD = AVS + SNGL(MCAVD) - BVS                                   P0660310
      WRITE (NUVI,661) MCAVD,CMAVD                                      P0660320
      CMAVD = CVS + SNGL(MCBVD) + AVS                                   P0660330
      WRITE (NUVI,661) MCBVD, CMAVD                                     P0660340
      CMAVD = SNGL(MCCVD)                                               P0660350
      WRITE (NUVI,661) MCCVD,CMAVD                                      P0660360
      CMBVD = -MCBVD                                                    P0660370
      CMAVD = -SNGL(MCBVD - CMBVD)                                      P0660380
      CMCVD = - (MCBVD + MCBVD)                                         P0660390
      WRITE (NUVI,661) CMCVD,CMAVD                                      P0660400
      CMCVD = MCDVD * MCDVD                                             P0660410
      CMAVD = BVS + SNGL(MCDVD**IVI) + CVS                              P0660420
      WRITE (NUVI,661) CMCVD, CMAVD                                     P0660430
C*****  ARGUMENT OF SNGL - INTRINSIC FUNCTION WITH DIFFERENT NO. OF ARG P0660440
      CMAVD = -(CVS + SNGL(DABS(MCDVD)) + BVS)                          P0660450
      WRITE (NUVI,661) MCDVD, CMAVD                                     P0660460
      CMAVD = AVS - BVS + SNGL(DMIN1(MCEVD,MCFVD))                      P0660470
      WRITE (NUVI,661) MCFVD, CMAVD                                     P0660480
      CMAVD = CVS + BVS + SNGL(DMAX1(MCCVD,MCEVD,MCFVD))                P0660490
      WRITE (NUVI,661) MCEVD, CMAVD                                     P0660500
      WRITE (NUVI, 662)                                                 P0660510
661   FORMAT(1H0,1X,6HLINE A,D25.14/2X,6HLINE B,D25.14)                 P0660520
662   FORMAT(33H0 LINE B SHOULD AGREE WITH LINE A /40H  ONLY TO THE PRECP0660530
     AISION OF A REAL DATUM. /37H  REMAINING DIGITS RESULT FROM OUTPUT /P0660540
     B 33H  CONVERSION WHEN A REAL VALUE IS / 32H  ASSIGNED TO D.P. FOR P0660550
     CPRINTING. )                                                       P0660560
C*****    END OF SEGMENT 066                                            P0660570
C*****  WHEN EXECUTING ONLY SEGMENT 066, THE STOP AND END CARDS         P0660580
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C= IN COLUMNS      P0660590
C*****  1  AND  2  REMOVED.                                             P0660600
C=    STOP                                                              P0660610
C=    END                                                               P0660620
      STOP                                                              P066C1
      END                                                               P066C2
C*******************************************************************************P0670010
C*****                                                                  P0670020
C*****                          IFREL - (067)                           P0670030
C*****                                                                  P0670040
C*******************************************************************************P0670050
C*****  GENERAL PURPOSE                                    ASA REF     P0670060
C*****    TEST INTRINSIC FUNCTION REAL (OBTAIN REAL PART OF   8.2/39)P0670070
C*****    COMPLEX ARGUMENT ).                               (TABLE 3)P0670080
C*****                                                                  P0670090
C*****  S P E C I F I C A T I O N S  SEGMENT 067                        P0670100
C*****                                                                  P0011570
C*****  WHEN EXECUTING ONLY SEGMENT 067, THE SPECIFICATION STATEMENTS   P0011575
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0011580
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0011585
C*****                                                                  P0011590
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C=    COMPLEX CHAVC,CHBVC,CHCVC,CHDVC,CHEVC,CHFVC                      P0011595
      COMPLEX CHAVC,CHBVC,CHCVC,CHDVC,CHEVC,CHFVC                      P067A1
C*****                                                                 P0011600
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0670110
C*****                                                                 P0071330
C*****  WHEN EXECUTING ONLY SEGMENT 067, THE FOLLOWING STATEMENT       P0071335
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.         P0071340
C=    NUVI = 6                                                         P0071345
      NUVI = 6                                                         P067B1
C*****                                                                 P0071350
      WRITE (NUVI,0670)                                                P0670120
0670  FORMAT (1H1,1X,34HIFREL - (067) INTRINSIC FUNCTION--/ 16X, 4HREAL/P0670130
     1 2X,14HASA REF. - 8.2//                                          P0670140
     2 2X,7HRESULTS)                                                   P0670150
C*****    HEADER FOR SEGMENT 067 WRITTEN                               P0670160
      CHAVC = (3.2,1.86)                                               P0670170
      CHBVC = (2.1,0.0)                                                P0670180
      CHCVC = (3.7,-1.2)                                               P0670190
      CHDVC = (+45.1,+2.2)                                             P0670200
      CHEVC = (-16.0, 0.0)                                             P0670210
      CHFVC = (-32.0, -1.1)                                            P0670220
      CMAVS = REAL(CHAVC)                                              P0670230
      CMBVS = CMAVS - 3.2                                              P0670240
      CMAVS = REAL(CHBVC)                                              P0670250
      CMCVS = CMAVS - 2.1                                              P0670260
      CMAVS = REAL(CHCVC)                                              P0670270
      CMDVS = CMAVS - 3.7                                              P0670280
      CMAVS = REAL(CHDVC)                                              P0670290
      CMEVS = CMAVS - 45.1                                             P0670300
      CMAVS =  ABS(REAL(CHEVC) + REAL(CHFVC))                          P0670310
      CMFVS = CMAVS - 48.0                                             P0670320
      CMAVS = AMAX1(REAL(CHAVC),REAL(CHBVC), REAL(CHEVC-CHFVC))        P0670330
      CMGVS = CMAVS - 16.0                                             P0670340
      WRITE (NUVI,0671) CMBVS,CMCVS,CMDVS,CMEVS,CMFVS,CMGVS            P0670350
C*****    REAL CONSTANTS HAVING ONLY FRACTIONAL PARTS(NO EXPONENT)     P0670360
      CHAVC = (.789,.12)                                               P0670370
      CHBVC = (.13,1.2)                                                P0670380
      CHCVC = (.507,-2.2)                                              P0670390
      CHDVC = (+.5401,+.5)                                             P0670400
      CHEVC = (-.5,0.25)                                               P0670410
      CHFVC = (-.0625, 1.1)                                            P0670420
      CMAVS = REAL(CHAVC)                                              P0670430
      CMBVS = CMAVS - .789                                             P0670440
      CMAVS = REAL(CHBVC)                                              P0670450
      CMCVS = CMAVS -0.13                                              P0670460
      CMAVS = REAL(CHCVC)                                              P0670470
      CMDVS = CMAVS -0.507                                             P0670480
      CMAVS = REAL(CHDVC)                                              P0670490
      CMEVS = CMAVS -0.5401                                            P0670500
      CMAVS = REAL(CHEVC+CHFVC)                                        P0670510
      CMFVS = CMAVS  + 0.5625                                          P0670520
      CMAVS = REAL(CHEVC) - REAL(CHFVC)                                P0670530
      CMGVS = CMAVS + 0.4375                                           P0670540
      WRITE (NUVI,0671) CMBVS,CMCVS,CMDVS,CMEVS,CMFVS,CMGVS            P0670550
C*****    REAL CONSTANTS HAVING ONLY INTEGRAL PARTS(NO EXPONENT)       P0670560
C*****                                                  5.1.1.2/22     P0670570
      CHAVC = (23.,0.1)                                                P0670580
      CHBVC = (12.,+1.2)                                               P0670590
      CHCVC = (1.,-2.3)                                                P0670600
      CHDVC = (+45.,+.6)                                               P0670610
      CHEVC = (19.0, 1.0)                                              P0670620
      CHFVC = (-32.0, 2.0)                                             P0670630
      CMAVS = REAL(CHAVC)                                              P0670640
      CMBVS = CMAVS - 23.0                                             P0670650
      CMAVS = REAL(CHBVC)                                              P0670660
      CMCVS = CMAVS - 12.0                                             P0670670
      CMAVS = REAL(CHCVC)                                              P0670680
      CMDVS = CMAVS - 1.0                                              P0670690
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      CMAVS = REAL(CHDVC)                                                P0670700
      CMEVS = CMAVS - 45.0                                               P0670710
      CMAVS = SIGN(DIM(REAL(CHEVC),REAL(CHFVC)),REAL(CHFVC))             P0670720
      CMFVS = CMAVS + 51.0                                               P0670730
      CMAVS = REAL((16.0,1.0) + CHEVC + CHFVC)                           P0670740
      CMGVS = CMAVS - 3.0                                                P0670750
      WRITE (NUVI,0671) CMBVS,CMCVS,CMDVS,CMEVS,CMFVS,CMGVS              P0670760
      WRITE (NUVI,0672)                                                  P0670770
0671  FORMAT (/6(F20.4/))                                                P0670780
0672  FORMAT ( /40H  ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS /             P0670790
     132H  TEST SEGMENT TO BE SUCCESSFUL.)                               P0670800
C*****    END OF TEST SEGMENT 067                                        P0670810
C*****  WHEN EXECUTING ONLY SEGMENT 067, THE  STOP  AND  END  CARDS      P0670820
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P0670830
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0670840
C=    STOP                                                               P0670850
C=    END                                                                P0670860
      STOP                                                               P067C1
      END                                                                P067C2
C*************************************************************************P0680010
C*****                                                                   P0680020
C*****                          IFIMG - (068)                            P0680030
C*****                                                                   P0680040
C*************************************************************************P0680050
C*****  GENERAL PURPOSE                                        ASA REF  P0680060
C*****    TEST INTRINSIC FUNCTION AIMAG (OBTAIN IMAGINARY PART   8.2/41P0680070
C*****    OF COMPLEX ARGUMENT )                                (TABLE 3)P0680080
C*****                                                                   P0680090
C*****  S P E C I F I C A T I O N S  SEGMENT 068                         P0680100
C*****                                                                   P0011610
C*****  WHEN EXECUTING ONLY SEGMENT 068, THE SPECIFICATION STATEMENTS    P0011615
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0011620
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0011625
C*****                                                                   P0011630
C=    COMPLEX CHAVC,CHBVC,CHCVC,CHDVC,CHEVC,CHFVC,CHGVC,CHHVC,CHIVC,     P0011635
C=   1CHJVC,CHKVC,CHLVC                                                  P0011640
      COMPLEX CHAVC,CHBVC,CHCVC,CHDVC,CHEVC,CHFVC,CHGVC,CHHVC,CHIVC,     P068A1
     1CHJVC,CHKVC,CHLVC                                                  P068A2
C*****                                                                   P0011645
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0680110
C*****                                                                   P0071360
C*****  WHEN EXECUTING ONLY SEGMENT 068, THE FOLLOWING STATEMENT         P0071365
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0071370
C=    NUVI = 6                                                           P0071375
      NUVI = 6                                                           P068B1
C*****                                                                   P0071380
      WRITE (NUVI,0680)                                                  P0680120
0680  FORMAT (1H1,1X,40HIFIMG - (068) INTRINSIC FUNCTION - AIMAG/16X,    P0680130
     119HOBTAIN IMAGINARY PT/16X,19HOF COMPLEX ARGUMENT/ 2X,             P0680140
     213HASA REF.- 8.2//2X,7HRESULTS)                                    P0680150
C*****    HEADER FOR SEGMENT 068 WRITTEN                                 P0680160
C*****    IMAGINARY PARTS OF COMPLEX NUMBERS HAVING BOTH INTEGRAL        P0680170
C*****    AND FRACTIONAL PARTS. (NO EXPONENT)                            P0680180
      CHAVC = (3.2,1.86)                                                 P0680190
      CHBVC = (2.1,0.0)                                                  P0680200
      CHCVC = (37.0,-1.2)                                                P0680210
      CHDVC = (+45.1,+2.2)                                               P0680220
      CMAVS = AIMAG(CHAVC)                                               P0680230
      CMBVS = CMAVS - 1.86                                               P0680240
      CMAVS = AIMAG(CHBVC)                                               P0680250
      CMCVS = CMAVS - 0.0                                                P0680260
      CMAVS = AIMAG(CHCVC)                                               P0680270
      CMDVS = CMAVS + 1.2                                                P0680280
      CMAVS = AIMAG(CHDVC)                                               P0680290
      CMEVS = CMAVS -2.2                                                 P0680300
      WRITE (NUVI,0681) CMBVS,CMCVS,CMDVS,CMEVS                          P0680310
C*****    IMAGINARY PARTS OF COMPLEX NUMBERS HAVING ONLY FRACTIONAL      P0680320
C*****    PARTS (NO EXPONENT)                                            P0680330
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      CHAVC = (.789,.00)                                                P0680340
      CHBVC = (1.2,.789)                                                P0680350
      CHCVC = (+4.56,-.456)                                             P0680360
      CHDVC = (-12.3,+.001)                                             P0680370
      CMAVS = AIMAG(CHAVC)                                              P0680380
      CMBVS = CMAVS - 0.0                                               P0680390
      CMAVS = AIMAG(CHBVC)                                              P0680400
      CMCVS = CMAVS - .789                                              P0680410
      CMAVS = AIMAG(CHCVC)                                              P0680420
      CMDVS = CMAVS + .456                                              P0680430
      CMAVS = AIMAG(CHDVC)                                              P0680440
      CMEVS = CMAVS - 0.001                                             P0680450
      WRITE (NUVI,0681) CMBVS,CMCVS,CMDVS,CMEVS                         P0680460
C*****    IMAGINARY PARTS OF COMPLEX NUMBERS HAVING ONLY INTEGRAL       P0680470
C*****    PARTS (NO EXPONENT)                                           P0680480
      CHAVC =(-12.,12.)                                                 P0680490
      CHBVC = (+1.23,0.)                                                P0680500
      CHCVC = (0.0, -16.0)                                              P0680510
      CHDVC = (-1.1, -32.0)                                             P0680520
      CMAVS = AIMAG(CHAVC)                                              P0680530
      CMBVS = CMAVS - 12.0                                              P0680540
      CMAVS = AIMAG(CHBVC)                                              P0680550
      CMCVS = CMAVS + 0.0                                               P0680560
      CMAVS = ABS(AIMAG(CHCVC)+AIMAG(CHDVC))                            P0680570
      CMDVS = CMAVS - 48.0                                              P0680580
      CMAVS = AMAX1(AIMAG(CHAVC), AIMAG(CHBVC), AIMAG(CHCVC-CHDVC))     P0680590
      CMEVS = CMAVS - 16.0                                              P0680600
      WRITE (NUVI,0681) CMBVS,CMCVS,CMDVS,CMEVS                         P0680610
C*****    IMAGINARY PARTS OF COMPLEX NUMBERS HAVING A DECIMAL EXPONENT. P0680620
      CHAVC = (2.3E0,1.2E0)                                             P0680630
      CHBVC = (1.2,.56E2)                                               P0680640
      CHCVC = (.24,1.E1)                                                P0680650
      CHDVC = (1.,+7.8E+1)                                              P0680660
      CHEVC = (1.5, 16.0)                                               P0680670
      CHFVC = (1.0, -32.0)                                              P0680680
      CHGVC = (1.E0,-7.99E-1)                                           P0680690
      CHHVC = (27.00,.55E-1)                                            P0680700
      CHIVC = (1.E0,2.E-0)                                              P0680710
      CHJVC = (1.2,1.E+1)                                               P0680720
      CHKVC = (1.E-1,+7.E0)                                             P0680730
      CHLVC = (1.7,-99.E-1)                                             P0680740
      CMAVS = AIMAG(CHAVC)                                              P0680750
      CMBVS = CMAVS - 1.2E0                                             P0680760
      CMAVS = AIMAG(CHBVC)                                              P0680770
      CMCVS = CMAVS - .56E2                                             P0680780
      CMAVS = AIMAG(CHCVC)                                              P0680790
      CMDVS = CMAVS - 1.E1                                              P0680800
      CMAVS = AIMAG(CHDVC)                                              P0680810
      CMEVS = CMAVS - 7.8E+1                                            P0680820
      WRITE (NUVI,0681) CMBVS,CMCVS,CMDVS,CMEVS                         P0680830
      CMAVS = SIGN(DIM(AIMAG(CHEVC),AIMAG(CHFVC)), AIMAG(CHFVC))        P0680840
      CMBVS = CMAVS + 48.0                                              P0680850
      CMAVS = AIMAG((1.0, 16.0) + CHEVC + CHFVC)                        P0680860
      CMCVS = CMAVS + 0.0                                               P0680870
      CMAVS = AIMAG(CHGVC)                                              P0680880
      CMDVS = CMAVS + 7.99E-1                                           P0680890
      CMAVS = AIMAG(CHHVC)                                              P0680900
      CMEVS = CMAVS - .55E-1                                            P0680910
      WRITE (NUVI,0681) CMBVS,CMCVS,CMDVS,CMEVS                         P0680920
      CMAVS = AIMAG(CHIVC)                                              P0680930
      CMBVS = CMAVS - 2.E-0                                             P0680940
      CMAVS = AIMAG(CHJVC)                                              P0680950
      CMCVS = CMAVS - 1.E+1                                             P0680960
      CMAVS = AIMAG(CHKVC)                                              P0680970
      CMDVS = CMAVS - 7.E0                                              P0680980
      CMAVS = AIMAG(CHLVC)                                              P0680990
      CMEVS = CMAVS + 99.E-1                                            P0681000
      WRITE (NUVI,0681) CMBVS,CMCVS,CMDVS,CMEVS                         P0681010
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      WRITE (NUVI,0682)                                                 P0681020
0681  FORMAT ( / 4(F20.5 / ))                                           P0681030
0682  FORMAT ( /40H  ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS /           P0681040
     132H  TEST SEGMENT TO BE SUCCESSFUL.)                              P0681050
C*****    END OF TEST SEGMENT 068                                       P0681060
C*****  WHEN EXECUTING ONLY SEGMENT 068, THE  STOP  AND  END  CARDS     P0681070
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0681080
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0681090
C=    STOP                                                            P0681100
C=    END                                                             P0681110
      STOP                                                            P068C1
      END                                                             P068C2
C*******************************************************************************P0690010
C*****                                                                 P0690020
C*****                          IFDBL - (069)                          P0690030
C*****                                                                 P0690040
C*******************************************************************************P0690050
C*****  GENERAL PURPOSE                                        ASA REF P0690060
C*****    TEST INTRINSIC FUNCTION DBLE (EXPRESS S.P. ARGUMENT    8.2/43P0690070
C*****    IN DOUBLE PRECISION FORM )                          (TABLE 3)P0690080
C*****    INTRINSIC FUNCTIONS DABS,DSIGN,DMIN1,DMAX1,AMAX1              P0690090
C*****    ASSUMED WORKING.                                              P0690100
C*****                                                                  P0690110
C*****  S P E C I F I C A T I O N S  SEGMENT 069                        P0690120
C*****                                                                  P0011650
C*****  WHEN EXECUTING ONLY SEGMENT 069, THE SPECIFICATION STATEMENTS   P0011655
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0011660
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0011665
C*****                                                                  P0011670
C=    DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD,MCGVD      P0011675
      DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,MCDVD,MCEVD,MCFVD,MCGVD      P069A1
C*****                                                                  P0011680
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0690130
C*****                                                                  P0071390
C*****  WHEN EXECUTING ONLY SEGMENT 06 , THE FOLLOW+NG STATEMENT        P0071395
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.          P0071400
C=    NUVI = 6                                                        P0071405
      NUVI = 6                                                        P069B1
C*****                                                                P0071410
      WRITE (NUVI,0690)                                               P0690140
0690  FORMAT (1H1,1X,39HIFDBL - (069) INTRINSIC FUNCTION - DBLE/16X,  P0690150
     126HS.P. ARGUMENT IN D.P. FORM / 2X,13HASA REF.- 8.2//2X,7HRESULTS)P0690160
C*****    HEADER FOR SEGMENT 069 WRITTEN                              P0690170
      CMAVS = 0.9765625E-3                                            P0690180
      CMBVS = -.1953125E-2                                            P0690190
      CMCVS = .5859375E-2                                             P0690200
      CMDVS = -.1048576E+7                                            P0690210
      CMEVS = +114688.0                                               P0690220
      MCAVD = 0.0D0                                                   P0690230
      MCBVD = MCAVD * DBLE(CMAVS)                                     P0690240
      MCCVD = DMIN1(DBLE(CMAVS),DBLE(CMEVS))                          P0690250
      MCDVD = MCAVD * MCBVD - DABS(DBLE(CMBVS))                       P0690260
      MCEVD = MCAVD - DSIGN(DBLE(CMCVS),DBLE(CMBVS))                  P0690270
      MCFVD = - DABS(DBLE(CMDVS)) + MCAVD                             P0690280
      MCGVD = DMAX1(DBLE(AMAX1(CMDVS,CMEVS)),MCBVD)                   P0690290
      WRITE(NUVI,691) CMAVS, MCCVD, CMBVS, MCDVD,                     P0690300
     1                CMCVS, MCEVD, CMDVS, MCFVD, CMEVS, MCGVD       P0690310
691   FORMAT(1H0,1X,6HLINE A, E18.7/ 8H  LINE B, D25.14)              P0690320
      WRITE(NUVI, 692)                                                P0690330
692   FORMAT(1H0,38H A COMPARISON OF LINE A AGAINST LINE B /1X,       P0690340
     1 40H IS NEEDED TO CHECK THE VALIDITY OF TEST)                   P0690350
C*****    END OF TEST SEGMENT 069                                     P0690360
C*****  WHEN EXECUTING ONLY SEGMENT 069, THE STOP AND END CARDS       P0690370
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=               P0690380
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P0690390
C=    STOP                                                            P0690400
C=    END                                                             P0690410
      STOP                                                            P069C1
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      END                                                               P069C2
C*************************************************************************P0700010
C*****                                                                  P0700020
C*****                          IFCPX - (070)                           P0700030
C*****                                                                  P0700040
C*************************************************************************P0700050
C*****  GENERAL PURPOSE                                        ASA REF P0700060
C*****    TEST INTRINSIC FUNCTION CMPLX (EXPRESS TWO REAL        8.2/45P0700070
C*****    ARGUMENTS IN COMPLEX FORM)                          (TABLE 3)P0700080
C*****  GENERAL COMMENTS                                               P0700090
C*****    SUBTRACTION OF COMPLEX NUMBERS ASSUMEO WORKING               P0700100
C*****                                                                 P0700110
C*****  S P E C I F I C A T I O N S  SEGMENT 070                       P0700120
C*****                                                                 P0011690
C*****  WHEN EXECUTING ONLY SEGMENT 070, THE SPECIFICATION STATEMENTS  P0011695
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                 P0011700
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                               P0011705
C*****                                                                 P0011710
C=    COMPLEX CHAVC,CHBVC,CHCVC,CHDVC,CHEVC,CHFVC,CHGVC               P0011715
      COMPLEX CHAVC,CHBVC,CHCVC,CHOVC,CHEVC,CHFVC,CHGVC               P070A1
C*****                                                                 P0011720
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0700130
C*****  WHEN EXECUTING ONLY SEGMENT 070, THE FOLLOWING STATEMENT       P0071420
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 ANO 2 REMOVEO.         P0071425
C=    NUVI = 6                                                        P0071430
      NUVI = 6                                                        P070B1
      WRITE (NUVI,0700)                                               P0700140
0700  FORMAT (1H1, 1X,40HIFCPX - (070) INTRINSIC FUNCTION - CMPLX/16X, P0700150
     126HEXPRESS TWO REAL ARGUMENTS/16X,15HIN COMPLEX FORM/15H  ASA REF.P0700160
     2- 8.2//2X,7HRESULTS)                                            P0700170
C*****    HEAOER FOR SEGMENT 070 WRITTEN                              P0700180
      CMAVS = 23.123                                                  P0700190
      CMBVS = -.78                                                    P0700200
      CMCVS = +17.                                                    P0700210
      CMOVS = 157.E-1                                                 P0700220
      CMEVS = -.985E1                                                 P0700230
      CMFVS = +88.E+0                                                 P0700240
      CHAVC = CMPLX(CMAVS,CMBVS)                                      P0700250
      CHBVC = CHAVC - (23.123,-.78)                                   P0700260
      CHAVC = CMPLX(CMBVS,15.0)                                       P0700270
      CHCVC = CHAVC - (-.78,15.0)                                     P0700280
      CHAVC = CMPLX(CMOVS,CMFVS)                                      P0700290
      CHOVC = CHAVC - (157.E-1,+88.E+0)                               P0700300
      CHAVC =  CMPLX(0.0,0.E0)                                        P0700310
      CHEVC = CHAVC                                                   P0700320
      CHAVC = CMPLX(CMEVS,CMFVS)                                      P0700330
      CHFVC = CHAVC - (-.985E1,+88.E+0)                               P0700340
      CHAVC = CMPLX(CMCVS,-0.0E-1)                                    P0700350
      CHGVC = CHAVC - (+17.0,0.0)                                     P0700360
      WRITE (NUVI,0702) CHBVC, CHCVC, CHOVC, CHEVC, CHFVC, CHGVC      P0700370
      WRITE (NUVI,0701)                                               P0700380
0701  FORMAT   (//2X,37HTHE ABOVE ANSWERS SHOULO ALL BE 0 FOR/1X,     P0700390
     136H THIS TEST SEGMENT TO BE SUCCESSFUL.)                        P0700400
0702  FORMAT (6(/F17.7,F17.7))                                        P0700410
C*****    ENO OF TEST SEGMENT 070                                     P0700420
C*****  WHEN EXECUTING ONLY SEGMENT 070, THE  STOP  ANO  ENO  CARDS   P0700430
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE  C=               P0700440
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P0700450
C=    STOP                                                            P0700460
C=    ENO                                                             P0700470
      STOP                                                            P070C1
      END                                                             P070C2
C*************************************************************************P0710010
C*****                                                                  P0710020
C*****                          IFCJG - (071)                           P0710030
C*****                                                                  P0710040
C*************************************************************************P0710050
C*****  GENERAL PURPOSE                                        ASA REF P0710060
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C*****    TEST INTRINSIC FUNCTION CONJG (OBTAIN CONJUGATE OF A     8.2/47P0710070
C*****    COMPLEX ARGUMENT)                                      (TABLE 3)P0710080
C*****  GENERAL COMMENTS                                                  P0710090
C*****    SUBTRACTION OF COMPLEX NUMBERS ASSUMED WORKING                  P0710100
C*****                                                                    P0710110
C*****  S P E C I F I C A T I O N S  SEGMENT 071                          P0710120
C*****                                                                    P0011730
C*****  WHEN EXECUTING ONLY SEGMENT 071, THE SPECIFICATION STATEMENTS     P0011735
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P0011740
C*****                                                                    P0011745
C=    COMPLEX  CHAVC, CHBVC, CHCVC, CHDVC ,CHEVC                          P0011750
      COMPLEX  CHAVC, CHBVC, CHCVC, CHDVC ,CHEVC                          P071A1
C*****                                                                    P0011755
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.        P0710130
C*****                                                                    P0071440
C*****  WHEN EXECUTING ONLY SEGMENT 071, THE FOLLOWING STATEMENT          P0071445
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.            P0071450
C=    NUVI = 6                                                            P0071455
      NUVI = 6                                                            P071B1
C*****                                                                    P0071460
      WRITE (NUVI,0710)                                                   P0710140
0710  FORMAT (1H1, 1X,40HIFCJG - (071) INTRINSIC FUNCTION - CONJG/16X,    P0710150
     119HOBTAIN CONJUGATE OF/16X,16HA COMPLEX NUMBER/                     P0710160
     217H  ASA REFS. - 8.2//2X,7HRESULTS)                                 P0710170
C*****    HEADER FOR SEGMENT 071 WRITTEN                                  P0710180
      CHAVC = (1.1,+2.1)                                                  P0710190
      CHBVC = CONJG(CHAVC)                                                P0710200
      CHCVC = CHBVC - (1.1,-2.1)                                          P0710210
      CHEVC = (-2.E0, -3.E-1)                                             P0710220
      CHBVC = CONJG(CHEVC)                                                P0710230
      CHDVC = CHBVC - (-2.E0,3.E-1)                                       P0710240
      WRITE (NUVI,0711) CHCVC, CHDVC                                      P0710250
      CHAVC = (-.2,+.3)                                                   P0710260
      CHBVC = CONJG(CHAVC)                                                P0710270
      CHCVC = CHBVC - (-.2,-.3)                                           P0710280
      CHAVC = (23.1E-1,1.E-2)                                             P0710290
      CHBVC = CONJG(CHAVC)                                                P0710300
      CHDVC = CHBVC - (23.1E-1,-1.E-2)                                    P0710310
      WRITE (NUVI,0711) CHCVC,CHDVC                                       P0710320
      CHBVC = CONJG((1.2,2.2))                                            P0710330
      CHCVC = CHBVC - (1.2,-2.2)                                          P0710340
      CHBVC = CONJG((-1.0,2.0E-1))                                        P0710350
      CHDVC = CHBVC - (-1.0,-2.0E-1)                                      P0710360
      WRITE (NUVI,0711) CHCVC, CHDVC                                      P0710370
      CHBVC = CONJG((.1,.2E0))                                            P0710380
      CHCVC = CHBVC - (.1,-.2E0)                                          P0710390
      CHDVC = CONJG((.0,-0.E0))                                           P0710400
      WRITE (NUVI,0711) CHCVC, CHDVC                                      P0710410
      WRITE (NUVI,0712)                                                   P0710420
0711  FORMAT (4(/  F17.7, F10.7))                                         P0710430
0712  FORMAT (//38H  ALL ABOVE ANSWERS MUST BE 0 FOR THIS/1X,             P0710440
     131H TEST SEGMENT TO BE SUCCESSFUL.)                                 P0710450
C*****    END OF TEST SEGMENT 071                                         P0710460
C*****  WHEN EXECUTING ONLY SEGMENT 071, THE  STOP  AND  END  CARDS       P0710470
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                   P0710480
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P0710490
C=    STOP                                                                P0710500
C=    END                                                                 P0710510
      STOP                                                                P071C1
      END                                                                 P071C2
C*******************************************************************************P0720010
C*****                                                                    P0720020
C*****                          IFBMS - (072)                             P0720030
C*****                                                                    P0720040
C*******************************************************************************P0720050
C*****  GENERAL PURPOSE                                          ASA REF P0720060
C*****    TEST THAT ALL INTRINSIC FUNCTIONS WOULD ACCEPT           8.2/32P0720070
C*****    ANY EXPRESSION OF THE TYPE SPECIFIED IN THE            (TABLE 3)P0720080
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C*****    INTRINSIC FUNCTION TABLE - ASA REFS - 8.2/01-47                P0720090
C*****  GENERAL COMMENTS                                                 P0720100
C*****    SEGMENTS 055 TO 071 ASSUMED WORKING                            P0720110
C*****                                                                   P0720120
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0720130
C*****                                                                   P0720140
C*****  WHEN EXECUTING ONLY SEGMENT 072, THE FOLLOWING STATEMENT         P0071470
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0071475
C=     NUVI = 6                                                          P0071480
       NUVI = 6                                                          P072B1
C*****                                                                   P0071485
      WRITE (NUVI,0720)                                                  P0720150
0720  FORMAT (1H1,1X,37HIFBMS - (072) BASIC FORTRAN INTRINSIC/10X,       P0720160
     128HFUNCTIONS ACCEPT EXPRESSIONS/10X,30HOF TYPE SPECIFIED IN I.F.TAP0720170
     2BLE//15H  ASA REF.- 8.2//2X,7HRESULTS)                             P0720180
C*****    HEADER FOR SEGMENT 072 WRITTEN                                 P0720190
C*****    TEST ABS - ABSOLUTE VALUE OF REAL ARGUMENT              8.2/11P0720200
      CMAVS = 0.5                                                        P0720210
      CMBVS = -.25                                                       P0720220
      CMCVS = 16.0                                                       P0720230
      CMDVS = -4.0                                                       P0720240
      CMEVS = ABS(CMAVS + CMBVS) + 1.0                                   P0720250
      CMFVS = CMEVS - (0.5 - .25) - 1.0                                  P0720260
      CMEVS = ABS(0.0 -ABS(CMAVS - CMCVS+ CMDVS))                        P0720270
      CMGVS = CMEVS + (0.5 - 16.0 - 4.0)                                 P0720280
      CMEVS = ABS(CMAVS + 1.0 - (CMCVS + CMDVS) + 0.5 * 8.0)             P0720290
      CMHVS = CMEVS + (0.5 + 1.0 - (16.0 - 4.0) + 4.0)                   P0720300
      CMEVS = ABS(1.0E0 + (1.0 * 1.0 / 1.0) **2)                         P0720310
      CMIVS = CMEVS - 2.0                                                P0720320
      WRITE (NUVI,0721) CMFVS , CMGVS , CMHVS , CMIVS                    P0720330
C*****    TEST OF IABS - ABSOLUTE VALUE OF INTEGER ARGUMENT       8.2/12P0720340
      MCAVI = 2                                                          P0720350
      MCBVI = 10                                                         P0720360
      MCCVI = IABS (MCAVI + MCBVI)                                       P0720370
      MCDVI = MCCVI - 12                                                 P0720380
      MCCVI = IABS(MCAVI * 2 + MCBVI / 2) +1                             P0720390
      MCEVI = MCCVI - 10                                                 P0720400
      MCCVI = IABS(-MCBVI /(-2) - MCBVI ** 1 + (1 * 2 * 3 / 2 - 3) - 10  P0720410
     1 + 10 + MCBVI / MCAVI - 5)                                         P0720420
      MCFVI = MCCVI - 5                                                  P0720430
      MCCVI = IABS(0 - IABS(-5 * 1 / 5  - 5 * IABS(-1)))                 P0720440
      MCGVI = MCCVI - 6                                                  P0720450
      WRITE (NUVI, 0722) MCDVI , MCEVI , MCFVI , MCGVI                   P0720460
C*****    TEST OF FLOAT - CONVERSION FROM INTEGER TO REAL         8.2/29P0720470
      CMEVS = FLOAT (MCAVI + MCBVI)                                      P0720480
      CMFVS = CMEVS - 12.0                                               P0720490
      CMEVS = FLOAT(MCAVI * 2 /4 + MCBVI ** 1)                           P0720500
      CMGVS = CMEVS - 11.0                                               P0720510
      CMEVS = FLOAT((23 + 46)/69 + 10 - MCBVI) *2.0 + 1.5                P0720520
      CMHVS = CMEVS - 3.5                                                P0720530
      CMEVS = (76.5 * 1.0 - FLOAT (76 * 1)) * 4.0                        P0720540
      CMIVS = CMEVS - 2.0                                                P0720550
      WRITE (NUVI,0723) CMFVS, CMGVS, CMHVS, CMIVS                       P0720560
C*****    TEST OF IFIX - CONVERSION FROM REAL TO INTEGER          8.2/30P0720570
      MCCVI = IFIX(CMAVS - CMBVS)                                        P0720580
      MCDVI = MCCVI                                                      P0720590
      MCCVI = IFIX(CMAVS *1.0 + CMBVS/CMBVS - (CMCVS - CMDVS))           P0720600
      MCEVI = MCCVI + 18                                                 P0720610
      MCCVI = 1 + IFIX(2.5 * 2.0) - IFIX(10.0 /2.0)                      P0720620
      MCFVI = MCCVI - 1                                                  P0720630
      MCCVI = 2 + IFIX(2.5 ** 1.0 + (10.65 + 3.45))                      P0720640
      MCGVI = MCCVI - 18                                                 P0720650
      WRITE (NUVI,0724) MCDVI, MCEVI, MCFVI, MCGVI                       P0720660
C*****    TEST OF SIGN - TRANSFER OF SIGN WITH REAL ARGUMENTS     8.2/31P0720670
      CMEVS = SIGN(CMAVS+CMDVS,CMDVS-CMBVS)                              P0720680
      CMFVS = CMEVS - (CMAVS + CMDVS)                                    P0720690
      CMEVS = SIGN(25.0 + 0.0 * 4.0,-24.4/6.1 * 1.0)                     P0720700
      CMGVS = CMEVS + 25.0                                               P0720710
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      CMEVS = SIGN(10.5,SIGN(2.0,-4.5))                                 P0720720
      CMHVS = CMEVS + 10.5                                              P0720730
      CMEVS = SIGN(1.0,SIGN(-2.0,SIGN(2.0,-1.0)))                       P0720740
      CMIVS = CMEVS + 1.0                                               P0720750
      WRITE (NUVI,0725) CMFVS, CMGVS, CMHVS, CMIVS                      P0720760
C*****    TEST OF ISIGN - TRANSFER OF SIGN WITH INTEGER ARGUMENT  8.2/32P0720770
      MCCVI = ISIGN(MCAVI,MCAVI + MCBVI - 13)                           P0720780
      MCDVI = MCCVI + 2                                                 P0720790
      MCCVI = ISIGN(10,-5 - 10/2 + 1**2)                                P0720800
      MCEVI = MCCVI + 10                                                P0720810
      MCCVI = ISIGN( 1 + 2 + 3 , ISIGN(-2,7 + 5))                       P0720820
      MCFVI = MCCVI - 6                                                 P0720830
      MCCVI = ISIGN(1,ISIGN(-1,ISIGN(+1,-1)))                           P0720840
      MCGVI = MCCVI + 1                                                 P0720850
      WRITE (NUVI,0726) MCDVI, MCEVI, MCFVI, MCGVI                      P0720860
C*****    TEST OF COMBINATION OF ABS,IABS,FLOAT,IFIX,SIGN,ISIGN         P0720870
      CMEVS = FLOAT(IABS(IFIX(ABS(-5.0 + SIGN(-1.0,2.0)))))             P0720880
      CMFVS = CMEVS - 4.0                                               P0720890
      MCCVI = IFIX(FLOAT(ISIGN(1+2,IABS(1 + ISIGN(1,-1)))))             P0720900
      MCDVI = MCCVI - 3                                                 P0720910
      CMEVS = SIGN(ABS(1.0 + FLOAT(-20)), FLOAT(IFIX(1.0)))             P0720920
      CMGVS = CMEVS - 19.0                                              P0720930
      MCCVI = ISIGN(IABS(IFIX(1.0) - 2) , -((1 + IFIX(-1.0)) +1))       P0720940
      MCEVI = MCCVI + 1                                                 P0720950
      WRITE (NUVI,0727) CMFVS, CMGVS, MCDVI, MCEVI                      P0720960
      CMEVS = ABS(SIGN(1.0 + 2.0, FLOAT(IABS(-2))))                     P0720970
      CMFVS = CMEVS - 3.0                                               P0720980
      MCCVI = IABS(IFIX(SIGN(-2.0,2.0)))                                P0720990
      MCDVI = MCCVI - 2                                                 P0721000
      CMEVS = 1.2 + FLOAT(1 + 5 - ISIGN(-1,6))                          P0721010
      CMGVS = CMEVS - 6.2                                               P0721020
      MCCVI = 25 - ISIGN(IFIX(2.0),-IABS(-5))                           P0721030
      MCEVI = MCCVI - 27                                                P0721040
      WRITE (NUVI,0728) CMFVS, CMGVS, MCDVI, MCEVI                      P0721050
C*****    END OF TEST STATEMENTS                                        P0721060
0721  FORMAT ( / 30H  TEST OF ABS IN EXPRESSIONS -/ 4(F17.1/))          P0721070
0722  FORMAT (   31H  TEST OF IABS IN EXPRESSIONS -/ 4(I15/))           P0721080
0723  FORMAT (   32H  TEST OF FLOAT IN EXPRESSIONS -/ 4(F17.1/))        P0721090
0724  FORMAT (   31H  TEST OF IFIX IN EXPRESSIONS -/ 4(I15/))           P0721100
0725  FORMAT (   31H  TEST OF SIGN IN EXPRESSIONS -/ 4(F17.1/))        P0721110
0726  FORMAT (   32H  TEST OF ISIGN IN EXPRESSIONS -/ 4(I15/))          P0721120
0727  FORMAT (   40H  COMBINATION OF ALL INTRINSIC FUNCTIONS,           P0721130
     1  2(/F17.1), 2(/I15))                                            P0721140
0728  FORMAT (  2(F17.1/),2(I15/)/ 35H  ALL ABOVE ANSWERS SHOULD BE 0 FOP0721150
     1R/2X,35HTHIS TEST SEGMENT TO BE SUCCESSFUL.)                     P0721160
C*****    END OF TEST SEGMENT 072                                       P0721170
C*****  WHEN EXECUTING ONLY SEGMENT 072, THE  STOP  AND  END  CARDS     P0721180
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0721190
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0721200
C=    STOP                                                            P0721210
C=    END                                                             P0721220
      STOP                                                            P072C1
      END                                                             P072C2
C*******************************************************************************P0730010
C*****                                                                 P0730020
C*****                          IFFMS - (073)                          P0730030
C*****                                                                 P0730040
C*******************************************************************************P0730050
C*****  GENERAL PURPOSE                                        ASA REF P0730060
C*****    TEST THAT ALL INTRINSIC FUNCTIONS IN FORTRAN WOULD     8.2/07P0730070
C*****    ACCEPT ANY EXPRESSION OF THE TYPE SPECIFIED IN THE   (PG 24)P0730080
C*****    INTRINSIC FUNCTION TABLE - ASA REFS - 8.2/TABLE 3             P0730090
C*****    SEGMENTS 055 - 071 ASSUMED WORKING.                           P0730100
C*****                                                                  P0730110
C*****  S P E C I F I C A T I O N S  SEGMENT 073                        P0730120
C*****                                                                  P0011760
C*****  WHEN EXECUTING ONLY SEGMENT 073, THE SPECIFICATION STATEMENTS   P0011765
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0011770
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C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0011775
C*****                                                                   P0011780
C=     DIMENSION MCA1I(5),AC2S(5,6)                                      P0011785
C=     INTEGER MCA3I(2,3,3)                                              P0011790
C=     DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD,DPEVD,DPFVD,DPGVD,       P0011795
C=    1DPA1D(5),FC2D(5,5)                                                P0011800
       DIMENSION MCA1I(5),AC2S(5,6)                                      P073A1
       INTEGER MCA3I(2,3,3)                                              P073A2
       DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD,DPEVD,DPFVD,DPGVD,       P073A3
      1DPA1D(5),FC2D(5,5)                                                P073A4
C*****                                                                   P0011805
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0730130
C*****                                                                   P0071490
C*****  WHEN EXECUTING ONLY SEGMENT 073, THE FOLLOWING STATEMENT         P0071495
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0071500
C=     NUVI = 6                                                          P0071505
       NUVI = 6                                                          P073B1
C*****                                                                   P0071510
       WRITE (NUVI,0730)                                                 P0730140
0730   FORMAT (1H1,1X,41HIFFMS - (073) FORTRAN INTRINSIC FUNCTIONS/16X,  P0730150
      126HACCEPT EXPRESSIONS OF TYPE/16X,22HSPECIFIED IN I.F.TABLE/      P0730160
      223H  ASA REF.- 8.2/TABLE 3//2X,7HRESULTS)                         P0730170
C*****    HEADER FOR SEGMENT 073 WRITTEN                                 P0730180
C*****    TEST OF DABS IN EXPRESSIONS                          8.2/13P0730190
       DPAVD = 1.25D0                                                    P0730200
       DPBVD = - 10.0D0                                                  P0730210
       DPCVD = DABS(DPAVD + DPBVD)                                       P0730220
       DPDVD = DPCVD - 10.0D0 + 1.25D0                                   P0730230
       DPCVD = DABS(1.0D0 + 2.D0 - 3.0D0 * 50.D-1)                       P0730240
       DPEVD = DPCVD - 12.D0                                             P0730250
       DPCVD = DABS( DPAVD * 1.D0 - 1.25D0 + DPBVD/2.D0) + 1.D0          P0730260
       DPFVD = DPCVD - 6.0D0                                             P0730270
       DPGVD = 1.0D0 + DABS(2.5D0 - 1.5D0 * 1.0D0) - 2.D0                P0730280
       WRITE (NUVI,0731) DPDVD, DPEVD, DPFVD, DPGVD                      P0730290
C*****    TEST DF AINT IN EXPRESSIDNS                          8.2/14P0730300
       CMAVS = 1.23                                                      P0730310
       CMBVS = 27.998                                                    P0730320
       CMCVS = -9.007E0                                                  P0730330
       CMDVS = AINT(CMAVS + CMBVS - CMCVS)                               P0730340
       CMEVS = CMDVS - 38.0                                              P0730350
       CMDVS = AINT(1.0 + 2.0 /1.0 - 3.0 * 2.E0)                         P0730360
       CMFVS = CMDVS + 3.0                                               P0730370
       CMDVS = AINT(4. + AINT(2.E0 + CMCVS))                             P0730380
       CMGVS = CMDVS + 3.0                                               P0730390
       CMDVS = AINT(AINT(AINT( 1.4 - 2.7)))                              P0730400
       CMHVS = CMDVS + 1.0                                               P0730410
       WRITE (NUVI,0732) CMEVS, CMFVS, CMGVS, CMHVS                      P0730420
C*****    TEST OF INT IN EXPRESSIDNS                           8.2/15P0730430
       MCAVI = INT(1.0 + 2.1 + 3.2 - 8.4 / 2.5 * 2.6)                    P0730440
       MCBVI = MCAVI + 2                                                 P0730450
       MCAVI = INT(100.0/6.0 - (2.0 **4.0) + (((2.0-3.0)+4.0) * 2.0))    P0730460
       MCCVI = MCAVI - 6                                                 P0730470
       MCAVI = INT((100.2/6.1/5.0+4.10) / 2.0)                           P0730480
       MCDVI = MCAVI - 3                                                 P0730490
       MCAVI = INT(9.0/2.0) + INT(5.1/4.0)                               P0730500
       MCEVI = MCAVI - 5                                                 P0730510
       WRITE (NUVI,0733) MCBVI, MCCVI, MCDVI, MCEVI                      P0730520
C*****    TEST OF IDINT IN EXPRESSIONS                         8.2/16P0730530
       DPA1D(1) = 2.5D1                                                  P0730540
       MCAVI = IDINT(DPBVD / 2.0D0 + 1.5D0)                              P0730550
       MCBVI = MCAVI + 3                                                 P0730560
       MCAVI = IDINT( 1.0D1 + 5.D0 * 2.D1 / 49.D1) + 1                   P0730570
       MCCVI = MCAVI - 11                                                P0730580
       MCAVI = IDINT(DPA1D(1))                                           P0730590
       MCDVI = MCAVI - 25                                                P0730600
       MCAVI = IDINT(DPA1D(1) + DPA1D(1)/4.0D0)                          P0730610
       MCEVI = MCAVI - 31                                                P0730620
       WRITE (NUVI,0734) MCBVI, MCCVI, MCDVI, MCEVI                      P0730630
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C*****    TEST OF AMDD, MOD IN EXPRESSIONS                    8.2/17-18P0730640
      AC2S(1,1) = 27.0                                                  P0730650
      CMDVS =AMDD(25.0 + AC2S(1,1), 1.0 * 5.0)                          P0730660
      CMEVS = CMDVS - 2.0                                               P0730670
      CMDVS =AMOD(99.0,AMOD(25.0+ 27.0, 5.0))                           P0730680
      CMFVS = CMDVS - 1.0                                               P0730690
      MCA3I(1,2,3) = 5                                                  P0730700
      MCAVI = MOD(98 + 1, MOD(25 + 27,5))                               P0730710
      MCBVI = MCAVI - 1                                                 P0730720
      MCAVI = MDD (MCA3I (1,2,3), 2)                                    P0730730
      MCCVI = MCAVI - 1                                                 P0730740
      WRITE (NUVI,0735) CMEVS, CMFVS, MCBVI, MCCVI                      P0730750
C*****    TEST DF AMAX0, AMAX1, MAX0, MAX1 AND DMAX1 IN EXPRESSIONS   P0730760
C*****                                                  8.2/19-23P0730770
      FC2D(1,1) = 27.0D0                                                P0730780
      CMDVS = AMAX0(5 + 9, MAX0(14 * 2, MAX1( 2.0 /1.0,1.0)))           P0730790
      CMEVS = CMDVS - 28.0                                              P0730800
      CMDVS = AMAX1((AMAX0((MAX0(29,-100)),5 + 10)), 2.0 * 2.0)         P0730810
      CMFVS = CMDVS - 29.0                                              P0730820
      MCAVI = MAX1((AMAX0(25, -(1 * 5))),100.0)                         P0730830
      MCBVI = MCAVI - 100                                               P0730840
      DPCVD = DMAX1(FC2D(1,1),DMAX1(1.0D0, 0.D0 * FC2D(1,1)))           P0730850
      DPDVD = DPCVD - 27.0D0                                            P0730860
      WRITE (NUVI,0736) CMEVS, CMFVS, MCBVI, DPDVD                      P0730870
C*****    TEST DF AMIN0, AMIN1, MIN0, MIN1 AND DMIN1 IN EXPRESSIONS   P0730880
C*****                                                  8.2/24-27P0730890
      CMDVS = AMIN1(2.5 + AC2S(1,1), AMIN0(-5, MIN0(0,1)))              P0730900
      CMEVS = CMDVS + 5.0                                               P0730910
      MCAVI = MIN0((MIN1( -99., 100.0 - 1.0 * 99.)), 2)                 P0730920
      MCBVI = MCAVI + 99                                                P0730930
      MCAVI = MIN1( 2.0,AMIN1( 5. * 3.0, -9.0 /(-9.0)))                 P0730940
      MCCVI = MCAVI - 1                                                 P0730950
      DPCVD = DMIN1(FC2D(1,1), DMIN1(2.0D-1,0.0D0))                     P0730960
      DPDVD = DPCVD - 0.0D0                                             P0730970
      WRITE (NUVI,0737) CMEVS, MCBVI, MCCVI, DPDVD                      P0730980
C*****    TEST DF DSIGN,AND DBLE IN EXPRESSIONS          8.2/33,8.2/43P0730990
      DPCVD= DSIGN(FC2D(1,1) * 1.0D1, - 1.0D0)                          P0731000
      DPDVD = DPCVD + 27.0D1                                            P0731010
      DPCVD = DSIGN((DSIGN(2.0D0, -1.0D0) + 0.0D0),  .0D0)              P0731020
      DPEVD = DPCVD - 2.0D0                                             P0731030
      DPCVD = DBLE( 2.0 * 4.0 + AC2S(1,1))                              P0731040
      DPFVD = DPCVD - 35.0D0                                            P0731050
      DPCVD = DBLE(-32.00 / 8.0) * DBLE(-2.0)                           P0731060
      DPGVD = DPCVD - 8.0D0                                             P0731070
      WRITE (NUVI,0738) DPDVD, DPEVD, DPFVD, DPGVD                      P0731080
C*****    TEST DF DIM AND IDIM IN EXPRESSIDNS                 8.2/34-35P0731090
      CMDVS = DIM( 2.0 * 3.5 /7.0, AC2S(1,1))                           P0731100
      CMEVS = CMDVS - 0.0                                               P0731110
      CMDVS = DIM(DIM(9.0,-5.5), DIM(6.0,0.0))                          P0731120
      CMFVS = CMDVS - 8.5                                               P0731130
      MCA1I(1)=8                                                        P0731140
      MCCVI = IDIM(MCA1I(1) * 1, - (IDIM(0, -3)))                       P0731150
      MCDVI = MCCVI - 11                                                P0731160
      MCCVI = IDIM(((4 + 2 + 3)/3), - 2)                                P0731170
      MCEVI = MCCVI - 5                                                 P0731180
      WRITE (NUVI,9995) CMEVS, CMFVS, MCDVI, MCEVI                      P0731190
C*****    TEST DF SNGL, REAL , AIMAG, CMPLX AND CDNJG IN EXPRESSIONS   P0731200
C*****                                                  8.2/36-47P0731210
      CMEVS = SNGL (1.0D0 * 2.D1 + AC2S(1,1))                           P0731220
      CMFVS = CMEVS - 47.0                                              P0731230
      CMEVS = REAL( CDNJG((1.0, -2.0)))+ AIMAG((99.0, -7.0))            P0731240
      CMGVS = CMEVS + 6.0                                               P0731250
      CMEVS = AIMAG(CMPLX(REAL((2.0,1.0)), SNGL (1.0D0)))               P0731260
      CMHVS = CMEVS - 1.0D0                                             P0731270
      WRITE (NUVI,0739) CMFVS, CMGVS, CMHVS                             P0731280
C*****    SOME CDMBINATIONS OF ABOVE INTRINSIC FUNCTIONS              P0731290
      CMEVS = AMIN1((FLOAT(IDIM(1+2,0))),(AIMAG(CMPLX(1.0,2.0))))       P0731300
      CMFVS = CMEVS - 2.0                                               P0731310
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      CMEVS = REAL(CMPLX(SNGL(DABS(-DSIGN(DBLE(2.0),1.0D0))),CMAVS))    P0731320
      CMGVS = CMEVS - 2.0                                               P0731330
      WRITE (NUVI,9994) CMFVS, CMGVS                                    P0731340
C*****    END OF TEST STATEMENTS FOR SEGMENT 073                        P0731350
0731  FORMAT (/ 30H  TEST OF DABS IN EXPRESSIONS //4(D23.8/))           P0731360
0732  FORMAT (  30H  TEST OF AINT IN EXPRESSIONS //4(E19.6/))           P0731370
0733  FORMAT (  30H  TEST OF INT IN EXPRESSIONS  //4(I10/))             P0731380
0734  FORMAT (  30H  TEST OF IDINT IN EXPRESSIONS//4(I10/))             P0731390
0735  FORMAT (  35H  TEST OF AMOD, MOD IN EXPRESSIONS //                P0731400
     1 2(E19.6/), 2(I10/))                                              P0731410
0736  FORMAT (  40H  TEST OF AMAX0,AMAX1,MAX0,MAX1 AND DMAX//           P0731420
     1 2(E19.6/), I10/ D23.8)                                           P0731430
0737  FORMAT (  40H1 TEST OF AMIN0,AMIN1,MIN0,MIN1 AND DMIN//           P0731440
     1 E19.6/ 2(I10/), D23.8)                                           P0731450
0738  FORMAT (/ 39H  TEST OF DSIGN AND DBLE IN EXPRESSIONS//4(D23.8/))  P0731460
0739  FORMAT (  35H  TEST OF SNGL,REAL,AIMAG,CMPLX AND /                P0731470
     123H  CONJG IN EXPRESSIONS //3(E19.6/))                            P0731480
9994  FORMAT (  36H  TEST OF SOME COMBINATIONS OF ABOVE/                 P0731490
     122H  INTRINSIC FUNCTIONS //2(E19.6/) /40H  ALL ABOVE ANSWERS SHOULP0731500
     2D BE 0 FOR THIS/27H  SEGMENT TO BE SUCCESSFUL.)                   P0731510
9995  FORMAT ( /37H  TEST OF DIM AND IDIM IN EXPRESSIONS/2(E19.6/),     P0731520
     1 2(I10/))                                                         P0731530
C*****    END OF TEST SEGMENT 073                                       P0731540
C*****  WHEN EXECUTING ONLY SEGMENT 073, THE  STOP  AND  END  CARDS     P0731550
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0731560
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0731570
C=    STOP                                                            P0731580
C=    END                                                             P0731590
      STOP                                                            P073C1
      END                                                             P073C2
C*******************************************************************************P0800010
C*****                                                                 P0800020
C*****                          EXPON - 080                            P0800030
C*****                                                                 P0800040
C*******************************************************************************P0800050
C*****  GENERAL PURPOSE                                        ASA REFP0800060
C*****    .TO TEST BASIC EXTERNAL FUNCTION - EXP - EXPONENTIAL  8.3.3  P0800070
C*****    .USED IN SIMPLE ARITHMETIC EXPRESSIONS                TABLE 4P0800080
C*****    .INTRINSIC FUNCTIONS  ABS AND SIGN ASSUMED WORKING           P0800090
C*****     ARGUMENTS ARE POWERS OF 2                                   P0800100
C*****                                                                 P0800110
C*****  NO  S P E C I F I C A T I O N S  SEGMENT 080                    P0800120
C*****                                                                 P0800130
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0800140
C*****  WHEN EXECUTING ONLY SEGMENT 080, THE FOLLOWING STATEMENT       P0071520
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.        P0071525
C*****                                                                 P0071530
C=    NUVI = 6                                                        P0071535
      NUVI = 6                                                        P080B1
      WRITE(NUVI,800)                                                 P0800150
800   FORMAT(15H1 EXPON - (080)//31H  BASIC EXTERNAL FUNCTION -EXP-   P0800160
     1//26H  (EXPONENTIAL -TYPE REAL)                                 P0800170
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0800180
     3 HOLLERITH INFORMATION//9H  RESULTS)                            P0800190
C*****    HEADER FOR SEGMENT 080 WRITTEN                              P0800200
C*****  ARGUMENT RANGE FROM -16.0 TO +16.0                            P0800210
      AVS = -16.0                                                     P0800220
      CVS =   4.0                                                     P0800230
      BVS = EXP(AVS)                                                  P0800240
      WRITE (NUVI,801) BVS                                            P0800250
      BVS = EXP(2. * CVS + AVS)                                       P0800260
      WRITE (NUVI,802)  BVS                                           P0800270
      BVS = EXP(AVS + (3. * CVS))                                     P0800280
      WRITE (NUVI, 803) BVS                                           P0800290
      BVS = EXP(ABS(AVS) + AVS)                                       P0800300
      WRITE (NUVI, 804) BVS                                           P0800310
      BVS = EXP(-AVS / CVS)                                           P0800320
      WRITE (NUVI, 805) BVS                                           P0800330
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      BVS = EXP(SIGN(AVS + CVS * 2.0, CVS))                                 P0800340
      WRITE (NUVI, 806) BVS                                                 P0800350
      BVS = EXP(CVS + ABS(AVS) - 4.0)                                       P0800360
      WRITE(NUVI, 807) BVS                                                  P0800370
      WRITE (NUVI, 808)                                                     P0800380
801   FORMAT( 9H0 X=-16.0,5X,25H0.11253517471925911 45E-06/E27.7)           P0800390
802   FORMAT( 9H0 X= -8.0,5X,25H0.33546262790251183 88E-03/E27.7)           P0800400
803   FORMAT( 9H0 X= -4.0,5X,25H0.18315638888734180 29E-01/E27.7)           P0800410
804   FORMAT( 9H0 X=  0.0,5X,25H0.10000000000000000 00E+01/E27.7)           P0800420
805   FORMAT( 9H0 X=  4.0,5X,25H0.54598150033144239 08E+02/E27.7)           P0800430
806   FORMAT( 9H0 X=  8.0,5X,25H0.29809579870417282 75E+04/E27.7)           P0800440
807   FORMAT( 9H0 X= 16.0,5X,25H0.88861105205078726 37E+07/E27.7)           P0800450
808   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0800460
     1 PRINTED TO ,8H7 DIGITS)                                              P0800470
C*****    END OF TEST SEGMENT 080                                         P0800480
C*****  WHEN EXECUTING ONLY SEGMENT 080, THE  STOP  AND  ENO  CARDS       P0800490
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                    P0800500
C*****  IN COLUMNS  1  ANO  2  REMOVED.                                   P0800510
C=    STOP                                                                P0800520
C=    ENO                                                                 P0800530
      STOP                                                                P080C1
      ENO                                                                 P080C2
C*******************************************************************************P0810010
C*****                                                                    P0810020
C*****                          OEXPO - 081                               P0810030
C*****                                                                    P0810040
C*******************************************************************************P0810050
C*****  GENERAL PURPOSE                                                   P0810060
C*****     TO TEST BASIC EXTERNAL FUNCTION - DEXP - EXPONENTIAL  ASA REF  P0810070
C*****     USED IN SIMPLE ARITHMETIC EXPRESSIONS -SAME AS        8.3.3   P0810080
C*****     SEGMENT 080 EXCEPT OOUBLE PRECISION                   TABLE 4P0810090
C*****     INTRINSIC FUNCTIONS OABS ANO OSIGN ASSUMEO WORKING              P0810100
C*****     ARGUMENTS RANGE FROM -16.000 TO  +16.000, POWERS OF 2           P0810110
C*****                                                                     P0810120
C*****  S P E C I F I C A T I O N S  SEGMENT 081                           P0810130
C*****                                                                     P0011810
C*****  WHEN EXECUTING ONLY SEGMENT 081, THE SPECIFICATION STATEMENTS      P0011815
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                     P0011820
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                    P0011825
C*****                                                                     P0011830
C=    DOUBLE PRECISION AVO, BVO, CVD                                      P0011835
      DOUBLE PRECISION AVO, BVD, CVD                                      P081A1
C*****                                                                    P0011840
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0810140
C*****                                                                    P0071540
C*****  WHEN EXECUTING ONLY SEGMENT 081, THE FOLLOWING STATEMENT          P0071545
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 ANO 2 REMOVEO.            P0071550
C=    NUVI = 6                                                            P0071555
      NUVI = 6                                                            P081B1
C*****                                                                    P0071560
810   FORMAT(15H1 DEXPO - (081)//32H  BASIC EXTERNAL FUNCTION -OEXP-      P0810150
     1//38H  (EXPONENTIAL -TYPE OOUBLE PRECISION)                         P0810160
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H   P0810170
     3 HOLLERITH INFORMATION//9H  RESULTS)                                P0810180
      WRITE (NUVI, 810)                                                   P0810190
C*****    HEAOER FOR SEGMENT 081 WRITTEN                                  P0810200
      AVD = -16.0D0                                                       P0810210
      CVD =   4.000                                                       P0810220
      BVO = OEXP(AVO)                                                     P0810230
      WRITE (NUVI, 811) BVD                                               P0810240
      BVD = OEXP(2. * CVO + AVO)                                          P0810250
      WRITE (NUVI, 812) BVD                                               P0810260
      BVD = OEXP(AVD + (3. * CVD))                                        P0810270
      WRITE (NUVI, 813) BVO                                               P0810280
      BVO = OEXP(OABS(AVO) + AVO)                                         P0810290
      WRITE( NUVI, 814) BVO                                               P0810300
      BVO = OEXP(-AVO / CVO)                                              P0810310
      WRITE (NUVI, 815) BVD                                               P0810320
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      BVD = DEXP(DSIGN(AVD + CVD * 2.0D0, CVD))                         P0810330
      WRITE (NUVI, 816) BVD                                             P0810340
      BVD = DEXP(CVD + DABS(AVD) - 4.0)                                 P0810350
      WRITE (NUVI, 817) BVD                                             P0810360
      WRITE (NUVI, 818)                                                 P0810370
811   FORMAT( 9H0 X=-16.0,5X,25H0.11253517471925911145D-06/D34.14)      P0810380
812   FORMAT( 9H0 X= -8.0,5X,25H0.33546262790251183888D-03/D34.14)      P0810390
813   FORMAT( 9H0 X= -4.0,5X,25H0.18315638888734180029D-01/D34.14)      P0810400
814   FORMAT( 9H0 X=  0.0,5X,25H0.10000000000000000000D+01/D34.14)      P0810410
815   FORMAT( 9H0 X=  4.0,5X,25H0.54598150033144239080D+02/D34.14)      P0810420
816   FORMAT( 9H0 X=  8.0,5X,25H0.29809579870417282750D+04/D34.14)      P0810430
817   FORMAT( 9H0 X= 16.0,5X,25H0.88861105205078726370D+07/D34.14)      P0810440
818   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0810450
     A PRINTED TO ,9H14 DIGITS)                                         P0810460
C*****    END OF TEST SEGMENT 081                                       P0810470
C*****  WHEN EXECUTING ONLY SEGMENT 081, THE  STOP  AND  END  CARDS     P0810480
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0810490
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0810500
C=    STOP                                                              P0810510
C=    END                                                               P0810520
      STOP                                                              P081C1
      END                                                               P081C2
C******************************************************************************P0820010
C******                                                                 P0820020
C*****                      CEXP0 - (082)                               P0820030
C******                                                                 P0820040
C******************************************************************************P0820050
C*****  GENERAL PURPOSE                                        ASA REF.P0820060
C*****    .TO TEST THE BASIC EXTERNAL FUNCTION- CEXP             8.3.3  P0820070
C*****    .TESTING RANGE EXTENDS FROM 0 TO 16 FOR MODULUS      (TABLE 4)P0820080
C*****     AND ARGUMENT, VARIES BY STEPS OF PI/3 MAGNITUDE              P0820090
C*****    .INTRINSIC FUNCTIONS CMPLX, SNGL, MOD ASSUMED WORKING         P0820100
C*****                                                                  P0820110
C*****  S P E C I F I C A T I O N S  SEGMENT 082                        P0820120
C*****                                                                  P0011850
C*****  WHEN EXECUTING ONLY SEGMENT 082, THE SPECIFICATION STATEMENTS   P0011855
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0011860
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0011865
C*****                                                                  P0011870
C=    COMPLEX EP1C(30), AVC, BVC                                        P0011875
C=    DOUBLE PRECISION AVD, BVD                                         P0011880
      COMPLEX EP1C(30), AVC, BVC                                        P082A1
      DOUBLE PRECISION AVD, BVD                                         P082A2
C*****                                                                  P0011885
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0820130
C*****                                                                  P0071570
C*****  WHEN EXECUTING ONLY SEGMENT 082, THE FOLLOWING STATEMENT        P0071575
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.          P0071580
C=    NUVI = 6                                                          P0071585
      NUVI = 6                                                          P082B1
C*****                                                                  P0071590
      WRITE(NUVI,820)                                                   P0820140
820   FORMAT(15H1 CEXP0 - (082)//32H  BASIC EXTERNAL FUNCTION -CEXP-    P0820150
     1// 29H  (EXPONENTIAL -TYPE COMPLEX)//27H  ASA REF.- 8.3.3 (TABLE 4P0820160
     2)//20H  (COMPLEX ARGUMENT)/8X,15HEXPECTED RESULT /8X,15HFUNCTION RP0820170
     3ESULT)                                                            P0820180
C*****  LOG OF 10                                                       P0820190
      BVD = 2.3025850929940D0                                           P0820200
C*****  SINE OF 60 DEGREES                                              P0820210
      AVD = .86602540378444D0                                           P0820220
C*****    INITIALIZE EP1C (EXPECTED VALUES)                             P0820230
      EP1C(1) = CMPLX(0.5E-7,SNGL(-AVD*1.D-7))                          P0820240
      EP1C(2) = CMPLX(2.5E-7,SNGL(-AVD*5.D-7))                          P0820250
      EP1C(3) = (1.E-6,0.0)                                             P0820260
      EP1C(4) = (5.E-6,0.0)                                             P0820270
      EP1C(5) = CMPLX(0.5E-5,SNGL(AVD*1.D-5))                           P0820280
      EP1C(6) = CMPLX(2.5E-5,SNGL(AVD*5.D-5))                           P0820290
      EP1C(7) = CMPLX(-.5E-4,SNGL(AVD * 1.D-4))                         P0820300
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      EP1C(8) = CMPLX(-2.5E-4,SNGL(AVD*5.D-4))                          P0820310
      EP1C(9) = (-1.E-3,0.0)                                            P0820320
      EP1C(10) = (-5.E-3,0.0)                                           P0820330
      EP1C(11) = CMPLX(-0.5E-2,SNGL(-AVD*1.D-2))                        P0820340
      EP1C(12) = CMPLX(-2.5E-2,SNGL(-AVD * 5.D-2))                      P0820350
      EP1C(13) = CMPLX(0.5E-1,SNGL(-AVD*1.D-1))                         P0820360
      EP1C(14) = CMPLX(2.5E-1,SNGL(-AVD*5.D-1))                         P0820370
      EP1C(15) = (1.0,0.0)                                              P0820380
      EP1C(16) = (5.0,0.0)                                              P0820390
      EP1C(17) = CMPLX(0.5E1,SNGL(AVD * 1.D1))                          P0820400
      EP1C(18) = CMPLX(2.5E1,SNGL(AVD * 5.D1))                          P0820410
      EP1C(19) = CMPLX(-0.5E2,SNGL(AVD * 1.D2))                         P0820420
      EP1C(20) = CMPLX(-2.5E2,SNGL(AVD * 5.D2))                         P0820430
      EP1C(21) = (-1.E3,0.0)                                            P0820440
      EP1C(22) = (-5.E3,0.0)                                            P0820450
      EP1C(23) = CMPLX(-0.5E4,SNGL(-AVD * 1.D4))                        P0820460
      EP1C(24) = CMPLX(-2.5E4,SNGL(-AVD * 5.D4))                        P0820470
      EP1C(25) = CMPLX(0.5E5,SNGL(-AVD * 1.D5))                         P0820480
      EP1C(26) = CMPLX(2.5E5,SNGL(-AVD * 5.D5))                         P0820490
      EP1C(27) = (1.E6,0.0)                                             P0820500
      EP1C(28) = (5.E6,0.0)                                             P0820510
      EP1C(29) = CMPLX(0.5E7,SNGL(AVD * 1.D7))                          P0820520
      EP1C(30) = CMPLX(2.5E7,SNGL(AVD * 5.D7))                          P0820530
      IVI = 0                                                           P0820540
  821 IVI = IVI + 1                                                     P0820550
      IF ( MOD(IVI,2).EQ.0) GO TO 822                                   P0820560
      XIVS = ((IVI + 1)/2) - 8                                          P0820570
      AVS = BVD * XIVS                                                  P0820580
      GO TO 823                                                         P0820590
C*****  1.609  IS LOG OF 5                                             P0820600
  822 XIVS = (IVI / 2) - 8                                              P0820610
      AVS = BVD * XIVS + 1.609437912434 1D0                             P0820620
C*****  1.047 IS PI/3                                                  P0820630
 823  AVC =  CMPLX(AVS,SNGL(1.0471975511966D0 * XIVS))                  P0820640
      BVC = CEXP(AVC)                                                   P0820650
      WRITE(NUVI, 824) AVC, EP1C(IVI), BVC                              P0820660
      IF (IVI - 10) 825, 827, 825                                       P0820670
  825 IF (IVI - 20) 826, 827, 826                                       P0820680
  826 IF (IVI - 30) 821, 828, 828                                       P0820690
  827 WRITE(NUVI, 829)                                                  P0820700
      GO TO 821                                                         P0820710
  828 CONTINUE                                                          P0820720
829   FORMAT(22H1 CEXP0 - (082) -CEXP-)                                 P0820730
  824 FORMAT(3H0 (,E14.7,1H,,E14.7,1H),2(/8X,2E16.7))                   P0820740
C*****    END OF TEST SEGMENT 082                                       P0820750
C*****  WHEN EXECUTING ONLY SEGMENT 082, THE STOP AND END CARDS         P0820760
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0820770
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0820780
C=    STOP                                                            P0820790
C=    END                                                             P0820800
      STOP                                                            P082C1
      END                                                             P082C2
C*******************************************************************************P0830010
C*****                                                                 P0830020
C*****                          LOGTM - 083                            P0830030
C*****                                                                 P0830040
C*******************************************************************************P0830050
C*****  GENERAL PURPOSE                                                P0830060
C*****     .TO TEST BASIC EXTERNAL FUNCTION - ALOG -            ASA REF P0830070
C*****      NATURAL LOG -USED IN SIMPLE ARITHMETIC EXPRESSIONS   8.3.3  P0830080
C*****      INTRINSIC FUNCTIONS ABS,AMIN1,INT,MIN0,FLOAT,       TABLE 4 P0830090
C*****      SIGN ASSUMED WORKING                                        P0830100
C*****      ARGUMENTS ARE POWERS(OR SUMS) OF 2                          P0830110
C*****                                                                 P0830120
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0830130
C*****                                                                 P0071600
C*****  WHEN EXECUTING ONLY SEGMENT 083, THE FOLLOWING STATEMENT       P0071605
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.         P0071610
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C=     NUVI = 6                                                          P0071615
       NUVI = 6                                                          P083B1
C*****                                                                   P0071620
830    FORMAT(15H1 LOGTM - (083)//32H  BASIC EXTERNAL FUNCTION -ALOG-    P0830140
     1//26H  (NATURAL LOG -TYPE REAL)                                    P0830150
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H  P0830160
     3 HOLLERITH INFORMATION//9H  RESULTS)                               P0830170
       WRITE (NUVI, 830)                                                 P0830180
C*****    HEAOER FOR SEGMENT 083 WRITTEN                                 P0830190
       AVS = .25                                                         P0830200
       CVS = 2.0                                                         P0830210
       MVI = -2                                                          P0830220
       BVS = ALOG(AVS / 2.0)                                             P0830230
       WRITE (NUVI, 831) BVS                                             P0830240
       BVS = ALOG(AVS)                                                   P0830250
       WRITE (NUVI, 832) BVS                                             P0830260
       BVS = ALOG(AVS * CVS)                                             P0830270
       WRITE (NUVI, 833) BVS                                             P0830280
       BVS = ALOG(AVS * CVS ** 2)                                        P0830290
       WRITE (NUVI, 834) BVS                                             P0830300
       BVS = ALOG(AMIN1(AVS * 2.0 + ABS(FLOAT(MVI) / CVS),CVS))          P0830310
       WRITE (NUVI, 835) BVS                                             P0830320
       BVS = ALOG(SIGN(FLOAT(MINO(MVI,INT(CVS))),AVS))                   P0830330
       WRITE (NUVI, 836) BVS                                             P0830340
831    FORMAT( 9H0 X=0.125,5X,19H-2.07944154167983 59/14X,F9.6)          P0830350
832    FORMAT( 9H0 X=0.25 ,5X,19H-1.3862943611198906/14X,F 9.6)          P0830360
833    FORMAT( 9H0 X=0.5  ,5X,19H-0.6931471805599453/14X,F10.7)          P0830370
834    FORMAT( 9H0 X=1.0  ,5X,19H 0.0000000000000000/14X,F10.7)          P0830380
835    FORMAT( 9H0 X=1.5  ,5X,19H 0.4054651081081644/14X,F10.7)          P0830390
836    FORMAT( 9H0 X=2.0  ,5X,19H 0.6931471805599453/14X,F10.7)          P0830400
       WRITE (NUVI, 837)                                                 P0830410
837    FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0830420
     1 PRINTEO TO ,8H7 OIGITS)                                           P0830430
C*****    END OF TEST SEGMENT 083                                        P0830440
C*****  WHEN EXECUTING ONLY SEGMENT 083, THE  STOP  AND  END  CARDS      P0830450
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0830460
C*****  IN COLUMNS  1  AND  2  REMOVEO.                                  P0830470
C=     STOP                                                              P0830480
C=     END                                                               P0830490
       STOP                                                              P083C1
       ENO                                                               P083C2
C*****************************************************************************P0840010
C*****                                                                   P0840020
C*****                          OPLOG - 084                              P0840030
C*****                                                                   P0840040
C*****************************************************************************P0840050
C*****  GENERAL PURPOSE                                                  P0840060
C*****     TO TEST BASIC EXTERNAL FUNCTION - OLOG -            ASA REF   P0840070
C*****     NATURAL LOG -TYPE OOUBLE PRECISION                   8.3.3    P0840080
C*****     USED IN SIMPLE ARITHMETIC EXPRESSIONS               TABLE 4   P0840090
C*****     INTRINSIC FUNCTIONS DMIN1,DABS,DBLE,FLOAT,DSIGN,              P0840100
C*****     MINO,DINT, ASSUMED WORKING                                    P0840110
C*****     ARGUMENTS ARE POWERS OF 2                                     P0840120
C*****                                                                   P0840130
C*****  S P E C I F I C A T I O N S  SEGMENT 084                         P0840140
C*****                                                                   P0011890
C*****  WHEN EXECUTING ONLY SEGMENT 084, THE SPECIFICATION STATEMENTS    P0011895
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                  P0011900
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0011905
C*****                                                                   P0011910
C=     DOUBLE PRECISION AVD, BVD, CVD                                    P0011915
       DOUBLE PRECISION AVD, BVD, CVD                                    P084A1
C*****                                                                   P0011920
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0840150
C*****                                                                   P0071630
C*****  WHEN EXECUTING ONLY SEGMENT 084, THE FOLLOWING STATEMENT         P0071635
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0071640
C=     NUVI = 6                                                          P0071645
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      NUVI = 6                                                          P084B1
C*****                                                                  P0071650
840   FORMAT(15H1 DPLOG - (084)//32H  BASIC EXTERNAL FUNCTION -DLOG-    P0840160
     1//38H  (NATURAL LOG -TYPE DOUBLE PRECISION)                       P0840170
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0840180
     3 HOLLERITH INFORMATION//9H  RESULTS)                              P0840190
      WRITE (NUVI, 840)                                                 P0840200
C*****    HEADER FOR SEGMENT 084 WRITTEN                                P0840210
      AVO = .2500                                                       P0840220
      CVD = 2.000                                                       P0840230
      MVI = -2                                                          P0840240
      BVO = OLOG(AVO / 2.000)                                           P0840250
      WRITE (NUVI, 841) BVO                                             P0840260
      BVO = OLOG(AVO)                                                   P0840270
      WRITE( NUVI, 842) BVD                                             P0840280
      BVO = OLOG(AVO * CVO)                                             P0840290
      WRITE(NUVI, 843) BVO                                              P0840300
      BVO = OLOG(AVO * CVO ** 2)                                        P0840310
      WRITE (NUVI, 844) BVO                                             P0840320
      BVO = OLOG(DMIN1(AVO * 2.000 +DABS(DBLE(FLOAT(MVI))/CVD), CVO))   P0840330
      WRITE (NUVI, 845) BVD                                             P0840340
      BVO = OLOG(OSIGN(OBLE(FLOAT(MINO(MVI,IOINT(CVO)))),AVO))          P0840350
      WRITE (NUVI, 846) BVD                                             P0840360
      WRITE (NUVI, 847)                                                 P0840370
841   FORMAT( 9H0 X=0.125,5X,23H-2.07944154167983590+00/1PO34.13)       P0840380
842   FORMAT( 9H0 X=0.25 ,5X,23H-1.38629436111989060+00/1PD34.13)       P0840390
843   FORMAT( 9H0 X=0.5  ,5X,23H-0.69314718055994530+00/  D35.14)       P0840400
844   FORMAT( 9H0 X=1.0  ,5X,23H 0.000000000000000     /  O35.14)       P0840410
845   FORMAT( 9H0 X=1.5  ,5X,23H 0.40546510810816440+00/  O35.14)       P0840420
846   FORMAT( 9H0 X=2.0  ,5X,23H 0.69314718055994530+00/  O35.14)       P0840430
847   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0840440
     A PRINTEO TO ,9H14 DIGITS)                                         P0840450
C*****    END OF TEST SEGMENT 084                                       P0840460
C*****  WHEN EXECUTING ONLY SEGMENT 084, THE  STOP  ANO  END  CAROS     P0840470
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                  P0840480
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                 P0840490
C=    STOP                                                              P0840500
C=    ENO                                                               P0840510
      STOP                                                              P084C1
      ENO                                                               P084C2
C*******************************************************************************P0850010
C*****                                                                  P0850020
C*****                          CXLOG - (085)                           P0850030
C*****                                                                  P0850040
C*******************************************************************************P0850050
C*****  GENERAL PURPOSE                                        ASA REF  P0850060
C*****    .TO TEST BASIC EXTERNAL FUNCTION - CLOG -            ASA REF  P0850070
C*****    (COMPLEX LOG)                                         8.3.3   P0850080
C*****      TESTING RANGE EXTENOS FROM 0 TO 5.E7 FOR MOOULUS    TABLE 4 P0850090
C*****      ANO ARGUMENT VARIES BY STEPS OF PI/3 MAGNITUDE            P0850100
C*****      INTRINSIC FUNCTIONS CMPLX, SNGL, MOO ASSUMEO WORKING      P0850110
C*****                                                                P0850120
C*****  S P E C I F I C A T I O N S  SEGMENT 085                      P0850130
C*****                                                                P0011930
C*****  WHEN EXECUTING ONLY SEGMENT 085, THE SPECIFICATION STATEMENTS P0011935
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                P0011940
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                               P0011945
C*****                                                                P0011950
C=    COMPLEX EP1C(30), AVC, BVC                                      P0011955
C=    OOUBLE PRECISION AVO, BVO                                       P0011960
      COMPLEX EP1C(30), AVC, BVC                                      P085A1
      OOUBLE PRECISION AVD, BVO                                       P085A2
C*****                                                                P0011965
C*****  O U T P U T - T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.  P0850140
C*****                                                                P0071660
C*****  WHEN EXECUTING ONLY SEGMENT 085, THE FOLLOWING STATEMENT      P0071665
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 ANO 2 REMOVEO.        P0071670
C=    NUVI = 6                                                        P0071675
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```
      NUVI = 6                                                          P085B1
C*****                                                                  P0071680
      WRITE (NUVI, 850)                                                 P0850150
850   FORMAT( 15H1 CXLOG - (085) //32H  BASIC EXTERNAL FUNCTION -CLOG-  P0850160
     1// 29H  (NATURAL LOG -TYPE COMPLEX)//27H  ASA REF.- 8.3.3 (TABLE 4P0850170
     2)//20H  (COMPLEX ARGUMENT)/ 8X,15HEXPECTED RESULT /8X,15HFUNCTION P0850180
     3RESULT)                                                           P0850190
C*****  LOG OF 10                                                       P0850200
      BVD = 2.3025850929940D0                                           P0850210
C*****  SINE OF 60 DEGREES                                              P0850220
      AVD = .86602540378444D0                                           P0850230
C*****  INITIALIZE EP1C (EXPECTED VALUES)                               P0850240
      EP1C(1) = CMPLX(0.5E-7,SNGL(-AVD*1.D-7))                          P0850250
      EP1C(2) = CMPLX(2.5E-7,SNGL(-AVD*5.D-7))                          P0850260
      EP1C(3) = (1.E-6,0.0)                                             P0850270
      EP1C(4) = (5.E-6,0.0)                                             P0850280
      EP1C(5) = CMPLX(0.5E-5,SNGL(AVD*1.D-5))                           P0850290
      EP1C(6) = CMPLX(2.5E-5,SNGL(AVD*5.D-5))                           P0850300
      EP1C(7) = CMPLX(-.5E-4,SNGL(AVD * 1.D-4))                         P0850310
      EP1C(8) = CMPLX(-2.5E-4,SNGL(AVD*5.D-4))                          P0850320
      EP1C(9) = (-1.E-3,0.0)                                            P0850330
      EP1C(10) = (-5.E-3,0.0)                                           P0850340
      EP1C(11) = CMPLX(-0.5E-2,SNGL(-AVD*1.D-2))                        P0850350
      EP1C(12) = CMPLX(-2.5E-2,SNGL(-AVD * 5.D-2))                      P0850360
      EP1C(13) = CMPLX(0.5E-1,SNGL(-AVD*1.D-1))                         P0850370
      EP1C(14) = CMPLX(2.5E-1,SNGL(-AVD*5.D-1))                         P0850380
      EP1C(15) = (1.0,0.0)                                              P0850390
      EP1C(16) = (5.0,0.0)                                              P0850400
      EP1C(17) = CMPLX(0.5E1,SNGL(AVD * 1.D1))                          P0850410
      EP1C(18) = CMPLX(2.5E1,SNGL(AVD * 5.D1))                          P0850420
      EP1C(19) = CMPLX(-0.5E2,SNGL(AVD * 1.D2))                         P0850430
      EP1C(20) = CMPLX(-2.5E2,SNGL(AVD * 5.D2))                         P0850440
      EP1C(21) = (-1.E3,0.0)                                            P0850450
      EP1C(22) = (-5.E3,0.0)                                            P0850460
      EP1C(23) = CMPLX(-0.5E4,SNGL(-AVD * 1.D4))                        P0850470
      EP1C(24) = CMPLX(-2.5E4,SNGL(-AVD * 5.D4))                        P0850480
      EP1C(25) = CMPLX(0.5E5,SNGL(-AVD * 1.D5))                         P0850490
      EP1C(26) = CMPLX(2.5E5,SNGL(-AVD * 5.D5))                         P0850500
      EP1C(27) = (1.E6,0.0)                                             P0850510
      EP1C(28) = (5.E6,0.0)                                             P0850520
      EP1C(29) = CMPLX(0.5E7,SNGL(AVD * 1.D7))                          P0850530
      EP1C(30) = CMPLX(2.5E7,SNGL(AVD * 5.D7))                          P0850540
C*****  YVS COMPENSATES FOR -2PI AND +2PI GENERATED BY USE OF XIVS*PI/3 P0850550
C*****  FOR EXPECTED IMAGINARY VALUES, TAKES VALUES +6,0,-6 DURING RANGEP0850560
      YVS = 6.                                                          P0850570
      IVI = 0                                                           P0850580
851   IVI = IVI +1                                                      P0850590
      IF (MOD(IVI, 2) .EQ. 0) GO TO 852                                 P0850600
      XIVS = ((IVI + 1)/2) - 8                                          P0850610
      AVS = BVD * XIVS                                                  P0850620
      GO TO 853                                                         P0850630
C*****    1.609 IS LOG OF 5                                             P0850640
852   XIVS = (IVI / 2) - 8                                              P0850650
      AVS = (BVD * XIVS) + 1.6094379124341D0                            P0850660
C*****    1.047 IS PI/3                                                 P0850670
853   AVC = CMPLX (AVS, SNGL(1.0471975511966D0 * (XIVS + YVS)))         P0850680
      BVC = CLOG (EP1C(IVI))                                            P0850690
      WRITE (NUVI, 854) EP1C(IVI), AVC, BVC                             P0850700
      IF(IVI - 10) 855, 858, 855                                        P0850710
855   IF (IVI - 20) 856, 859, 856                                       P0850720
856   IF (IVI - 22) 857, 7850, 857                                      P0850730
857   IF (IVI - 30) 851, 7851, 7851                                     P0850740
858   YVS = 0.0                                                         P0850750
859   WRITE (NUVI, 7852)                                                P0850760
      GO TO 851                                                         P0850770
7850  YVS = -6.0                                                        P0850780
      GO TO 851                                                         P0850790
7851  CONTINUE                                                          P0850800
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854    FORMAT(3H0 (,E14.7,1H,,E14.7,1H),2(/8X,2E16.7))                    P0850810
7852   FORMAT(22H1 CXLOG - (085) -CLOG-)                                  P0850820
C*****     END OF TEST SEGMENT 085                                        P0850830
C*****   WHEN EXECUTING ONLY SEGMENT 085, THE STOP AND END CARDS          P0850840
C*****   WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0850850
C*****   IN COLUMNS 1  AND  2 REMOVED.                                    P0850860
C=     STOP                                                               P0850870
C=     END                                                                P0850880
       STOP                                                               P085C1
       END                                                                P085C2
C*******************************************************************************P0860010
C*****                                                                    P0860020
C*****                          COLOG - 086                               P0860030
C*****                                                                    P0860040
C*******************************************************************************P0860050
C*****   GENERAL PURPOSE                                                  P0860060
C*****      TO TEST BASIC EXTERNAL FUNCTION - ALOG10 -            ASA REF P0860070
C*****      COMMON LOG - TYPE REAL                                 8.3.3  P0860080
C*****      USED IN SIMPLE ARITHMETIC EXPRESSIONS                 TABLE 4P0860090
C*****      INTRINSIC FUNCTIONS ABS,AINT,AMAX1,SIGN, ASSUMED WORKING      P0860100
C*****      ARGUMENT RANGE  0.5 TO 16.0 ,POWERS OF 2                      P0860110
C*****                                                                    P0860120
C*****   O U T P U T   T A P E   ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0860130
C*****                                                                    P0071690
C*****   WHEN EXECUTING ONLY SEGMENT 086, THE FOLLOWING STATEMENT         P0071695
C*****   NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0071700
C=     NUVI = 6                                                           P0071705
       NUVI = 6                                                           P086B1
C*****                                                                   P0071710
860    FORMAT(15H1 COLOG - (086)//34H  BASIC EXTERNAL FUNCTION -ALOG10-   P0860140
      1//25H  (COMMON LOG -TYPE REAL)                                     P0860150
      2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H  P0860160
      3 HOLLERITH INFORMATION//9H  RESULTS)                               P0860170
       WRITE (NUVI, 860)                                                 P0860180
C*****     HEADER FOR SEGMENT 086 WRITTEN                                P0860190
       AVS = -2.0                                                        P0860200
       CVS = -4.0                                                        P0860210
       BVS = ALOG10(AVS / CVS)                                           P0860220
       WRITE (NUVI, 861) BVS                                             P0860230
       BVS = ALOG10(ABS(AVS + 1.0))                                      P0860240
       WRITE (NUVI, 862) BVS                                             P0860250
       BVS = ALOG10( -AVS)                                               P0860260
       WRITE (NUVI, 863) BVS                                             P0860270
       BVS = ALOG10(AINT(AVS + 2.0 - CVS))                               P0860280
       WRITE (NUVI, 864) BVS                                             P0860290
       BVS = ALOG10(AMAX1(AVS * CVS, CVS * 2.0))                         P0860300
       WRITE (NUVI, 865) BVS                                             P0860310
       BVS = ALOG10(SIGN(CVS,(-AVS)) **2)                                P0860320
       WRITE (NUVI, 866) BVS                                             P0860330
       WRITE (NUVI, 867)                                                 P0860340
861    FORMAT( 8H0 X= 0.5,5X,25H-0.30102999566398119521372/8X, F15.7)    P0860350
862    FORMAT( 8H0 X= 1.0,5X,25H 0.00000000000000000000000/8X, F15.7)    P0860360
863    FORMAT( 8H0 X= 2.0,5X,25H 0.30102999566398119521372/8X, F15.7)    P0860370
864    FORMAT( 8H0 X= 4.0,5X,25H 0.60205999132796239042752/8X, F15.7)    P0860380
865    FORMAT( 8H0 X= 8.0,5X,25H 0.90308998699194358564122/8X, F15.7)    P0860390
866    FORMAT( 8H0 X=16.0,5X,25H 1.20411998265592478085502/8X, F15.7)    P0860400
867    FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0860410
      1 PRINTED TO ,8H7 DIGITS)                                          P0860420
C*****     END OF TEST SEGMENT 086                                       P0860430
C*****   WHEN EXECUTING ONLY SEGMENT 086, THE  STOP  AND  END  CARDS     P0860440
C*****   WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0860450
C*****   IN COLUMNS  1  AND  2  REMOVED.                                 P0860460
C=     STOP                                                              P0860470
C=     END                                                               P0860480
       STOP                                                              P086C1
       END                                                               P086C2
C*******************************************************************************P0870010
C*****                                                                   P0870020
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C*****                        DCLOG - 087                                  P0870030
C*****                                                                     P0870040
C*********************************************************************** P0870050
C*****  GENERAL PURPOSE                                                   P0870060
C*****     TO TEST BASIC EXTERNAL FUNCTION - DLOG10 -            ASA REF P0870070
C*****     COMMON LOG - TYPE DOUBLE PRECISION                    8.3.3   P0870080
C*****     SAME AS SEGMENT 086 EXCEPT FOR TYPE                   TABLE 4 P0870090
C*****     INTRINSIC FUNCTIONS DABS,IDINT,FLOAT,DBLE,                    P0870100
C*****     DMAX1,DSIGN ASSUMED WORKING                                   P0870110
C*****     ARGUMENT RANGE  0.5 TO 16.0  POWERS OF 2                      P0870120
C*****                                                                   P0870130
C*****  S P E C I F I C A T I O N S  SEGMENT 087                          P0870140
C*****                                                                   P0011970
C*****  WHEN EXECUTING ONLY SEGMENT 087, THE SPECIFICATION STATEMENTS    P0011975
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0011980
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0011985
C*****                                                                   P0011990
C=     DOUBLE PRECISION AVD, BVD, CVD                                    P0011995
       DOUBLE PRECISION AVD, BVD, CVD                                    P087A1
C*****                                                                   P0012000
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0870150
C*****                                                                   P0071720
C*****  WHEN EXECUTING ONLY SEGMENT 087, THE FOLLOWING STATEMENT         P0071725
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0071730
C=     NUVI = 6                                                          P0071735
       NUVI = 6                                                          P087B1
C*****                                                                   P0071740
870    FORMAT(15H1 DCLOG - (087)//34H  BASIC EXTERNAL FUNCTION -DLOG10-  P0870160
      1//37H  (COMMON LOG -TYPE DOUBLE PRECISION)                        P0870170
      2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0870180
      3 HOLLERITH INFORMATION//9H  RESULTS)                              P0870190
       WRITE (NUVI, 870)                                                 P0870200
C*****    HEADER FOR SEGMENT 087 WRITTEN                                 P0870210
       AVD = -2.0D0                                                      P0870220
       CVD = -4.0D0                                                      P0870230
       BVD = DLOG10(AVD / CVD)                                           P0870240
       WRITE (NUVI, 871) BVD                                             P0870250
       BVD = DLOG10(DABS(AVD + 1.0D0))                                   P0870260
       WRITE (NUVI, 872) BVD                                             P0870270
       BVD = DLOG10( -AVD)                                               P0870280
       WRITE (NUVI, 873) BVD                                             P0870290
       BVD = DLOG10(DBLE(FLOAT(IDINT(AVD + 2.0D0 - CVD))))               P0870300
       WRITE (NUVI, 874) BVD                                             P0870310
       BVD = DLOG10(DMAX1(AVD * CVD, CVD * 2.0D0))                       P0870320
       WRITE (NUVI, 875) BVD                                             P0870330
       BVD = DLOG10(DSIGN(CVD,(-AVD)) **2)                               P0870340
       WRITE (NUVI, 876) BVD                                             P0870350
       WRITE (NUVI, 877)                                                 P0870360
871    FORMAT( 8H0 X= 0.5,5X,29H-0.30102999566398119521370+00/D34.14)    P0870370
872    FORMAT( 8H0 X= 1.0,5X,29H 0.00000000000000000000    /D34.14)      P0870380
873    FORMAT( 8H0 X= 2.0,5X,29H 0.30102999566398119521370+00/D34.14)    P0870390
874    FORMAT( 8H0 X= 4.0,5X,29H 0.60205999132796239042750+00/D34.14)    P0870400
875    FORMAT( 8H0 X= 8.0,5X,29H 0.90308998699194358564120+00/D34.14)    P0870410
876    FORMAT( 8H0 X=16.0,5X,29H 1.20411998265592478085500+00/1PD33.13)  P0870420
877    FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0870430
     A PRINTED TO ,9H14 DIGITS)                                          P0870440
C*****    END OF TEST SEGMENT 087                                        P0870450
C*****  WHEN EXECUTING ONLY SEGMENT 087, THE  STOP  AND  END  CARDS      P0870460
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0870470
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0870480
C=     STOP                                                              P0870490
C=     END                                                               P0870500
       STOP                                                              P087C1
       END                                                               P087C2
C*********************************************************************** P0880010
C*****                                                                   P0880020
C*****                        SINUS - 088                                P0880030
C*****                                                                   P0880040
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C*******************************************************************************P0880050
C*****  GENERAL PURPOSE                                                  ASA REFP0880060
C*****      TO TEST BASIC EXTERNAL FUNCTION - SIN -                      8.3.3  P0880070
C*****      TRIGONOMETRIC SINE - TYPE REAL                               TABLE 4P0880080
C*****      INTRINSIC FUNCTION SNGL ASSUMED WORKING                             P0880090
C*****      ARGUMENTS FROM 0 TO 2 PI                                            P0880100
C*****                                                                          P0880110
C*****  S P E C I F I C A T I O N S  SEGMENT 088                                 P0880120
C*****                                                                          P0012010
C*****  WHEN EXECUTING ONLY SEGMENT 088, THE SPECIFICATION STATEMENTS           P0012015
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                          P0012020
C*****  IN COLUMNS  1  AND  2  REMOVED.                                         P0012025
C*****                                                                          P0012030
C=    DOUBLE PRECISION AVD, BVD, CVD, DVD, EVD, PIVD                            P0012035
      DOUBLE PRECISION AVD, BVD, CVD, DVD, EVD, PIVD                            P088A1
C*****                                                                          P0012040
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.             P0880130
C*****                                                                          P0071750
C*****  WHEN EXECUTING ONLY SEGMENT 088, THE FOLLOWING STATEMENT                P0071755
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.                  P0071760
C=    NUVI = 6                                                                  P0071765
      NUVI = 6                                                                  P088B1
C*****                                                                          P0071770
      WRITE (NUVI, 880)                                                         P0880140
880   FORMAT(15H1 SINUS - (088)//31H  BASIC EXTERNAL FUNCTION -SIN-             P0880150
     1//33H  (TRIGONOMETRIC SINE -TYPE REAL)                                    P0880160
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H         P0880170
     3 HOLLERITH INFORMATION//9H  RESULTS)                                      P0880180
C*****    HEADER FOR SEGMENT 088 WRITTEN                                        P0880190
      AVD = 3.140625D+0                                                         P0880200
      BVD = 0.9613037109375D-3                                                  P0880210
      CVD = 0.57220458984375D-5                                                 P0880220
      DVD = 0.596046447753906D-6                                                P0880230
      EVD = 0.31786509547056D-7                                                 P0880240
C*****PI IS SUM OF AVD TO EVD, PARTS ARE EXPRESSED IN SUMS OF POWERS OF         P0880250
C*****2, TO PERMIT A POSSIBLE 20 DECIMAL DIGIT ARGUMENT TO BE CREATED           P0880260
      PIVD = EVD + DVD + CVD + BVD + AVD                                        P0880270
      AVS = 1.0                                                                 P0880280
      CVS = 2.0                                                                 P0880290
      BVS = SIN(CVS - 2.0 * AVS)                                                P0880300
      WRITE (NUVI, 881) BVS                                                     P0880310
      BVS = SIN(AVS)                                                            P0880320
      WRITE (NUVI, 882) BVS                                                     P0880330
      BVS = SIN (CVS)                                                           P0880340
      WRITE (NUVI, 883) BVS                                                     P0880350
      BVS = SIN(AVS + CVS)                                                      P0880360
      WRITE (NUVI,884) BVS                                                      P0880370
      BVS = SIN(SNGL(PIVD))                                                     P0880380
      WRITE (NUVI, 885) BVS                                                     P0880390
      BVS = SIN(2. * CVS)                                                       P0880400
      WRITE (NUVI, 886) BVS                                                     P0880410
      BVS = SIN(2.0 + CVS + AVS)                                                P0880420
      WRITE (NUVI, 887) BVS                                                     P0880430
      BVS = SIN(CVS * (AVS + CVS))                                              P0880440
      WRITE (NUVI, 888) BVS                                                     P0880450
      BVS = SIN(SNGL(2.0D0 * PIVD))                                             P0880460
      WRITE (NUVI, 889) BVS                                                     P0880470
      WRITE (NUVI, 7880)                                                        P0880480
881   FORMAT( 9H0 X= 0.0 ,5X,15H 0.0000000000000  /14X, F10.7)                  P0880490
882   FORMAT( 9H0 X= 1.0 ,5X,15H+0.841470984808   /14X, F10.7)                  P0880500
883   FORMAT( 9H0 X= 2.0 ,5X,15H+0.909297426826   /14X, F10.7)                  P0880510
884   FORMAT( 9H0 X= 3.0 ,5X,15H+0.141120008060   /14X, F10.7)                  P0880520
885   FORMAT( 9H0 X= (PI),5X,15H 0.0000000000000  /14X, F10.7)                  P0880530
886   FORMAT( 9H0 X= 4.0 ,5X,15H-0.756802495308   /14X, F10.7)                  P0880540
887   FORMAT( 9H0 X= 5.0 ,5X,15H-0.958924274663   /14X, F10.7)                  P0880550
888   FORMAT( 9H0 X= 6.0 ,5X,15H-0.279415498198   /14X, F10.7)                  P0880560
889   FORMAT( 9H0 X=(2PI),5X,15H 0.0000000000000  /14X, F10.7)                  P0880570
7880  FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATION       P0880580
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     1 PRINTED TO ,8H7 DIGITS)                                                  P0880590
C*****    END OF TEST SEGMENT 088                                             P0880600
C*****  WHEN EXECUTING ONLY SEGMENT 088, THE  STOP  AND  END  CARDS           P0880610
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                        P0880620
C*****  IN COLUMNS  1  AND  2  REMOVED.                                       P0880630
C=     STOP                                                                   P0880640
C=     END                                                                    P0880650
       STOP                                                                   P088C1
       END                                                                    P088C2
C*************************************************************************** P0890010
C*****                                                                       P0890020
C*****                          DPSIN - 089                                  P0890030
C*****                                                                       P0890040
C*************************************************************************** P0890050
C*****  GENERAL PURPOSE                                          ASA REF     P0890060
C*****     TO TEST BASIC EXTERNAL FUNCTION - DSIN -              8.3.3       P0890070
C*****     TRIGONOMETRIC SINE - TYPE DOUBLE PRECISION            TABLE 4     P0890080
C*****     SAME AS SEGMENT 088 EXCEPT D.P.                                   P0890090
C*****     INTRINSIC FUNCTION DSIGN ASSUMED WORKING                          P0890100
C*****     ARGUMENTS FROM 0 TO 2 PI                                          P0890110
C*****                                                                       P0890120
C*****  S P E C I F I C A T I O N S  SEGMENT 089                             P0890130
C*****                                                                       P0012050
C*****  WHEN EXECUTING ONLY SEGMENT 089, THE SPECIFICATION STATEMENTS        P0012055
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                       P0012060
C*****  IN COLUMNS  1  AND  2  REMOVED.                                      P0012065
C*****                                                                       P0012070
C=     DOUBLE PRECISION AVD, BVD, CVD, DVD, EVD, PIVD, XVD, FVD, GVD        P0012075
       DOUBLE PRECISION AVD, BVD, CVD, DVD, EVD, PIVD, XVD, FVD, GVD        P089A1
C*****                                                                       P0012080
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.          P0890140
C*****                                                                       P0071780
C*****  WHEN EXECUTING ONLY SEGMENT 089, THE FOLLOWING STATEMENT             P0071785
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.               P0071790
C=     NUVI = 6                                                             P0071795
       NUVI = 6                                                             P089B1
C*****                                                                       P0071800
890    FORMAT(15H1 DPSIN - (089)//32H  BASIC EXTERNAL FUNCTION -DSIN-       P0890150
     1//33H  (TRIGONOMETRIC SINE -TYPE D.P.)                                 P0890160
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H      P0890170
     3 HOLLERITH INFORMATION//9H  RESULTS)                                   P0890180
       WRITE (NUVI, 890)                                                    P0890190
C*****    HEADER FOR SEGMENT 089 WRITTEN                                     P0890200
       AVD = 3.140625D+0                                                    P0890210
       BVD = 0.9613037109375D-3                                             P0890220
       CVD = 0.572204589843750-5                                            P0890230
       DVD = 0.596046447753906D-6                                           P0890240
       EVD = 0.317865095470560-7                                            P0890250
C*****PI IS SUM OF AVD TO EVD, PARTS ARE EXPRESSED IN SUMS OF POWERS OF     P0890260
C*****2, TO PERMIT A POSSIBLE 20 DECIMAL DIGIT ARGUMENT TO BE CREATED       P0890270
       PIVD = EVD + DVD + CVD + BVD + AVD                                   P0890280
       FVD = 1.0D0                                                          P0890290
       GVD = 2.0D0                                                          P0890300
       XVD = DSIN(GVD - 2.0D0 * FVD)                                        P0890310
       WRITE (NUVI, 891) XVD                                                P0890320
       XVD = DSIN(FVD)                                                      P0890330
       WRITE (NUVI, 892) XVD                                                P0890340
       XVD = DSIN(GVD)                                                      P0890350
       WRI   ' UVI, 893) XVD                                                P0890360
       XVD   ,IN(GVD + FVD)                                                 P0890370
       W   E (NUVI, 894) XVD                                                P0890380
       X  D = DSIN(PIVD)                                                    P0890390
       WRITE (NUVI, 895) XVD                                                P0890400
       XVD = DSIN(2. * GVD)                                                 P0890410
       WRITE (NUVI, 896) XVD                                                P0890420
       XVD = DSIN(2.0 +FVD + GVD)                                           P0890430
       WRITE (NUVI, 897) XVD                                                P0890440
       XVD = DSIN(GVD * (FVD + GVD))                                        P0890450
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      WRITE (NUVI, 898) XVD                                                  P0890460
      XVD = DSIN(DSIGN(2.0D0 * PIVD, GVD))                                   P0890470
      WRITE (NUVI, 899) XVD                                                  P0890480
      WRITE (NUVI, 7890)                                                     P0890490
891   FORMAT(9H0 X= 0.0 ,  31H  0.000000000000000000000000     / D31.14)     P0890500
892   FORMAT(9H0 X= 1.0 ,  31H +0.841470984807896506652502+00 /D31.14)       P0890510
893   FORMAT(9H0 X= 2.0 ,  31H +0.909297426825681695396022+00 /D31.14)       P0890520
894   FORMAT(9H0 X= 3.0 ,  31H +0.141120008059867222100742+00 /D31.14)       P0890530
895   FORMAT(9H0 X= (PI),  31H  0.000000000000000000000000     / D31.14)     P0890540
896   FORMAT(9H0 X= 4.0 ,  31H -0.756802495307928251372642+00 /D31.14)       P0890550
897   FORMAT(9H0 X= 5.0 ,  31H -0.958924274663138468893152+00 / D31.14)      P0890560
898   FORMAT(9H0 X= 6.0 ,  31H -0.279415498198925872811562+00 / D31.14)      P0890570
899   FORMAT(9H0 X=(2PI),  31H  0.000000000000000000000000     / D31.14)     P0890580
7890  FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0890590
     A PRINTED TO ,9H14 DIGITS)                                             P0890600
C*****    END OF TEST SEGMENT 089                                          P0890610
C*****  WHEN EXECUTING ONLY SEGMENT 089, THE  STOP  AND  END  CARDS        P0890620
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                     P0890630
C*****  IN COLUMNS  1  AND  2  REMOVED.                                    P0890640
C=    STOP                                                                 P0890650
C=    END                                                                  P0890660
      STOP                                                                 P089C1
      END                                                                  P089C2
C*************************************************************************** P0900010
C*****                                                                      P0900020
C*****                    CSICO - (090)                                     P0900030
C*****                                                                      P0900040
C*************************************************************************** P0900050
C*****  GENERAL PURPOSE                                          ASA REF  P0900060
C*****    TO TEST BASIC EXTERNAL FUNCTIONS  -CSIN- AND -CCOS-     8.3.3   P0900070
C*****    COMPLEX SINE AND COSINE                                 TABLE 4P0900080
C*****    INTRINSIC FUNCTION CMPLX ASSUMED WORKING                        P0900090
C*****                                                                     P0900100
C*****  S P E C I F I C A T I O N S  SEGMENT 090                           P0900110
C*****                                                                     P0012090
C*****  WHEN EXECUTING ONLY SEGMENT 090, THE SPECIFICATION STATEMENTS      P0012095
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                    P0012100
C*****  IN COLUMNS  1  AND  2  REMOVED.                                    P0012105
C*****                                                                     P0012110
C=    DIMENSION L1I (10)                                                   P0012115
C=    COMPLEX AVC, BVC                                                     P0012120
      DIMENSION L1I (10)                                                   P090A1
      COMPLEX AVC, BVC                                                     P090A2
C*****                                                                     P0012125
C*****  O U T P U T - T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P0900120
C*****                                                                     P0071810
C*****  WHEN EXECUTING ONLY SEGMENT 090, THE FOLLOWING STATEMENT           P0071815
C*****  NUVI = 6 MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.              P0071820
C=    NUVI = 6                                                             P0071825
      NUVI = 6                                                             P090B1
C*****                                                                     P0071830
      WRITE (NUVI, 900)                                                    P0900130
900   FORMAT(15H1 CSICO - (090)//40H  BASIC EXTERNAL FUNCTIONS -CSIN , CP0900140
     1COS- //39H  (TRIG. SINE AND COSINE -TYPE COMPLEX)//26H  ASA REF 8.P0900150
     23.3 (TABLE 4) //10H  FUNCTION, 10X,7HRESULTS //)                    P0900160
      DATA LA2VI,LB2VI, LC2VI,LDZVI/2H0( ,2H, ,2H1/,1H)/                   P0900170
      DATA L1I(1),L1I(2),L1I(3),L1I(4),L1I(5)/                             P0900180
     -       2H1 ,  2H2 ,  2H3 ,  2H4 ,  2H5 /,                           P0900190
     -    L1I(6),L1I(7),L1I(8),L1I(9),L1I(10)/                            P0900200
     -       2H6 ,  2H7 ,  2H8 ,  2H9 ,  2H10 /                           P0900210
      AVC = (1.0,1.0)                                                      P0900220
      BVC = CSIN (AVC)                                                     P0900230
      WRITE(NUVI, 901) BVC                                                 P0900240
      BVC = CCOS(AVC)                                                      P0900250
      WRITE (NUVI, 902) BVC                                                P0900260
      IVI = 0                                                              P0900270
905   IVI = IVI + 1                                                        P0900280
      AVS = IVI                                                            P0900290
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      BVS = 1. / AVS                                                    P0900300
      AVC = CMPLX (AVS,BVS)                                             P0900310
      BVC = CSIN(AVC) ** 2 + CCOS(AVC) ** 2                             P0900320
      WRITE(NUVI, 904) LAZVI, L1I(IVI),LBZVI,LCZVI,L1I(IVI),LDZVI, BVC  P0900330
904   FORMAT(   A2,A2, A2,A2,A2,A1,4X,2F12.7)                           P0900340
      IF(IVI - 10) 905, 906, 906                                        P0900350
906   CONTINUE                                                          P0900360
901   FORMAT(/13H  TABLE VALUE,4X,22H 1.2984576   0.6349639 /17H  CSIN(1P0900370
     1.,1.) =  ,F10.7,F12.7)                                            P0900380
902   FORMAT(/13H  TABLE VALUE,4X,22H 0.8337300  -0.9888977 /17H  CCOS(1P0900390
     1.,1.) =  ,F10.7,F12.7 ///35H  CSIN(X)**2 + CCOS(X)**2 = 1.0,0.0 / P0900400
     2 40H0 ARGUMENT     RESULTS SHOULD BE 1.0,0.0 )                    P0900410
C*****    END OF TEST SEGMENT 090                                       P0900420
C*****  WHEN EXECUTING ONLY SEGMENT 090, THE STOP AND END CARDS         P0900430
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0900440
C*****  IN COLUMNS  1  AND  2 REMOVED.                                  P0900450
C=    STOP                                                            P0900460
C=    END                                                             P0900470
      STOP                                                            P090C1
      END                                                             P090C2
C*******************************************************************************P0910010
C*****                                                                 P0910020
C*****                          COSNS - 091                            P0910030
C*****                                                                 P0910040
C*******************************************************************************P0910050
C*****  GENERAL PURPOSE                                        ASA REFP0910060
C*****     TO TEST BASIC EXTERNAL FUNCTION - COS -              8.3.3  P0910070
C*****     TRIGONOMETRIC COSINE - TYPE REAL                     TABLE 4P0910080
C*****     SAME AS SEGMENT     EXCEPT FOR COSINE                       P0910090
C*****     INTRINSIC FUNCTION SNGL ASSUMED WORKING                     P0910100
C*****     ARGUMENTS FROM 0 TO 2 PI                                    P0910110
C*****                                                                 P0910120
C*****  S P E C I F I C A T I O N S  SEGMENT 091                        P0910130
C*****                                                                 P0012130
C*****  WHEN EXECUTING ONLY SEGMENT 091, THE SPECIFICATION STATEMENTS   P0012135
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                 P0012140
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0012145
C*****                                                                 P0012150
C=    DOUBLE PRECISION AVD, BVD, CVD, DVD, EVD, PIVD                  P0012155
      DOUBLE PRECISION AVD, BVD, CVD, DVD, EVD, PIVD                  P091A1
C*****                                                                 P0012160
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0910140
C*****                                                                 P0071840
C*****  WHEN EXECUTING ONLY SEGMENT 091, THE FOLLOWING STATEMENT       P0071845
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.         P0071850
C=    NUVI = 6                                                        P0071855
      NUVI = 6                                                        P091B1
C*****                                                                 P0071860
910   FORMAT(15H1 COSNS - (091)//31H  BASIC EXTERNAL FUNCTION -COS-   P0910150
     1//35H  (TRIGONOMETRIC COSINE -TYPE REAL)                        P0910160
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0910170
     3 HOLLERITH INFORMATION//9H  RESULTS)                            P0910180
      WRITE (NUVI, 910)                                               P0910190
C*****    HEADER FOR SEGMENT 091 WRITTEN                              P0910200
      AVD = 3.140625D+0                                               P0910210
      BVD = 0.9613037109375D-3                                        P0910220
      CVD = 0.572204589843750-5                                       P0910230
      DVD = 0.596046447753906D-6                                      P0910240
      EVD = 0.317865095470560-7                                       P0910250
C*****PI IS SUM OF AVD TO EVD, PARTS ARE EXPRESSED IN SUMS OF POWERS OF P0910260
C*****2, TO PERMIT A POSSIBLE 20 DECIMAL DIGIT ARGUMENT TO BE CREATED  P0910270
      PIVD = EVD + DVD + CVD + BVD + AVD                              P0910280
      AVS = 1.0                                                       P0910290
      CVS = 2.0                                                       P0910300
      BVS = COS(CVS - 2.0 * AVS)                                      P0910310
      WRITE (NUVI, 911) BVS                                           P0910320
      BVS = COS(AVS)                                                  P0910330
      WRITE (NUVI, 912) BVS                                           P0910340
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      BVS = COS(CVS)                                                    P0910350
      WRITE (NUVI, 913) BVS                                             P0910360
      BVS = CDS(AVS + CVS)                                              P0910370
      WRITE (NUVI, 914) BVS                                             P0910380
      BVS = COS(SNGL(PIVD))                                             P0910390
      WRITE (NUVI, 915) BVS                                             P0910400
      BVS = CDS(2. * CVS)                                               P0910410
      WRITE (NUVI, 916) BVS                                             P0910420
      BVS = CDS(2.0 + CVS + AVS)                                        P0910430
      WRITE (NUVI, 917) BVS                                             P0910440
      BVS = CDS(CVS * (AVS + CVS))                                      P0910450
      WRITE (NUVI, 918) BVS                                             P0910460
      BVS = CDS(SNGL(2.0D0 * PIVD))                                     P0910470
      WRITE (NUVI, 919) BVS                                             P0910480
      WRITE (NUVI, 7910)                                                P0910490
911   FORMAT( 9H0 X= 0.0 ,5X,15H+1.000000000000  /14X, F10.7)           P0910500
912   FORMAT( 9H0 X= 1.0 ,5X,15H+0.540302305868  /14X, F10.7)           P0910510
913   FORMAT( 9H0 X= 2.0 ,5X,15H-0.416146836547  /14X, F10.7)           P0910520
914   FORMAT( 9H0 X= 3.0 ,5X,15H-0.989992496600  /14X, F10.7)           P0910530
915   FORMAT( 9H0 X= (PI),5X,15H-1.000000000000  /14X, F10.7)           P0910540
916   FORMAT(9H0 X= 4.0 ,5X,15H-0.653643620864  /14X, F10.7)           P0910550
917   FORMAT( 9H0 X= 5.0 ,5X,15H+0.283662185463  /14X, F10.7)           P0910560
918   FORMAT( 9H0 X= 6.0 ,5X,15H+0.960170286650  /14X, F10.7)           P0910570
919   FORMAT( 9H0 X=(2PI),5X,15H+1.000000000000  /14X, F10.7)           P0910580
7910  FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0910590
     1 PRINTED TO ,8H7 DIGITS)                                          P0910600
C*****    END OF TEST SEGMENT 091                                       P0910610
C*****  WHEN EXECUTING ONLY SEGMENT 091, THE  STOP  AND  END  CARDS     P0910620
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0910630
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0910640
C=    STOP                                                              P0910650
C=    END                                                               P0910660
      STOP                                                              P091C1
      END                                                               P091C2
C*******************************************************************************P0920010
C*****                                                                 P0920020
C*****                          DPCOS - (092)                          P0920030
C*****                                                                 P0920040
C*******************************************************************************P0920050
C*****  GENERAL PURPOSE                                        ASA REF P0920060
C*****      TEST BASIC EXTERNAL FUNCTION - DCOS -              8.3.3  P0920070
C*****      TRIGONOMETRIC COSINE -TYPE DOUBLE PRECISION        TABLE 4P0920080
C*****      SAME AS SEGMENT 091 EXCEPT D.P.                           P0920090
C*****      INTRINSIC FUNCTION DMAX1 ASSUMED WORKING                  P0920100
C*****      ARGUMENTS FROM 0 TO 2 PI                                  P0920110
C*****                                                                P0920120
C*****  S P E C I F I C A T I O N S  SEGMENT 092                       P0920130
C*****                                                                P0012170
C*****  WHEN EXECUTING ONLY SEGMENT 092, THE SPECIFICATION STATEMENTS  P0012175
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                 P0012180
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0012185
C*****                                                                P0012190
C=    DOUBLE PRECISION AVD, BVD, CVD, DVD, EVD, FVD, GVD, PIVD, XVD   P0012195
      DOUBLE PRECISION AVD, BVD, CVD, DVD, EVD, FVD, GVD, PIVD, XVD   P092A1
C*****                                                                P0012200
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0920140
C*****                                                                P0071870
C*****  WHEN EXECUTING ONLY SEGMENT 092, THE FOLLOWING STATEMENT       P0071875
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.         P0071880
C=    NUVI = 6                                                        P0071885
      NUVI = 6                                                        P092B1
C*****                                                                P0071890
920   FORMAT(15H1 DPCOS - (092)//32H  BASIC EXTERNAL FUNCTION -DCOS-   P0920150
     1//35H  (TRIGONOMETRIC COSINE -TYPE D.P.)                        P0920160
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0920170
     3 HOLLERITH INFORMATION//9H  RESULTS)                            P0920180
      WRITE (NUVI, 920)                                               P0920190
      AVD = 3.140625D+0                                               P0920200
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      BVD = 0.9613037109375D-3                                          P0920210
      CVD = 0.57220458984375D-5                                         P0920220
      DVD = 0.596046447753906D-6                                        P0920230
      EVD = 0.31786509547056D-7                                         P0920240
C*****PI IS SUM OF AVD TO EVD, PARTS ARE EXPRESSED IN SUMS OF POWERS OF P0920250
C*****2, TO PERMIT A POSSIBLE 20 DECIMAL DIGIT ARGUMENT TO BE CREATED   P0920260
      PIVD = EVD + DVD + CVD + BVD + AVD                                P0920270
      FVD = 1.0D0                                                       P0920280
      GVD = 2.0D0                                                       P0920290
      XVD = DCOS(GVD - 2.0D0 * FVD)                                     P0920300
      WRITE (NUVI, 921) XVD                                             P0920310
      XVD = DCOS(FVD)                                                   P0920320
      WRITE (NUVI, 922) XVD                                             P0920330
      XVD = DCOS(GVD)                                                   P0920340
      WRITE (NUVI, 923) XVD                                             P0920350
      XVD = DCOS(GVD + FVD)                                             P0920360
      WRITE (NUVI, 924) XVD                                             P0920370
      XVD = DCOS(PIVD)                                                  P0920380
      WRITE (NUVI, 925) XVD                                             P0920390
      XVD = DCOS(2. * GVD)                                              P0920400
      WRITE (NUVI, 926) XVD                                             P0920410
      XVD = DCOS(2.0 + FVD + GVD)                                       P0920420
      WRITE (NUVI, 927) XVD                                             P0920430
      XVD = DCOS(GVD * (FVD + GVD))                                     P0920440
      WRITE (NUVI, 928) XVD                                             P0920450
      XVD = DCOS(DMAX1(2.0D0 * PIVD, GVD))                              P0920460
      WRITE (NUVI, 929) XVD                                             P0920470
      WRITE (NUVI, 7992)                                                P0920480
921   FORMAT(9H0 X= 0.0 ,31H +0.100000000000000000000000D+01 / D31.14)  P0920490
922   FORMAT(9H0 X= 1.0 ,31H +0.540302305868139717400940+00 /D31.14)    P0920500
923   FORMAT(9H0 X= 2.0 ,31H -0.416146836547142386997570+00 / D31.14)   P0920510
924   FORMAT(9H0 X= 3.0 ,31H -0.989992496600445457271570+00 / D31.14)   P0920520
925   FORMAT(9H0 X= (PI),31H -0.100000000000000000000000D+01 / D31.14)  P0920530
926   FORMAT(9H0 X= 4.0 ,31H -0.653643620863611916639170+00 / D31.14)   P0920540
927   FORMAT(9H0 X= 5.0 ,31H +0.283662185463226264466640+00 / D31.14)   P0920550
928   FORMAT(9H0 X= 6.0 ,31H +0.960170286650360205456500+00 / D31.14)   P0920560
929   FORMAT(9H0 X=(2PI),31H +0.100000000000000000000000D+01 / D31.14)  P0920570
7992  FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0920580
     A PRINTED TO ,9H14 DIGITS)                                         P0920590
C*****    END OF SEGMENT 092                                          P0920600
C*****  WHEN EXECUTING ONLY SEGMENT 092, THE  STOP  AND  END  CARDS   P0920610
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                P0920620
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P0920630
C=    STOP                                                            P0920640
C=    END                                                             P0920650
      STOP                                                            P092C1
      END                                                             P092C2
C*******************************************************************************P0940010
C*****                                                                P0940020
C*****                          TANGH - 094                           P0940030
C*****                                                                P0940040
C*******************************************************************************P0940050
C*****  GENERAL PURPOSE                                        ASA REFP0940060
C*****     TO TEST BASIC EXTERNAL FUNCTION - TANH -            8.3.3  P0940070
C*****     HYPERBOLIC TANGENT -TYPE REAL                              P0940080
C*****     USED IN SIMPLE ARITHMETIC EXPRESSIONS                      P0940090
C*****     INTRINSIC FUNCTIONS ABS,FLOAT,AMINO,AMAX0,INT              P0940100
C*****     ASSUMED WORKING                                            P0940110
C*****     ARGUMENTS FROM 0.0 TO 8.0                                  P0940120
C*****                                                                P0940130
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0940140
C*****  WHEN EXECUTING ONLY SEGMENT 094, THE FOLLOWING STATEMENT      P0071900
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.       P0071905
C*****                                                                P0071910
C=    NUVI = 6                                                        P0071915
      NUVI = 6                                                        P094B1
940   FORMAT(15H1 TANGH - (094)//32H  BASIC EXTERNAL FUNCTION -TANH-   P0940150
     1//33H  (HYPERBOLIC TANGENT -TYPE REAL)                          P0940160
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     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0940170
     3 HOLLERITH INFORMATION//9H  RESULTS)                              P0940180
      WRITE (NUVI, 940)                                                 P0940190
C*****    HEADER FOR SEGMENT 094 WRITTEN                                P0940200
      AVS = 2.0                                                         P0940210
      CVS = -0.5                                                        P0940220
      IVI = 6                                                           P0940230
      BVS = TANH(FLOAT(IVI) - 3.0 * AVS)                                P0940240
      WRITE (NUVI, 941) BVS                                             P0940250
      BVS = TANH(AVS)                                                   P0940260
      WRITE (NUVI, 942) BVS                                             P0940270
      BVS = TANH(AVS + ABS(CVS))                                        P0940280
      WRITE (NUVI, 943) BVS                                             P0940290
      BVS = TANH(AMIN0(IVI,8) - AVS)                                    P0940300
      WRITE (NUVI, 944) BVS                                             P0940310
      BVS = TANH(AMAX0(IVI,INT(AVS)))                                   P0940320
      WRITE (NUVI, 945) BVS                                             P0940330
      BVS = TANH(AVS ** 4 / AVS)                                        P0940340
      WRITE (NUVI, 946) BVS                                             P0940350
      WRITE (NUVI, 947)                                                 P0940360
941   FORMAT(7H0 X=0.0,5X,12H0.0000000000 /F21.7)                       P0940370
942   FORMAT(7H0 X=2.0,5X,12H0.9640275801 /F21.7)                       P0940380
943   FORMAT(7H0 X=2.5,5X,12H0.9866142982 /F21.7)                       P0940390
944   FORMAT(7H0 X=4.0,5X,12H0.9993292997 /F21.7)                       P0940400
945   FORMAT(7H0 X=6.0,5X,12H0.9999877117 /F21.7)                       P0940410
946   FORMAT(7H0 X=8.0,5X,12H0.9999997749 /F21.7)                       P0940420
947   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0940430
     1 PRINTED TO , 8H7 DIGITS )                                        P0940440
C*****    END OF TEST SEGMENT 094                                       P0940450
C*****  WHEN EXECUTING ONLY SEGMENT 094, THE  STOP  AND  END  CARDS     P0940460
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0940470
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0940480
C=    STOP                                                              P0940490
C=    END                                                               P0940500
      STOP                                                              P094C1
      END                                                               P094C2
C******************************************************************************P0950010
C*****                                                                 P0950020
C*****                          SQROT - (095)                          P0950030
C*****                                                                 P0950040
C******************************************************************************P0950050
C*****  GENERAL PURPOSE                                        ASA REFP0950060
C*****     TO TEST BASIC EXTERNAL FUNCTION - SQRT -            8.3.3  P0950070
C*****     (SQUARE ROOT - TYPE REAL)                           TABLE 4P0950080
C*****     USED IN SIMPLE ARITHMETIC EXPRESSIONS                      P0950090
C*****     INTRINSIC FUNCTIONS FLOAT,INT,AMIN0,MAX0                   P0950100
C*****     ASSUMED WORKING                                            P0950110
C*****     ARGUMENTS ARE ALL PRIME NUMBERS                            P0950120
C*****                                                                P0950130
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P0950140
C*****                                                                P0071920
C*****  WHEN EXECUTING ONLY SEGMENT 095, THE FOLLOWING STATEMENT       P0071925
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.         P0071930
C=    NUVI = 6                                                         P0071935
      NUVI = 6                                                          P095B1
C*****                                                                P0071940
950   FORMAT(15H1 SQROT - (095)//32H  BASIC EXTERNAL FUNCTION -SQRT-    P0950150
     1//26H  (SQUARE ROOT -TYPE REAL)                                   P0950160
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0950170
     3 HOLLERITH INFORMATION//9H  RESULTS)                              P0950180
      WRITE (NUVI, 950)                                                 P0950190
C*****    HEADER FOR SEGMENT 095 WRITTEN                                P0950200
      AVS = 2.0                                                         P0950210
      IVI = 3                                                           P0950220
      CVS = 17.0                                                        P0950230
      BVS = SQRT(FLOAT(( IVI + INT(AVS)) / 2))                          P0950240
      WRITE (NUVI, 951) BVS                                             P0950250
      BVS = SQRT(AMIN0(MAX0(IVI,2), INT(CVS)))                          P0950260
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      WRITE (NUVI, 952) BVS                                                 P0950270
      BVS = SQRT(CVS)                                                       P0950280
      WRITE (NUVI, 953) BVS                                                 P0950290
      BVS = SQRT(2.0 * CVS - FLOAT(IVI))                                    P0950300
      WRITE (NUVI, 954) BVS                                                 P0950310
      BVS = SQRT(FLOAT(IVI + 1) + 5.0 * CVS)                                P0950320
      WRITE (NUVI, 955) BVS                                                 P0950330
      WRITE (NUVI, 956)                                                     P0950340
951   FORMAT ( 8H0 X= 2.0,4X,16H1.41421356237310 / F21.7)                   P0950350
952   FORMAT ( 8H0 X= 3.0,4X,16H1.73205080756888 / F21.7)                   P0950360
953   FORMAT ( 8H0 X=17.0,4X,16H4.12310562561766 / F21.7)                   P0950370
954   FORMAT ( 8H0 X=31.0,4X,16H5.56776436283002 / F21.7)                   P0950380
955   FORMAT ( 8H0 X=89.0,4X,16H9.43398113205660 / F21.7)                   P0950390
956   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATION    P0950400
     1 PRINTEO TO , 8H7 OIGITS )                                            P0950410
C*****    END OF TEST SEGMENT 095                                         P0950420
C*****  WHEN EXECUTING ONLY SEGMENT 095, THE  STOP  ANO  END  CAROS       P0950430
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                    P0950440
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P0950450
C=    STOP                                                                P0950460
C=    END                                                                 P0950470
      STOP                                                                P095C1
      ENO                                                                 P095C2
C*******************************************************************************P0960010
C*****                                                                   P0960020
C*****                          OSQRO - (096)                            P0960030
C*****                                                                   P0960040
C*******************************************************************************P0960050
C*****  GENERAL PURPOSE                                          ASA REFP0960060
C*****     TO TEST BASIC EXTERNAL FUNCTION - OSQRT -             8.3.3  P0960070
C*****     (SQUARE ROOT - TYPE O.P.)                             TABLE 4P0960080
C*****     USEO IN SIMPLE EXPRESSIONS                                    P0960090
C*****     INTRINSIC FUNCTIONS OBLE,IABS,FLOAT ASSUMEO WORKING           P0960100
C*****     ARGUMENTS ARE ALL PRIME NUMBERS                               P0960110
C*****                                                                   P0960120
C*****  S P E C I F I C A T I O N S  SEGMENT 096                         P0960130
C*****                                                                   P0012210
C*****  WHEN EXECUTING ONLY SEGMENT 096, THE SPECIFICATION STATEMENTS    P0012215
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                  P0012220
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                  P0012225
C*****                                                                   P0012230
C=    OOUBLE PRECISION BVO                                              P0012235
      DOUBLE PRECISION BVO                                              P096A1
C*****                                                                   P0012240
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P0960140
C*****                                                                   P0071950
C*****  WHEN EXECUTING ONLY SEGMENT 096, THE FOLLOWING STATEMENT         P0071955
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0071960
C=    NUVI = 6                                                          P0071965
      NUVI = 6                                                          P096B1
C*****                                                                   P0071970
960   FORMAT(15H1 OSQRO - (096)//33H  BASIC EXTERNAL FUNCTION -OSQRT-   P0960150
     1//26H  (SQUARE ROOT -TYPE O.P.)                                   P0960160
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0960170
     3 HOLLERITH INFORMATION//9H  RESULTS)                              P0960180
      WRITE (NUVI, 960)                                                 P0960190
C*****    HEAOER FOR SEGMENT 096 WRITTEN                                P0960200
      AVS = 3.0                                                         P0960210
      IVI = -2                                                          P0960220
      CVS = 17.0                                                        P0960230
      BVD = DSQRT(OBLE(FLOAT(IABS(IVI)) + AVS - 3.0))                   P0960240
      WRITE (NUVI, 961) BVD                                             P0960250
      BVO = OSQRT(0.000 + AVS)                                          P0960260
      WRITE (NUVI, 962) BVO                                             P0960270
      BVO = OSQRT(CVS - AVS + 3.000)                                    P0960280
      WRITE (NUVI, 963) BVD                                             P0960290
      BVO = DSQRT(2.0D0 * CVS - OBLE(AVS))                              P0960300
      WRITE (NUVI, 964) BVD                                             P0960310
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      BVD = DSQRT(DBLE(FLOAT(-IVI)+ AVS) * CVS + FLOAT(IVI ** 2))        P0960320
      WRITE (NUVI, 965) BVD                                              P0960330
      WRITE (NUVI, 966)                                                  P0960340
961   FORMAT ( 8H0 X= 2.0,5X,25H1.414213562373095048 8D+00/8X,1PD24.13)  P0960350
962   FORMAT ( 8H0 X= 3.0,5X,25H1.732050807568877293 5D+00/8X,1PD24.13)  P0960360
963   FORMAT ( 8H0 X=17.0,5X,25H4.123105625617660549 8D+00/8X,1PD24.13)  P0960370
964   FORMAT ( 8H0 X=31.0,5X,25H5.567764362830021922 1D+00/8X,1PD24.13)  P0960380
965   FORMAT ( 8H0 X=89.0,5X,25H9.433981132056603811 3D+00/8X,1PD24.13)  P0960390
966   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0960400
     A PRINTED TO ,9H14 DIGITS)                                          P0960410
C*****    END OF TEST SEGMENT 096                                        P0960420
C*****  WHEN EXECUTING ONLY SEGMENT 096, THE  STOP  AND  END  CARDS      P0960430
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0960440
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0960450
C=    STOP                                                               P0960460
C=    END                                                                P0960470
      STOP                                                               P096C1
      END                                                                P096C2
C*******************************************************************************P0970010
C*****                                                                   P0970020
C*****                          CSQRO - (097)                            P0970030
C*****                                                                   P0970040
C*******************************************************************************P0970050
C*****  GENERAL PURPOSE                                          ASA REFP0970060
C*****                                                                   P0970070
C*****     TO TEST BASIC EXTERNAL FUNCTION  -CSQRT-              8.3.3  P0970080
C*****     (SQUARE ROOT OF A COMPLEX NUMBER )                   TABLE 4P0970090
C*****     ARGUMENTS ARE EP1C(11)  TO  EP1C(20)                          P0970100
C*****     EXPECTED RESULTS ARE EP1C(1)  TO  EP1C(10)                    P0970110
C*****  S P E C I F I C A T I O N S  SEGMENT 097                         P0970120
C*****                                                                   P0012250
C*****  WHEN EXECUTING ONLY SEGMENT 097 THE SPECIFICATION STATEMENTS     P0012255
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0012260
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0012265
C*****    .                                                              P0012270
C=    COMPLEX EP1C(30), AVC, BVC                                         P0012275
      COMPLEX EP1C(30), AVC, BVC                                         P097A1
C*****                                                                   P0012280
C*****  O U T P U T - T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0970130
C*****                                                                   P0071980
C*****  WHEN EXECUTING ONLY SEGMENT 097, THE FOLLOWING STATEMENT         P0071985
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.          P0071990
C=    NUVI = 6                                                           P0071995
      NUVI = 6                                                           P097B1
C*****                                                                   P0072000
      WRITE (NUVI, 970)                                                  P0970140
970   FORMAT(15H1 CSQRO - (097)//33H  BASIC EXTERNAL FUNCTION -CSQRT-    P0970150
     1//29H  (SQUARE ROOT -TYPE COMPLEX)//27H  ASA REF.- 8.3.3 (TABLE 4)P0970160
     2//24H  LINE 1 OF EACH PAIR IS /20H  THE EXPECTED VALUE //9H  RESULP0970170
     3T )                                                                P0970180
C*****    INITIALIZE EP1C (EXACT VALUES)                                 P0970190
      EP1C(1) = (0.9950042,0.0998334)                                    P0970200
      EP1C(2) = (0.9800666,0.1986693)                                    P0970210
      EP1C(3) = (0.9553365,0.2955202)                                    P0970220
      EP1C(4) = (0.9210610,0.3894183)                                    P0970230
      EP1C(5) = (0.8775826,0.4794255)                                    P0970240
      EP1C(6) = (0.8253356,0.5646425)                                    P0970250
      EP1C(7) = (0.7648422,0.6442177)                                    P0970260
      EP1C(8) = (0.6967067,0.7173561)                                    P0970270
      EP1C(9) = (0.5403023,0.8414710)                                    P0970280
      EP1C(10) = (0.4161468,-0.9092974)                                  P0970290
      EP1C(11) = (0.9800666,0.1986693)                                   P0970300
      EP1C(12) = (0.9210610,0.3894183)                                   P0970310
      EP1C(13) = (0.8253356,0.5646425)                                   P0970320
      EP1C(14) = (0.6967067,0.7173561)                                   P0970330
      EP1C(15) = (0.5403023,0.8414710)                                   P0970340
      EP1C(16) = (0.3623577,0.9320391)                                   P0970350
      EP1C(17) = (0.1699671,0.9854497)                                   P0970360
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      EP1C(18) = (-0.0291995,0.9995736)                                 P0970370
      EP1C(19) = (-0.4161468,0.9092974)                                 P0970380
      EP1C(20) = (-0.6536436,-0.7568025)                                P0970390
      IVI = 0                                                           P0970400
971   JVI = 1                                                           P0970410
972   IVI = IVI + 1                                                     P0970420
      JVI = JVI + 1                                                     P0970430
      AVC = CSQRT(EP1C(IVI + 10) * (10. ** ((2 * JVI) - 8)))            P0970440
      BVC =  EP1C(IVI) * 10. ** (JVI - 4)                               P0970450
      WRITE (NUVI, 973) BVC, AVC                                        P0970460
973   FORMAT( 2H0 2E14.7/2X,2E14.7)                                     P0970470
      IF (JVI - 6) 972, 974, 974                                        P0970480
974   IF (IVI - 10) 971, 975, 975                                       P0970490
975   WRITE (NUVI, 976)                                                 P0970500
976   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/13H  CALCULATIONP0970510
     1)                                                                 P0970520
C*****    END OF TEST SEGMENT 097                                       P0970530
C*****  WHEN EXECUTING ONLY SEGMENT 097 THE STOP AND END CARDS          P0970540
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0970550
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0970560
C=    STOP                                                            P0970570
C=    END                                                             P0970580
      STOP                                                            P097C1
      END                                                             P097C2
C******************************************************************************P0980010
C*****                                                                 P0980020
C*****                          ARCTG - (098)                          P0980030
C*****                                                                 P0980040
C******************************************************************************P0980050
C*****  GENERAL PURPOSE                                        ASA REFP0980060
C*****     TO TEST BASIC EXTERNAL FUNCTION - ATAN -             8.3.3  P0980070
C*****     (TRIGONOMETRIC ARCTANGENT, SINGLE ARGUMENT -TYPE REAL)TABLE 4P0980080
C*****     USED IN SIMPLE ARITHMETIC EXPRESSIONS                       P0980090
C*****     INTRINSIC FUNCTION ABS,FLOAT,AMAX1,INT                      P0980100
C*****       ASSUMED WORKING                                           P0980110
C*****     ARGUMENTS ARE POWERS (OR SUMS) OF 2                         P0980120
C*****                                                                 P0980130
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P0980140
C*****                                                                 P0072010
C*****  WHEN EXECUTING ONLY SEGMENT 098, THE FOLLOWING STATEMENT       P0072015
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.        P0072020
C=    NUVI = 6                                                        P0072025
      NUVI = 6                                                        P098B1
C*****                                                                P0072030
      WRITE (NUVI, 980)                                               P0980150
980   FORMAT(15H1 ARCTG - (098)//32H  BASIC EXTERNAL FUNCTION -ATAN-  P0980160
     1//25H  (ARCTANGENT -TYPE REAL)                                  P0980170
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23HP0980180
     3 HOLLERITH INFORMATION//9H  RESULTS)                            P0980190
C*****    HEADER FOR SEGMENT 098 WRITTEN                              P0980200
      AVS = .125                                                      P0980210
      CVS = -.25                                                      P0980220
      IVI = 2                                                         P0980230
      BVS = ATAN(AMAX1(AVS,CVS))                                      P0980240
      WRITE (NUVI, 981) BVS                                           P0980250
      BVS = ATAN(AVS * 2.0)                                           P0980260
      WRITE(NUVI, 982) BVS                                            P0980270
      BVS = ATAN (ABS(CVS) + AVS)                                     P0980280
      WRITE(NUVI, 983) BVS                                            P0980290
      BVS = ATAN(-CVS * AMAX0(IVI, INT(AVS)))                         P0980300
      WRITE(NUVI, 984) BVS                                            P0980310
      BVS = ATAN (FLOAT(IVI) * CVS - (2.0 * AVS))                     P0980320
      WRITE (NUVI, 985) BVS                                           P0980330
      BVS = ATAN(1.0)                                                 P0980340
      WRITE (NUVI, 986) BVS                                           P0980350
      WRITE (NUVI, 987)                                               P0980360
981   FORMAT(10H0 X= 0.125,5X,15H 0.124354994547,/10X,F15.7)          P0980370
982   FORMAT(10H0 X= 0.250,5X,15H 0.244978663127,/10X,F15.7)          P0980380
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983    FDRMAT(10H0 X= 0.375,5X,15H 0.358770670271,/10X,F15.7)              P0980390
984    FDRMAT(10H0 X= 0.500,5X,15H 0.463647609001,/10X,F15.7)              P0980400
985    FDRMAT(10H0 X=-0.750,5X,15H-0.643501108793,/10X,F15.7)              P0980410
986    FDRMAT(10H0 X= 1.000,5X,15H 0.785398163397,/10X,F15.7)              P0980420
987    FDRMAT(//37H  LINE 2 DF EACH PAIR IS THE FUNCTIDN/25H  CALCULATIONP0980430
     1 PRINTED TD ,8H7 DIGITS )                                          P0980440
C*****    END DF TEST SEGMENT 098                                        P0980450
C*****  WHEN EXECUTING ONLY SEGMENT 098, THE STOP AND END CARDS          P0980460
C*****  WHICH APPEAR AS CDMMENT CARDS MUST HAVE THE C=                   P0980470
C*****  IN COLUMNS  1  AND  2  REMDVED.                                  P0980480
C=     STOP                                                             P0980490
C=     END                                                              P0980500
       STOP                                                             P098C1
       END                                                              P098C2
C*******************************************************************************P0990010
C*****                                                                  P0990020
C*****                          DACTG - (099)                           P0990030
C*****                                                                  P0990040
C*******************************************************************************P0990050
C*****  GENERAL PURPOSE                                          ASA REFP0990060
C*****     TO TEST BASIC EXTERNAL FUNCTION - DATAN -             8.3.3  P0990070
C*****     (TRIGONOMETRIC ARCTANGENT,SINGLE ARGUMENT -TYPE D.P.) TABLE 4P0990080
C*****     USED IN SIMPLE ARITHMETIC EXPRESSIDNS                        P0990090
C*****     INTRINSIC FUNCTIONS DSIGN,FLOAT,DBLE ASSUMED WDRKING         P0990100
C*****     ARGUMENTS ARE POWERS (DR SUMS) DF 2                          P0990110
C*****                                                                  P0990120
C*****  S P E C I F I C A T I O N S  SEGMENT 099                        P0990130
C*****                                                                  P0012290
C*****  WHEN EXECUTING ONLY SEGMENT 099, THE SPECIFICATIDN STATEMENTS   P0012295
C*****  WHICH APPEAR AS CDMMENT CARDS  MUST HAVE THE C=                 P0012300
C*****  IN COLUMNS 1  AND  2 REMDVED.                                   P0012305
C*****                                                                  P0012310
C=     DOUBLE PRECISIDN AVD, BVD, CVD                                   P0012315
       DOUBLE PRECISIDN AVD, BVD, CVD                                   P099A1
C*****                                                                  P0012320
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  ND INPUT TAPE.     P0990140
C*****                                                                  P0072040
C*****  WHEN EXECUTING ONLY SEGMENT 099, THE FDLLOWING STATEMENT        P0072045
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMDVED.          P0072050
C=     NUVI = 6                                                         P0072055
       NUVI = 6                                                         P099B1
C*****                                                                  P0072060
C*****     HEADER FDR SEGMENT 099 WRITTEN                               P0990150
       WRITE(NUVI, 990)                                                 P0990160
990    FDRMAT(15H1 DACTG - (099)//33H  BASIC EXTERNAL FUNCTIDN -DATAN-  P0990170
     1//25H  (ARCTANGENT -TYPE D.P.)                                    P0990180
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P0990190
     3 HDLLERITH INFDRMATIDN//9H  RESULTS)                              P0990200
       AVD = -.125D0                                                    P0990210
       CVD = .25D0                                                      P0990220
       IVI = 2                                                          P0990230
       BVD = DATAN(DSIGN(AVD,CVD))                                      P0990240
       WRITE (NUVI, 991) BVD                                            P0990250
       BVD = DATAN(2.0 * (-AVD))                                        P0990260
       WRITE(NUVI, 992) BVD                                             P0990270
       BVD = DATAN(CVD - AVD)                                           P0990280
       WRITE(NUVI, 993) BVD                                             P0990290
       BVD = DATAN(DBLE(FLDAT(IVI) / 4.0))                              P0990300
       WRITE (NUVI, 994) BVD                                            P0990310
       BVD = DATAN (DSIGN(1.0D0 - CVD, AVD))                            P0990320
       WRITE(NUVI, 995) BVD                                             P0990330
       BVD = DATAN(DBLE(FLOAT(IVI ** 2)) * CVD)                         P0990340
       WRITE (NUVI, 996) BVD                                            P0990350
       WRITE (NUVI, 997)                                                P0990360
991    FDRMAT(10H0 X= 0.125,5X,19H 0.124354994547D+00 /10X,D24.12)      P0990370
992    FDRMAT(10H0 X= 0.250,5X,19H 0.244978663127D+00 /10X,D24.12)      P0990380
993    FDRMAT(10H0 X= 0.375,5X,19H 0.358770670271D+00 /10X,D24.12)      P0990390
994    FDRMAT(10H0 X= 0.500,5X,19H 0.463647609001D+00 /10X,D24.12)      P0990400
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995    FORMAT(10H0 X=-0.750,5X,19H-0.6435011087930+00 /10X,024.12)        P0990410
996    FORMAT(10H0 X= 1.000,5X,19H 0.785398163397D+00 /10X,D24.12)        P0990420
997    FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP0990430
      1 PRINTED TO ,9H12 OIGITS )                                         P0990440
C*****    END OF TEST SEGMENT 099                                         P0990450
C*****  WHEN EXECUTING ONLY SEGMENT 099, THE STOP ANO END CARDS           P0990460
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE  C=                   P0990470
C*****  IN COLUMNS  1  ANO  2  REMOVED.                                   P0990480
C=     STOP                                                               P0990490
C=     ENO                                                                P0990500
       STOP                                                               P099C1
       END                                                                P099C2
C*******************************************************************************P1000010
C*****                                                                    P1000020
C*****                    ACTG2 - (100)                                   P1000030
C*****                                                                    P1000040
C*******************************************************************************P1000050
C*****  GENERAL PURPOSE                                          ASA REFP1000060
C*****     TO TEST BASIC EXTERNAL FUNCTION - ATAN2 -             8.3.3  P1000070
C*****     (TRIGONOMETRIC ARCTANGENT, TWO ARGUMENTS -TYPE REAL)  TABLE 4P1000080
C*****     USEO IN SIMPLE ARITHMETIC EXPRESSIONS                         P1000090
C*****     INTRINSIC FUNCTIONS AMIN1,FLOAT,AMAX0  ASSUMEO WORKING        P1000100
C*****     ARGUMENTS ARE POWERS (OR SUMS) OF 2                           P1000110
C*****                                                                   P1000120
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENTS.  NO INPUT TAPE.      P1000130
C*****                                                                   P0072070
C*****  WHEN EXECUTING ONLY SEGMENT 100, THE FOLLOWING STATEMENT         P0072075
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 ANO 2 REMOVEO.          P0072080
C=     NUVI = 6                                                          P0072085
       NUVI = 6                                                          P100B1
C*****                                                                   P0072090
       WRITE(NUVI, 1000)                                                 P1000140
1000   FORMAT(15H1 ACTG2 - (100)//33H  BASIC EXTERNAL FUNCTION -ATAN2-   P1000150
      1//37H  (ARCTANGENT, 2 ARGUMENT -TYPE REAL)                        P1000160
      2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H P1000170
      3 HOLLERITH INFORMATION//9H  RESULTS)                              P1000180
       AVS = .125                                                        P1000190
       CVS = -.25                                                        P1000200
       IVI = 2                                                           P1000210
       BVS = ATAN2(ABS(AMIN1(AVS,CVS)),FLOAT(IVI))                       P1000220
       WRITE (NUVI, 1001) BVS                                            P1000230
       BVS = ATAN2(CVS ** 2, AVS * 2.0)                                  P1000240
       WRITE (NUVI, 1002) BVS                                            P1000250
       BVS = ATAN2 (AVS - CVS, -(4.0 * CVS))                             P1000260
       WRITE (NUVI, 1003) BVS                                            P1000270
       BVS = ATAN2(-CVS/AVS, AMAX0(IVI,4))                               P1000280
       WRITE (NUVI, 1004) BVS                                            P1000290
       BVS = ATAN2(-.09375,AVS)                                          P1000300
       WRITE (NUVI, 1005) BVS                                            P1000310
       BVS = ATAN2(FLOAT(IVI), 2.0)                                      P1000320
       WRITE (NUVI, 1006) BVS                                            P1000330
       WRITE (NUVI, 1007)                                                P1000340
1001   FORMAT(10H0 X= 0.125,5X,15H 0.124354994547,/10X,F15.7)            P1000350
1002   FORMAT(10H0 X= 0.250,5X,15H 0.244978663127,/10X,F15.7)            P1000360
1003   FORMAT(10H0 X= 0.375,5X,15H 0.358770670271,/10X,F15.7)            P1000370
1004   FORMAT(10H0 X= 0.500,5X,15H 0.463647609001,/10X,F15.7)            P1000380
1005   FORMAT(10H0 X=-0.750,5X,15H-0.643501108793,/10X,F15.7)            P1000390
1006   FORMAT(10H0 X= 1.000,5X,15H 0.785398163397,/10X,F15.7)            P1000400
1007   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP1000410
      1 PRINTEO TO ,8H7 DIGITS )                                         P1000420
C*****    ENO OF TEST SEGMENT 100                                        P1000430
C*****  WHEN EXECUTING ONLY SEGMENT 100, THE STOP ANO ENO CAROS          P1000440
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                   P1000450
C*****  IN COLUMNS  1  ANO  2  REMOVED.                                  P1000460
C=     STOP                                                              P1000470
C=     ENO                                                               P1000480
       STOP                                                              P100C1
       ENO                                                               P100C2
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C*****************************************************************************P1010010
C*****                                                                        P1010020
C*****                    DATN2 - (101)                                       P1010030
C*****                                                                        P1010040
C*****************************************************************************P1010050
C*****  GENERAL PURPOSE                                              ASA REFP1010060
C*****     TO TEST BASIC EXTERNAL FUNCTION - DATAN2 -                8.3.3  P1010070
C*****     (TRIGONOMETRIC ARCTANGENT, TWO ARGUMENT -TYPE D.P.)       TABLE 4P1010080
C*****     USED IN SIMPLE ARITHMETIC EXPRESSIONS                             P1010090
C*****     INTRINSIC FUNCTIONS DMIN1,DMAX1,DSIGN,DBLE,FLOAT                  P1010100
C*****    ASSUMED WORKING                                                    P1010110
C*****     ARGUMENTS ARE POWERS (OR SUMS) OF 2                               P1010120
C*****                                                                       P1010130
C*****  S P E C I F I C A T I O N S  SEGMENT 101                             P1010140
C*****                                                                       P0012330
C*****  WHEN EXECUTING ONLY SEGMENT 101, THE SPECIFICATION STATEMENTS        P0012335
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=  IN COLUMNS           P0012340
C*****  1  AND  2  REMOVED.                                                 P0012345
C*****                                                                       P0012350
C=     DOUBLE PRECISION AVD, BVD, CVD                                        P0012355
       DOUBLE PRECISION AVD, BVD, CVD                                        P101A1
C*****                                                                       P0012360
C*****  O U T P U T - T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE          P1010150
C*****                                                                       P0072100
C*****  WHEN EXECUTING ONLY SEGMENT 101, THE FOLLOWING STATEMENT             P0072105
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.              P0072110
C=     NUVI = 6                                                              P0072115
       NUVI = 6                                                              P101B1
C*****                                                                       P0072120
       WRITE (NUVI, 1010)                                                    P1010160
1010   FORMAT(15H1 DATN2 - (101)//36H  BASIC EXTERNAL FUNCTION -DATAN2-      P1010170
     1//37H  (ARCTANGENT, 2 ARGUMENT -TYPE D.P.)                             P1010180
     2//27H  ASA REF.- 8.3.3 (TABLE 4)//24H  LINE 1 OF EACH PAIR IS/23H      P1010190
     3 HOLLERITH INFORMATION//9H  RESULTS)                                   P1010200
       AVD = .125                                                            P1010210
       CVD = -.25                                                            P1010220
       IVI = 2                                                               P1010230
       BVD = DATAN2( DMIN1( AVD,-CVD), 2.0D0/ DBLE(FLOAT(IVI)))              P1010240
       WRITE (NUVI, 1011) BVD                                                P1010250
       BVD = DATAN2( AVD, FLOAT( IVI) * (-CVD))                              P1010260
       WRITE (NUVI, 1012) BVD                                                P1010270
       BVD = DATAN2 (DSIGN(2.0D0 * CVD + AVD, AVD), DMAX1(AVD,CVD,1.0D0))    P1010280
       WRITE (NUVI, 1013) BVD                                                P1010290
       BVD = DATAN2(DMIN1(AVD,.0625D0),DMAX1(AVD,CVD))                       P1010300
       WRITE (NUVI, 1014) BVD                                                P1010310
       BVD = DATAN2(DABS(CVD) * DSIGN(AVD, CVD) * 6.D0, .25D0)               P1010320
       WRITE (NUVI, 1015) BVD                                                P1010330
       BVD = DATAN2 (DBLE(FLOAT(IVI)),AVD * FLOAT(IVI **4))                  P1010340
       WRITE (NUVI, 1016) BVD                                                P1010350
       WRITE (NUVI, 1017)                                                    P1010360
1011   FORMAT(10H0 X= 0.125,5X,19H 0.124354994547D+00 /10X,D24.12)           P1010370
1012   FORMAT(10H0 X= 0.250,5X,19H 0.244978663127D+00 /10X,D24.12)           P1010380
1013   FORMAT(10H0 X= 0.375,5X,19H 0.358770670271D+00 /10X,D24.12)           P1010390
1014   FORMAT(10H0 X= 0.500,5X,19H 0.463647609001D+00 /10X,D24.12)           P1010400
1015   FORMAT(10H0 X=-0.750,5X,19H-0.643501108793D+00 /10X,D24.12)           P1010410
1016   FORMAT(10H0 X= 1.000,5X,19H 0.785398163397D+00 /10X,D24.12)           P1010420
1017   FORMAT(//37H  LINE 2 OF EACH PAIR IS THE FUNCTION/25H  CALCULATIONP1010430
     1 PRINTED TO ,9H12 DIGITS )                                             P1010440
C*****    END OF TEST SEGMENT 101                                            P1010450
C*****  WHEN EXECUTING ONLY SEGMENT 101  THE STOP AND END CARDS              P1010460
C*****  WHICH APPEAR AS COMMENT CARDS  MUST HAVE THE C=                      P1010470
C*****  IN COLUMNS  1  AND  2  REMOVED.                                      P1010480
C=     STOP                                                                  P1010490
C=     END                                                                   P1010500
       STOP                                                                  P101C1
       END                                                                   P101C2
C*****************************************************************************P1020010
C*****                                                                        P1020020
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C*****                      DMODA - (102)                               P1020030
C*****                                                                  P1020040
C***********************************************************************P1020050
C*****  GENERAL PURPOSE                                         ASA REFP1020060
C*****    TO TEST BASIC EXTERNAL FUNCTION - DMOD -              8.3.3  P1020070
C*****    (REMAINDERING -TYPE DOUBLE PRECISION)                 TABLE 4P1020080
C*****    INTRINSIC FUNCTIONS DBLE,FLOAT,IDINT, ASSUMED WORKING         P1020090
C*****                                                                  P1020100
C*****  S P E C I F I C A T I O N S  SEGMENT 102                        P1020110
C*****                                                                  P0012370
C*****  WHEN EXECUTING ONLY SEGMENT 102, THE SPECIFICATION STATEMENTS   P0012375
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0012380
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0012385
C*****                                                                  P0012390
C=    DOUBLE PRECISION AVD,BVD,CVD,DVD,EVD,FVD,GVD                      P0012395
      DOUBLE PRECISION AVD,BVD,CVD,DVD,EVD,FVD,GVD                      P102A1
C*****                                                                  P0012400
C*****  O U T P U T - T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P1020120
C*****                                                                  P0072130
C*****  WHEN EXECUTING ONLY SEGMENT 102 THE FOLLOWING STATEMENT         P0072135
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS  1  AND  2  REMOVED.      P0072140
C=    NUVI = 6                                                          P0072145
      NUVI = 6                                                          P102B1
C*****                                                                  P0072150
      WRITE (NUVI, 1020)                                                P1020130
1020  FORMAT(15H1 DMODA - (102)//32H  BASIC EXTERNAL FUNCTION -DMOD-    P1020140
     1//39H  (REMAINDERING -TYPE DOUBLE PRECISION)//27H  ASA REF.- 8.3.3P1020150
     2 (TABLE 4)// 9H  RESULTS)                                         P1020160
      AVD = 16.0625D0                                                   P1020170
      BVD = -4.0D0                                                      P1020180
      CVD = -8.125D0                                                    P1020190
      DVD = 2.5D0                                                       P1020200
      EVD = -1.0D0                                                      P1020210
      FVD =  1.0D0                                                      P1020220
      FVD = DMOD(AVD, BVD)                                              P1020230
      GVD = FVD - 0.0625D0                                              P1020240
      WRITE (NUVI, 1021) GVD                                            P1020250
      FVD = 2.0D0                                                       P1020260
      FVD = DMOD(CVD, DVD)                                              P1020270
      GVD = FVD + 0.625D0                                               P1020280
      WRITE (NUVI, 1021) GVD                                            P1020290
      FVD = 3.0D0                                                       P1020300
      FVD = DMOD(BVD, EVD)                                              P1020310
      GVD = FVD + 0.0D0                                                 P1020320
      WRITE (NUVI, 1021) GVD                                            P1020330
      FVD = 4.0D0                                                       P1020340
      FVD = DMOD(BVD, AVD)                                              P1020350
      GVD = FVD - (BVD-(DBLE(FLOAT(IDINT(BVD/AVD)))) * AVD)             P1020360
      WRITE (NUVI, 1021) GVD                                            P1020370
      WRITE (NUVI, 1022)                                                P1020380
1021  FORMAT(//D25.14)                                                  P1020390
1022  FORMAT(//18H  END OF DMOD TEST//40H  ALL ABOVE ANSWERS SHOULD BE 0P1020400
     1 FOR THIS/32H  TEST SEGMENT TO BE SUCCESSFUL.)                    P1020410
C*****    END OF TEST SEGMENT 102                                       P1020420
C*****  WHEN EXECUTING ONLY SEGMENT 102  THE STOP AND END CARDS         P1020430
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1020440
C*****  IN COLUMNS  1  AND 2  REMOVED.                                  P1020450
C=    STOP                                                              P1020460
C=    END                                                               P1020470
      STOP                                                              P102C1
      END                                                               P102C2
C***********************************************************************P1030010
C*****                                                                  P1030020
C*****                      CABSA - (103)                               P1030030
C*****                                                                  P1030040
C***********************************************************************P1030050
C*****  GENERAL PURPOSE                                         ASA REFP1030060
C*****    .TO TEST BASIC EXTERNAL FUNCTION  -CABS-              8.3.3  P1030070
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C*****      (MODULUS OF A COMPLEX NUMBER)                          TABLE 4P1030080
C*****      ARGUMENTS ARE ARRAY EP1C(30), FUNCTIONS FROM                  P1030090
C*****       ODD NUMBERED ARGUMENTS PRINTED AS SET 1 AND 2                P1030100
C*****       FROM EVEN NUMBERED ARGUMENTS                                 P1030110
C*****       SET 1 RESULTS SHOULD BE .1 E-6 TO .1 E+8                     P1030120
C*****       SET 2 RESULTS SHOULD BE .5 E-6 TO .5 E+8                     P1030130
C*****                                                                    P1030140
C*****  S P E C I F I C A T I O N S  SEGMENT 103                          P1030150
C*****                                                                    P0012410
C*****  WHEN EXECUTING ONLY SEGMENT 103  THE SPECIFICATION STATEMENTS     P0012415
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                    P0012420
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P0012425
C*****                                                                    P0012430
C=     COMPLEX EP1C(30)                                                  P0012435
       COMPLEX EP1C(30)                                                  P103A1
C*****                                                                    P0012440
C*****  O U T P U T - T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P1030160
C*****                                                                    P0072160
C*****  WHEN EXECUTING ONLY SEGMENT 103 THE FOLLOWING STATEMENT           P0072165
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS  1 AND 2 REMOVED.           P0072170
C=     NUVI = 6                                                          P0072175
       NUVI = 6                                                          P103B1
C*****                                                                    P0072180
       WRITE (NUVI, 1030)                                                P1030170
1030   FORMAT(15H1 CABSA - (103)//32H  BASIC EXTERNAL FUNCTION -CABS-     P1030180
      1//31H  (MODULUS OF A COMPLEX NUMBER)//27H  ASA REF.- 8.3.3 (TABLE P1030190
      24)//9H  RESULTS//10X,5HSET 1,15X,5HSET 2 )                        P1030200
C*****INITIALIZE EP1C(EXACT VALUES)                                      P1030210
       EP1C(1) = (0.5E-7,-0.866025E-7)                                   P1030220
       EP1C(2) = (2.5E-7,-4.330125E-7)                                   P1030230
       EP1C(3) = (1.E-6,0.0)                                             P1030240
       EP1C(4) = (5.E-6,0.0)                                             P1030250
       EP1C(5) = (0.5E-5,0.866025E-5)                                    P1030260
       EP1C(6) = (2.5E-5,4.330125E-5)                                    P1030270
       EP1C(7) = (-0.5E-4,0.866025E-4)                                   P1030280
       EP1C(8) = (-2.5E-4,4.330125E-4)                                   P1030290
       EP1C(9) = (-1.E-3,0.0)                                            P1030300
       EP1C(10) = (-5.E-3,0.0)                                           P1030310
       EP1C(11) = (-0.5E-2,-0.866025E-2)                                 P1030320
       EP1C(12) = (-2.5E-2,-4.330125E-2)                                 P1030330
       EP1C(13) = (0.5E-1,-0.866025E-1)                                  P1030340
       EP1C(14) = (2.5E-1,-4.330125E-1)                                  P1030350
       EP1C(15) = (1.0,0.0)                                              P1030360
       EP1C(16) = (5.0,0.0)                                              P1030370
       EP1C(17) = (0.5E1,0.866025E1)                                     P1030380
       EP1C(18) = (2.5E1,4.330125E1)                                     P1030390
       EP1C(19) = (-0.5E2,0.866025E2)                                    P1030400
       EP1C(20) = (-2.5E2,4.330125E2)                                    P1030410
       EP1C(21) = (-1.E3,0.0)                                            P1030420
       EP1C(22) = (-5.E3,0.0)                                            P1030430
       EP1C(23) = (-0.5E4,-0.866025E4)                                   P1030440
       EP1C(24) = (-2.5E4,-4.330125E4)                                   P1030450
       EP1C(25) = (0.5E5,-0.866025E5)                                    P1030460
       EP1C(26) = (2.5E5,-4.330125E5)                                    P1030470
       EP1C(27) = (1.E6,0.0)                                             P1030480
       EP1C(28) = (5.E6,0.0)                                             P1030490
       EP1C(29) = (0.5E7,0.866025E7)                                     P1030500
       EP1C(30) = (2.5E7,4.330125E7)                                     P1030510
       IVI = - 1                                                         P1030520
1031   IVI = IVI + 2                                                     P1030530
       AVS = CABS (EP1C(IVI))                                            P1030540
       BVS = CABS (EP1C(IVI + 1))                                        P1030550
       WRITE (NUVI, 1032) AVS, BVS                                       P1030560
1032   FORMAT(1H0, E17.6, 2X, E17.6)                                     P1030570
       IF (IVI - 29) 1031, 1033, 1033                                    P1030580
1033   WRITE (NUVI, 1034)                                                P1030590
1034   FORMAT(//39H  VALUES IN EACH SET SHOULD BE POSITIVE /39H  .1 FOR SP1030600
      1ET 1 (.5 FOR SET 2), EXPONENT /35H  RANGE FROM -06 TO +08 IN SEQUEP1030610
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     2NCE )                                                                    P1030620
C*****    END OF TEST SEGMENT 103                                              P1030630
C*****  WHEN EXECUTING ONLY SEGMENT 103  THE STOP AND END CARDS                P1030640
C*****  WHICH APPEAR AS COMMENT CARDS  MUST HAVE THE C=                        P1030650
C*****  IN COLUMNS  1  AND  2  REMOVED.                                        P1030660
C=     STOP                                                                   P1030670
C=     END                                                                    P1030680
       STOP                                                                   P103C1
       END                                                                    P103C2
C***********************************************************************      P1100010
C*****                                                                        P1100020
C*****                          BSFTS - (110)                                 P1100030
C*****                                                                        P1100040
C***********************************************************************      P1100050
C*****  GENERAL PURPOSE                                          ASA REF      P1100060
C*****    TEST OF ALL STATEMENT FUNCTIONS THAT HAVE BEEN DEFINED              P1100070
C*****    IN TEST SEGMENT 005                                      8.1.2P1100080
C*****  GENERAL COMMENTS                                                      P1100090
C*****    INTRINSIC AND EXTERNAL FUNCTIONS ASSUMED WORKING                    P1100100
C*****  INTRINSIC AND BASIC EXTERNAL FUNCTIONS DECLARED IN A       10.1.7 P1100110
C*****  TYPE STATEMENT OF SAME TYPE AS TABLES 3 AND 4                5.3 P1100120
C*****                                                                        P1100130
C*****  S P E C I F I C A T I O N S  SEGMENT 110                              P1100140
C*****                                                                        P0012450
C*****  WHEN EXECUTING ONLY SEGMENT 110, THE SPECIFICATION STATEMENTS         P0012455
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                        P0012460
C*****  IN COLUMNS  1  AND  2  REMOVED.                                       P0012465
C*****                                                                        P0012470
C=     INTEGER IFIX                                                           P0012475
C=     REAL  ABS, SQRT                                                        P0012480
       INTEGER IFIX                                                           P110A1
       REAL  ABS, SQRT                                                        P110A2
C*****                                                                        P0012485
C*****  WHEN EXECUTING ONLY SEGMENT 110, THE SEGMENT 005, WHICH               P1100150
C*****  CONTAINS THE STATEMENT FUNCTIONS BEING TESTED HERE MUST BE            P1100160
C*****  INSERTED AFTER THE SPECIFICATION STATEMENTS OF SEGMENT 110.           P1100170
C***********************************************************************      P0050010
C*****                                                                        P0050020
C*****                          BSFDF - (005)                                 P0050030
C*****                                                                        P0050040
C***********************************************************************      P0050050
C*****  GENERAL PURPOSE                                          ASA REF      P0050060
C*****    DEFINING STATEMENT FUNCTIONS THAT ARE TO BE TESTED                  P0050070
C*****    IN SEGMENT 110 (BASIC FORTRAN) AND 111 (FULL FORTRAN)    8.1.1P0050080
C*****    HEADER FOR SEGMENT 005                                              P0050090
C*****    DEFINING EXPRESSION CONTAINS CONSTANTS AND VARIABLES                P0050100
      CMAFS(CAWVS,CBWVS) = CAWVS * 2. + CBWVS                                 P0050110
      CMBFS(MAWVI,MBWVI,MCWVI) =(MAWVI + MBWVI + MCWVI)/3                     P0050120
      MCAFI(MAWVI,MBWVI) = MAWVI ** MBWVI                                     P0050130
      MCBFI(CAWVS,CBWVS,CCWVS) = (CAWVS + CBWVS + CCWVS) * 2.0                P0050140
C*****    DEFINING EXPRESSION CONTAINS CONSTANTS, VARIABLES AND               P0050150
C*****    INTRINSIC FUNCTIONS                                                 P0050160
      CMCFS(CAWVS,CBWVS,CCWVS) = ABS(CAWVS**2 - (CBWVS+CCWVS)**2)             P0050170
      CMDFS(MAWVI,MBWVI) = ISIGN((MAWVI+MBWVI),(MAWVI-MBWVI))                 P0050180
      MCCFI(MAWVI,MBWVI,CAWVS) = MAWVI**2 + MBWVI**2 + IFIX(CAWVS)**2         P0050190
      MCDFI(CAWVS,CBWVS,CCWVS,CDWVS,CEWVS) = (CAWVS + CBWVS + CCWVS +         P0050200
     1CDWVS +CEWVS) ** (ABS(CAWVS))                                           P0050210
C*****    DEFINING EXPRESSION CONTAINS PREVIOUSLY DEFINED STATEMENT           P0050220
C*****    FUNCTIONS AND/OR EXTERNAL FUNCTION REFERENCES                       P0050230
      CMEFS(CAWVS,CBWVS) = CMBFS(1,2,3) + SQRT((CAWVS + CBWVS))               P0050240
      CMFFS(MAWVI,MBWVI,MCWVI) = MCCFI(MAWVI,MBWVI,3.0) + MCWVI **2           P0050250
      MCEFI(MAWVI,MBWVI) = MCAFI(MAWVI,MBWVI) ** MCAFI(MAWVI,MBWVI)           P0050260
      MCFFI(CAWVS,CBWVS,CCWVS) = SQRT(CAWVS) + SQRT(CBWVS) + EXP(CCWVS)       P0050270
C*****    DEFINING EXPRESSION CONTAINS CONSTANTS, VARIABLES, INTRINSIC        P0050280
C*****    OR EXTERNAL FUNCTION REFERENCES AND PREVIOUSLY DEFINED              P0050290
C*****    STATEMENT FUNCTIONS.                                                P0050300
      CMGFS(MAWVI,MBWVI,CAWVS,CBWVS) = FLOAT(MAWVI ** 2) - CMAFS(CAWVS,       P0050310
     1CBWVS) + SQRT((FLOAT(MAWVI + MBWVI)))                                   P0050320
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      MCGFI(MAWVI,MBWVI,MCWVI,CAWVS) = MCEFI(MAWVI,MBWVI) - MCEFI(MAWVI,P0050330
     1MCWVI) + IFIX(EXP(CAWVS))                                          P0050340
C*****    END OF TEST SEGMENT 005                                        P0050350
C*****                                                                   P1100180
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P1100190
C*****                                                                   P0072190
C*****  WHEN EXECUTING ONLY SEGMENT 110, THE FOLLOWING STATEMENT         P0072195
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0072200
C=    NUVI = 6                                                           P0072205
      NUVI = 6                                                           P110B1
C*****                                                                   P0072210
      WRITE (NUVI,1100)                                                  P1100200
1100  FORMAT(39H1 BSFTS - (110) STATEMENT FUNCTION TEST/23X,16HINTEGER AP1100210
     1ND REAL//18H  ASA REF. - 8.1.2// 9H  RESULTS)                      P1100220
C*****    HEADER FOR SEGMENT 110 WRITTEN                                 P1100230
      CMAVS = 9.0 - CMAFS(2.0, 3.0 + 2.0)                                P1100240
      CMBVS = CMBFS(2/2, 1+1, 1*3) -2.0                                  P1100250
      MCAVI = MCAFI(IFIX(5.0),5) - (5 ** 5)                              P1100260
      MCBVI = MCBFI(1.0,2.0,3.0) - MCAFI(6,2) + 24                       P1100270
      WRITE (NUVI,1108) CMAVS, CMBVS, MCAVI, MCBVI                       P1100280
      CMAVS = CMCFS(4.0,2.0,2.0)                                         P1100290
      CMBVS = CMDFS(-1,-4) - 5.0                                         P1100300
      MCAVI = MCCFI(9*2/18, (4**2)/8, 3.0) - 14                          P1100310
      MCBVI = MCDFI(1.,2.1,3.,4.,5.) -15                                 P1100320
      WRITE (NUVI,1108) CMAVS, CMBVS, MCAVI, MCBVI                       P1100330
      CMAVS = CMEFS(2.0,1.0 * 2.0) - 4.0                                 P1100340
      MCAVI = 3                                                          P1100350
      CMBVS = CMFFS(1,2, MCAVI) - 23.                                    P1100360
      MCAVI = MCEFI(2,2) - (4 ** 4)                                      P1100370
      MCBVI = MCFFI(9.0,4.0,CMBVS * CMBVS * 0.0) - 6                     P1100380
      WRITE (NUVI,1108) CMAVS, CMBVS, MCAVI, MCBVI                       P1100390
      CMAVS = CMGFS(3,13,2.0,5.0) - 4.0                                  P1100400
      CMBVS = CMGFS(IFIX(SQRT(CMAFS(2.,5.))),IFIX(CMFFS(1,2,3) -10.),    P1100410
     1 CMBFS(1,2,3), CMDFS(-1,-4)) - 4.0                                 P1100420
      MCAVI = MCGFI(2,2,2,0.0) - 1                                       P1100430
      MCBVI = MCGFI(MCAFI(2,1), MCBFI(1.0,0.,.0), IFIX(SQRT(CMGFS(3,13,  P1100440
     12.0,5.0))),EXP(0.0) - 1.0)-1                                       P1100450
      WRITE (NUVI,1108) CMAVS, CMBVS, MCAVI, MCBVI                       P1100460
      WRITE (NUVI,1109)                                                  P1100470
1108  FORMAT ( /2(F20.10 /),2(I19/ ))                                    P1100480
1109  FORMAT ( /36H  ALL ABOVE ANSWERS SHOULD BE 0 FOR /                 P1100490
     137H  THIS TEST SEGMENT TO BE SUCCESSFUL.)                          P1100500
C*****    END OF TEST SEGMENT 110                                        P1100510
C*****  WHEN EXECUTING ONLY SEGMENT 110, THE  STOP  AND  END  CARDS      P1100520
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P1100530
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P1100540
C=    STOP                                                               P1100550
C=    END                                                                P1100560
      STOP                                                               P110C1
      END                                                                P110C2
C*************************************************************************P1110010
C*****                                                                   P1110020
C*****                        FSFTS - (111)                              P1110030
C*****                                                                   P1110040
C*************************************************************************P1110050
C*****  GENERAL PURPOSE                                        ASA REF P1110060
C*****    TEST STATEMENT FUNCTIONS THAT HAVE BEEN DEFINED IN     8.1.2P1110070
C*****    SEGMENT 006 (FOR FULL FORTRAN TEST ONLY)                     P1110080
C*****  GENERAL COMMENTS                                               P1110090
C*****    INTRINSIC AND EXTERNAL FUNCTIONS ASSUMED WORKING             P1110100
C*****  INTRINSIC AND BASIC EXTERNAL FUNCTIONS DECLARED IN A    10.1.7 P1110110
C*****  TYPE STATEMENT OF SAME TYPE AS TABLES 3 AND 4             5.3  P1110120
C*****                                                                 P1110130
C*****  S P E C I F I C A T I O N S  SEGMENT 111                       P1110140
C*****                                                                 P0012490
C*****  WHEN EXECUTING ONLY SEGMENT 111, THE SPECIFICATION STATEMENTS  P0012495
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                 P0012500
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0012505
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C*****                                                                  P0012510
C=    DDUBLE PRECISIDN DPAFD,DPBFD,DPCFD,DPDFD,DPFFD,DPGFD,DPEFD,DPHFD  P0012515
C=    DDUBLE PRECISIDN DPAVD, DPBVD, DPCVD, DPDVD ,DAWVD,DBWVD,DCWVD    P0012520
C=    DDUBLE PRECISIDN DPA1D(5),FC2D(5,5)                               P0012525
C=    DDUBLE PRECISIDN DBLE, DEXP                                       P0012530
C=    CDMPLEX CMPLX, CEXP                                               P0012535
C=    CDMPLEX CHAVC,CHBVC,CHCVC,CHDVC,CHEVC,CHFVC                       P0012540
C=    CDMPLEX CHAFC, CHBFC, CHCFC, CHDFC,CAWVC, CBWVC                   P0012545
C=    LDGICAL A3B(2,2,2)                                                P0012550
C=    LDGICAL MCFVB, MCHVB, ABFB, BCFB, IEFB, KLFB                      P0012555
C=   -  ,MCEVB,MCIVB,MCKVB,ATVB, AWVB,BWVB,CWVB,DWVB,EWVB,SWVB,TWVB    P0012560
      DDUBLE PRECISIDN DPAVD, DPBVD, DPCVD, DPDVD ,DAWVD,DBWVD,DCWVD    P111A1
      DDUBLE PRECISIDN DPAFD, DPBFD,DPCFD,DPDFD,DPFFD,DPGFD,DPEFD,DPHFD P111A2
      DDUBLE PRECISIDN DPA1D(5), FC2D(5,5)                              P111A3
      CDMPLEX CHAVC,CHBVC,CHCVC,CHDVC,CHEVC,CHFVC                       P111A4
      CDMPLEX CHAFC, CHBFC, CHCFC, CHDFC,CAWVC, CBWVC                   P111A5
      LDGICAL A3B(2,2,2)                                                P111A6
      LDGICAL MCFVB, MCHVB, ABFB, BCFB, IEFB, KLFB                      P111A7
     -  ,MCEVB,MCIVB,MCKVB,ATVB, AWVB,BWVB,CWVB,DWVB,EWVB,SWVB,TWVB     P111A8
      CDMPLEX CMPLX, CEXP                                               P111A9
      DDUBLE PRECISIDN DBLE, DEXP                                       P111AA
C*****                                                                  P0012565
C*****  WHEN EXECUTING ONLY SEGMENT 111, THE SEGMENT 006, WHICH         P1110150
C*****  CONTAINS THE STATEMENT FUNCTIDNS BEING TESTED HERE MUST BE      P1110160
C*****  INSERTED AFTER THE SPECIFICATIDN STATEMENTS DF SEGMENT 111.     P1110170
C*********************************************************************P0060010
C*****                                                                  P0060020
C*****                          FSFDF - (006)                           P0060030
C*****                                                                  P0060040
C*********************************************************************P0060050
C*****  GENERAL PURPDSE                                        ASA REF P0060060
C*****    DEFINING STATEMENT FUNCTIDNS THAT ARE TD BE TESTED       8.1.1P0060070
C*****    IN SEGMENT 111 (FULL FDRTRAN STATEMENT FUNCTIDN TEST)         P0060080
C*****    HEADER FDR SEGMENT 006                                        P0060090
C*****    D.P. STATEMENT FUNCTIDNS CDNTAINING CDNSTANTS AND VARIABLES   P0060100
      DPAFD(DAWVD,DBWVD) = (DAWVD + DBWVD) ** 2                         P0060110
      DPBFD(DAWVD,DBWVD,DCWVD) = (DAWVD + DBWVD - DCWVD) ** 3           P0060120
      DPCFD(DAWVD,DBWVD,DCWVD) = 3.0D0 *  (DAWVD + DBWVD + DCWVD)/2.D0  P0060130
C*****    D.P. STATEMENT FUNCTIDNS CDNTAINING CDNSTANTS, VARIABLES      P0060140
C*****    AND INTRINSIC FUNCTIDN REFERENCES                             P0060150
      DPDFD(DAWVD,DBWVD) = DSIGN(DAWVD, -(DBWVD))                       P0060160
      DPEFD(DAWVD,DBWVD,CAWVC,CAWVS) = DBLE(CAWVS + AIMAG(CAWVC))       P0060170
     1+ DMAX1(DAWVD,DBWVD + 1.D0)                                       P0060180
C*****    D.P. STATEMENT FUNCTIDNS CDNTAINING CDNSTANTS, VARIABLES,     P0060190
C*****    INTRINSIC FUNCTIDN AND PREVIDUSLY DEFINED STATEMENT FUNCTIDN  P0060200
C*****    REFERENCES                                                    P0060210
      DPFFD(DAWVD,DBWVD,CAWVS) = DPAFD(DAWVD,DBWVD) -(2.D0 * DAWVD *    P0060220
     1 DBWVD) + (DBLE(CAWVS) * 2.D0 )                                   P0060230
      DPGFD(DAWVD,DBWVD,CAWVS,CAWVC) = DPBFD(DAWVD,DBWVD,DBLE(CAWVS))   P0060240
     1 - DBLE(AIMAG(CAWVC)) + 5.0D0                                     P0060250
C*****    D.P. STATEMENT FUNCTIDNS CDNTAINING CDNSTANTS, VARIABLES,     P0060260
C*****    INTRINSIC FUNCTIDN, PREVIDUSLY DEFINED STATEMENT FUNCTIDN     P0060270
C*****    AND EXTERNAL FUNCTIDN REFERENCES                              P0060280
      DPHFD(DAWVD,DBWVD,CAWVS) = DPFFD(DAWVD,DBWVD +1.0D0, CAWVS) * 2.D0P0060290
     1 + DEXP(DAWVD) - (DBLE(CAWVS) * 2 .D0)-DEXP(DAWVD)                P0060300
C*****    CDMPLEX STATEMENT FUNCTIDNS CDNTAINING CDNSTANTS AND VARIABLESP0060310
      CHAFC(CAWVC,CBWVC) = CAWVC * (2.0,2.0) + CBWVC + (2.0,2.0)        P0060320
C*****    COMPLEX STATEMENT FUNCTIDN CDNTAINING CDNSTANTS, VARIABLES,   P0060330
C*****    AND INTRINSIC FUNCTIDN REFERENCES                             P0060340
      CHBFC(CAWVC,CBWVC,CAWVS) = CAWVC - CBWVC + CMPLX(CAWVS,CAWVS)     P0060350
C*****    CDMPLEX STATEMENT FUNCTIDN CDNTAINING CONSTANTS,              P0060360
C*****    VARIABLES, INTRINSIC AND EXTERNAL FUNCTIDN REFERENCES         P0060370
      CHCFC(CAWVC,CBWVC,CAWVS,CBWVS) = (CAWVC - CBWVC) + CEXP (CMPLX    P0060380
     1 (CAWVS,CBWVS)) -  CMPLX(CAWVS,CBWVS)                             P0060390
C*****    CDMPLEX STATEMENT FUNCTIDN CDNTAINING CDNSTANTS, VARIABLES,   P0060400
C*****    INTRINSIC, EXTERNAL AND PREVIDUSLY DEFINED STATEMENT FUNCTIDN P0060410
C*****    REFERENCES                                                    P0060420
      CHDFC(CAWVC,CBWVC,CAWVS,CBWVS) = CHCFC(CAWVC,CBWVC,CAWVS +CAWVS,  P0060430
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     1 2.0 * CBWVS)  + CMPLX(1.0,2.0)                                    P0060440
C*****   STATEMENT FUNCTION CONTAINING LOGICAL VARIABLES                 P0060450
      ABFB(AWVB, BWVB, DWVB) = AWVB .AND. BWVB .OR. .FALSE..AND.DWVB     P0060460
C*****   STATEMENT FUNCTION CONTAINING CONSTANTS, VARIABLES AND          P0060470
C*****  INTRINSIC FUNCTIONS                                             P0060480
      BCFB(EWVB,CWVB,BAWVS,BCWVS) = EWVB .AND.(BAWVS * ABS(BCWVS) .GT.   P0060490
     1  0.5).AND..NOT. CWVB                                             P0060500
C*****  STATEMENT FUNCTION CONTAINING PREVIOUSLY DEFINED STATEMENT       P0060510
C*****    FUNCTION AND AN INTRINSIC FUNCTION REFERENCE                  P0060520
      IEFB(EWVB,ATVB,CWVB,BAWVS,BCWVS) = ATVB .AND.EWVB .AND. CWVB .OR.  P0060530
     1 AMAX1(BAWVS,BCWVS) .GT. 600. .OR.  BCFB (EWVB,CWVB,BAWVS,BCWVS)   P0060540
C*****  STATEMENT FUNCTION CONTAINING BASIC EXTERNAL FUNCTION REFERENCE  P0060550
      KLFB(SWVB,TWVB,ATVB,BAWVS) = SWVB .AND..NOT. TWVB.OR.(SQRT(BAWVS)  P0060560
     1  .GT. 9.0) .OR. ATVB                                             P0060570
C*****    END OF TEST SEGMENT 006                                       P0060580
C*****                                                                  P1110180
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P1110190
C*****                                                                  P0072220
C*****  WHEN EXECUTING ONLY SEGMENT 111, THE FOLLOWING STATEMENT        P0072225
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.          P0072230
C=    NUVI = 6                                                          P0072235
      NUVI = 6                                                          P111B1
C*****                                                                  P0072240
      WRITE (NUVI,1110)                                                 P1110200
1110  FORMAT(39H1 FSFTS - (111) STATEMENT FUNCTION TEST//               P1110210
     1 39H  DOUBLE PRECISION, COMPLEX AND LOGICAL//                     P1110220
     218H  ASA REF. - 8.1.2//10H  RESULTS )                             P1110230
C*****    HEADER FOR SEGMENT 111 WRITTEN                                P1110240
C*****    CONSTANTS USED IN THIS SEGMENT                                P1110250
      CHAVC = (1.0,2.0)                                                 P1110260
      CHBVC = (-2.0,3.0)                                                P1110270
      DPA1D(2) = 3.5D0                                                  P1110280
      ATVB = .FALSE.                                                    P1110290
      PPDVS = 18.                                                       P1110300
      RRDVS = 21.0                                                      P1110310
      ATVS = 18.0                                                       P1110320
      MCFVB = .TRUE.                                                    P1110330
      FC2D(2,2) = 1.75D0                                                P1110340
C*****    TEST OF D.P. STATEMENT FUNCTIONS                              P1110350
      DPAVD = DPAFD(3.5D0,DPA1D(2)) - 49.0D0                            P1110360
      DPBVD = DPBFD(1.D0,DPA1D(2)- 2.5D0,DBLE(1.0)) - 1.0D0             P1110370
      DPCVD = DPCFD(0.D0,1.0D0,DPA1D(2)+ 0.5D0) - 7.5D0                 P1110380
      DPDVD = DPDFD(DBLE(AIMAG(CHAVC)),FC2D(2,2)) + 2.0D0               P1110390
      WRITE (NUVI,1118) DPAVD, DPBVD, DPCVD, DPDVD                      P1110400
      DPAVD = DPEFD(1.0D0, FC2D(2,2) *2.D0,(1.0,-4.),AMAX1(2.0,4.0))    P1110410
     1  - 4.5D0                                                         P1110420
      DPBVD = DPFFD(DPA1D(2), FC2D(2,2)-1.75D0,5.00) - 22.25D0          P1110430
      DPCVD = DPGFD(2.D0/.2D1,DPA1D(2) - 2.5D0,1.0,CHAVC) - 4.0D0       P1110440
      DPDVD= DPHFD(3.5D0, FC2D(2,2) - 2.75D0,5.0) - 34.5D0              P1110450
      WRITE (NUVI,1118) DPAVD, DPBVD, DPCVD, DPDVD                      P1110460
C*****    TEST OF COMPLEX STATEMENT FUNCTIONS                           P1110470
      CHCVC = CHAFC((2.0,2.),CHAVC) - (3.0,12.0)                        P1110480
      CHDVC = CHBFC((4.0,-8.5),CHBVC,1.0) - (7.0,-10.5)                 P1110490
      CHEVC = CHCFC((1.0,1.0) **2,CHAVC, 0.000, AIMAG(CHAVC) -2.0)      P1110500
      CHFVC = CHDFC((0.0,0.0)    ,CHAVC, 0.000 , SNGL (DMIN1(0.D0,4.D0))P1110510
     1)-(1.0,0.0)                                                       P1110520
      WRITE (NUVI,1117) CHCVC, CHDVC, CHEVC, CHFVC                      P1110530
      WRITE (NUVI, 1119)                                                P1110540
C*****  TEST DF LDGICAL STATEMENT FUNCTION                              P1110550
      MCEVB = PPDVS .GT. 60.0                                           P1110560
      A3B(1,1,1) = ATVS .LE. 20.9 .AND. ABFB(.TRUE.,.TRUE.,.FALSE.)     P1110570
      MCHVB  = BCFB(.TRUE.,.FALSE.,PPDVS,21.0) .AND..NOT.PPDVS.GE.RRDVS P1110580
      MCIVB = .NDT. (IEFB(.FALSE.,ATVB,.TRUE.,650.,-5.11).AND.ATVB)     P1110590
      MCKVB = MCFVB.AND.KLFB(.TRUE.,.TRUE.,.TRUE.,100.).AND..NOT.MCEVB  P1110600
      WRITE (NUVI,1116) A3B(1,1,1), MCHVB, MCIVB, MCKVB                 P1110610
1116  FORMAT(//4(L4)//38H THE FOUR ABOVE ANSWERS SHOULD BE TRUE/        P1110620
     1 35H  FOR THIS SEGMENT TO BE SUCCESSFUL)                          P1110630
1117  FORMAT(/ 4(F16.7,F14.7/))                                         P1110640
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1118  FORMAT (/ 4(D30.18/))                                                 P1110650
1119  FORMAT (/ 40H  ALL ABOVE ANSWERS SHOULD BE 0 FOR THIS/                P1110660
     140H  TEST SEGMENT TO BE SUCCESSFUL. VALUES /40H  WITH EXPONENTS LEP1110670
     2SS THAN    10**(-14) /22H  ARE CONSIDERED ZERO )                     P1110680
C*****    END OF TEST SEGMENT 111                                         P1110690
C*****  WHEN EXECUTING ONLY SEGMENT 111, THE  STOP  AND  END  CARDS       P1110700
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                   P1110710
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P1110720
C=    STOP                                                                P1110730
C=    END                                                                 P1110740
      STOP                                                                P111C1
      END                                                                 P111C2
C*******************************************************************************P1400010
C*****                                                                    P1400020
C*****                              CPXAD - (140)                         P1400030
C*****                                                                    P1400040
C*******************************************************************************P1400050
C*****                          GENERAL PURPOSE                           P1400060
C*****     TO TEST ADDITION AND SUBTRACTION OF COMPLEX NUMBERS   ASA REFP1400070
C*****     INCLUDES OPERATIONS WITH UP TO 9 TERMS                 6.1    P1400080
C*****     DOES NOT TEST FOR ACCURACY                                    P1400090
C*****                                                                    P1400100
C*****ADDITION AND SUBTRACTION OF 2 TERMS                                 P1400110
C*****                                                                    P1400120
C*****  S P E C I F I C A T I O N S  SEGMENT 140                          P1400130
C*****                                                                    P0012570
C*****  WHEN EXECUTING ONLY SEGMENT 140, THE SPECIFICATION STATEMENTS     P0012575
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                    P0012580
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P0012585
C*****                                                                    P0012590
C=    COMPLEX  AVC, BVC, CVC, DVC, EVC, FVC, GVC, HVC, IVC, JVC, AAVC,    P0012595
C=   1 ABVC,BAVC,BBVC,CCVC,CDVC,BCVC,DCVC                                 P0012600
      COMPLEX  AVC, BVC, CVC, DVC, EVC, FVC, GVC, HVC, IVC, JVC, AAVC,    P140A1
     1 ABVC,BAVC,BBVC,CCVC,CDVC,BCVC,DCVC                                 P140A2
C*****                                                                    P0012605
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P1400140
C*****  WHEN EXECUTING ONLY SEGMENT 140, THE FOLLOWING STATEMENT          P0072250
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.           P0072255
C*****                                                                    P0072260
C=    NUVI = 6                                                            P0072265
      NUVI = 6                                                            P140B1
      WRITE (NUVI, 1401)                                                  P1400150
1401  FORMAT(1H1,1X,34HCPXAD - (140) COMPLEX ADDITION AND/16X,            P1400160
     111HSUBTRACTION//2X,14HASA REF. - 6.1//2X,7HRESULTS//)               P1400170
      AVC=(1.467,2.560)                                                   P1400180
      BVC=(3.568,7.480)                                                   P1400190
      CVC=AVC+BVC                                                         P1400200
      DVC=AVC+(3.568,7.480)                                               P1400210
      EVC=(1.9467,2.9560)+BVC                                             P1400220
      FVC=(1.467,2.560)+(3.568,7.480)                                     P1400230
      GVC=AVC-BVC                                                         P1400240
      HVC = (.1467E+1,.2560E1) - BVC                                      P1400250
      IVC = AVC - (3568E-3,.7480E+1)                                      P1400260
      JVC=(1.467,2.560)-(3.568,7.480)                                     P1400270
C*****ADDITION AND SUBTRACTION OF 3 TERMS                                 P1400280
      AAVC=AVC+BVC-CVC                                                    P1400290
      ABVC=AVC+(3.568,7.480)-DVC                                          P1400300
      BAVC=(1.467,2.560)+BVC-CVC                                          P1400310
      BBVC=(1.467,2.560)+(3.568,7.480)-FVC                                P1400320
      BCVC=AVC-BVC-GVC                                                    P1400330
      CCVC=(1.467,2.560)-BVC-HVC                                          P1400340
      CDVC=AVC-(3.568,7.480)-IVC                                          P1400350
      DCVC=(1.467,2.560)-(3.568,7.480)-JVC                                P1400360
      WRITE(NUVI,1402) AAVC,ABVC,BAVC,BBVC,BCVC,CCVC,CDVC,DCVC            P1400370
C*****ADDITION AND SUBTRACTION OF 5 TERMS                                 P1400380
      AAVC=AVC-(1.89,6.48)-AAVC-BVC+(0.0,9.830)                           P1400390
      ABVC=AVC-(1.89,6.48)-AAVC-BVC+(0.0,9.830)                           P1400400
      WRITE(NUVI,1402)ABVC                                                P1400410
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 1402 FORMAT(2X,2F8.4)                                                  P1400420
      AAVC=AVC-(1.89,6.48)-BVC+(0.0,9.83)+CVC                           P1400430
C*****ADDITION AND SUBTRACTION OF 6 TERMS                              P1400440
      ABVC=AVC-(1.89,6.48)-BVC+(0.0,9.83)+CVC-AAVC                      P1400450
      WRITE(NUVI,1402) ABVC                                             P1400460
C*****ADDITION AND SUBTRACTION OF 8 TERMS                              P1400470
      AAVC=AVC+BVC-CVC+(0.34,6.45)-(4.54,6.85)+OVC+(1.0,0.0)-EVC        P1400480
C*****AOOITION ANO SUBTRACTION OF 9 TERMS                              P1400490
      ABVC=AVC+BVC-CVC+(0.34,6.45)-(4.54,6.85)+DVC+(1.0,0.0)-EVC-AAVC   P1400500
      WRITE (NUVI,1403) ABVC                                            P1400510
 1403 FORMAT(2X,2F8.4//2X,35HTEST IS POSITIVE IF NUMBERS PRINTEO/2X     P1400520
     117HABOVE ARE 0.0,0.0)                                             P1400530
C*****    ENO OF TEST SEGMENT 140                                      P1400540
C*****  WHEN EXECUTING ONLY SEGMENT 140, THE  STOP  AND  ENO  CAROS    P1400550
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                 P1400560
C*****  IN COLUMNS  1  ANO  2  REMOVED.                                P1400570
C=    STOP                                                            P1400580
C=    END                                                             P1400590
      STOP                                                            P140C1
      ENO                                                             P140C2
C*******************************************************************************P1410010
C*****                                                                P1410020
C*****                       CPXMU - (141)                            P1410030
C*******************************************************************************P1410040
C*****                    GENERAL PURPOSE                             P1410050
C*****    TO TEST MULTIPLICATION OF COMPLEX NUMBERS              ASA REFP1410060
C*****    INCLUDES OPERATIONS WITH UP TO 10 TERMS                 6.1 P1410070
C*****    DOES NOT TEST FOR ACCURACY                                  P1410080
C*****                                                                P1410090
C*****                                                                P1410100
C*****  S P E C I F I C A T I O N S   SEGMENT 141                     P1410110
C*****                                                                P0012610
C*****  WHEN EXECUTING ONLY SEGMENT 141, THE SPECIFICATION STATEMENTS P0012615
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                    P0012620
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P0012625
C*****                                                                P0012630
C=    COMPLEX AVC, BVC, CVC, DVC, EVC, FVC, GVC, HVC, IVC, JVC        P0012635
C=   1   ,AAVC, ABVC, BAVC, BBVC                                       P0012640
      COMPLEX AVC, BVC, CVC, DVC, EVC, FVC, GVC, HVC, IVC, JVC        P141A1
     1   ,AAVC, ABVC, BAVC, BBVC                                      P141A2
C*****                                                                P0012645
C*****  O U T O U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P1410120
C*****                                                                P0072270
C*****  WHEN EXECUTING ONLY SEGMENT 141, THE FOLLOWING STATEMENT      P0072275
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  ANO  2  REMOVEO.   P0072280
C*****                                                                P0072285
C=    NUVI = 6                                                        P0072290
      NUVI = 6                                                        P141B1
C*****                                                                P0072295
      WRITE (NUVI, 1411)                                              P1410130
1411  FORMAT (1H1,1 X,36HCPXMU - (141) COMPLEX MULTIPLICATION//2X,     P1410140
     114HASA REF. - 6.1//2X,7HRESULTS//)                              P1410150
C*****MULTIPLICATION OF TWO TERMS                                     P1410160
      AVC = (-0.5,0.86602)                                            P1410170
      BVC = (-0.5,-0.86602)                                           P1410180
      AAVC = (AVC * BVC )                                             P1410190
      ABVC =  AVC * (-0.5,-0.86602)                                   P1410200
      BAVC = (-0.5,0.86602) * BVC                                     P1410210
      BBVC = (-0.5,0.86602)*(-0.5,-0.86602)                           P1410220
      WRITE(NUVI,1412) AAVC,ABVC,BAVC,BBVC                            P1410230
C*****MULTIPLICATION OF 3 TERMS                                       P1410240
      AVC=(0.0,1.0)                                                   P1410250
      BVC=(1.0,0.0)                                                   P1410260
      CVC=(0.0,-1.0)                                                  P1410270
      AAVC=AVC*BVC*CVC                                                P1410280
      ABVC=(0.0,1.0)*BVC*(0.0,-1.0)                                   P1410290
      WRITE(NUVI,1412) AAVC,ABVC                                      P1410300
 1412  FORMAT(2X,2F8.3)                                               P1410310
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C*****MULTIPLICATION OF 4 TERMS                                         P1410320
      AVC=(0.30901,0.95105)                                             P1410330
      BVC=(-0.80901,0.58778)                                            P1410340
      CVC=(-0.80901,-0.58778)                                           P1410350
      DVC=(0.30901,-0.95105)                                            P1410360
      AAVC=AVC*BVC*CVC*DVC                                              P1410370
      ABVC=AVC*(-0.80901,0.58778)*CVC*(0.30901,-0.95105)                P1410380
      WRITE(NUVI,1412) AAVC,ABVC                                        P1410390
C*****MULTIPLICATION OF 5 TERMS                                         P1410400
      AVC=(0.5,0.86602)                                                 P1410410
      BVC=(-0.5,0.86602)                                                P1410420
      CVC = (1.0,0.0)                                                   P1410430
      DVC=(-0.5,-0.86602)                                               P1410440
      EVC=(0.5,-0.86602)                                                P1410450
      AAVC=AVC*BVC*CVC*DVC*EVC                                          P1410460
      ABVC=AVC*(-0.5,0.86602)*CVC*(-0.5,-0.86602)*EVC                   P1410470
      WRITE(NUVI,1412) AAVC,ABVC                                        P1410480
C*****MULTIPLICATION OF 6 TERMS                                         P1410490
      AVC = (0.98480,0.17364)                                           P1410500
      BVC=(-0.17364,0.98480)                                            P1410510
      CVC=(-0.86602,0.5)                                                P1410520
      DVC=(-0.93969,-0.34202)                                           P1410530
      EVC=(0.34202,-0.93969)                                            P1410540
      FVC=(0.86602,-0.5)                                                P1410550
      AAVC=AVC*BVC*CVC*DVC*EVC*FVC                                      P1410560
      ABVC=AVC*(-0.17364,0.98480)*CVC*(-0.93969,-0.34202)*EVC*(0.86602, P1410570
     1-0.5)                                                             P1410580
      WRITE(NUVI,1412) AAVC,ABVC                                        P1410590
C*****MULTIPLICATION OF 7 TERMS                                         P1410600
      AVC=(0.70710,0.70710)                                             P1410610
      BVC=(0.0,1.0)                                                     P1410620
      CVC=(-0.70710,0.70710)                                            P1410630
      DVC=(1.0,0.0)                                                     P1410640
      EVC=(-0.70710,-0.70710)                                           P1410650
      FVC=(0.0,-1.0)                                                    P1410660
      GVC=(0.70710,-0.70710)                                            P1410670
      AAVC=AVC*BVC*CVC*DVC*EVC*FVC*GVC                                  P1410680
      ABVC=AVC*(0.0,1.0)*CVC*( 1.0,0.0)*EVC*(0.0,-1.0)*GVC              P1410690
      WRITE(NUVI,1412) AAVC,ABVC                                        P1410700
C*****MULTIPLICATION OF 8 TERMS                                         P1410710
      AVC=(0.76604,0.64278)                                             P1410720
      BVC=(0.17364,0.98480)                                             P1410730
      CVC=(-0.5,0.86602)                                                P1410740
      DVC=(-0.93969,0.34202)                                            P1410750
      EVC=(-0.93969,-0.34202)                                           P1410760
      FVC=(-0.5,-0.86602)                                               P1410770
      GVC=(0.17364,-0.98480)                                            P1410780
      HVC=(0.76604,-0.64278)                                            P1410790
      AAVC=AVC*BVC*CVC*DVC*EVC*FVC*GVC*HVC                              P1410800
      ABVC=AVC*(0.17364,0.98480)*CVC*DVC*(-0.93969,-0.34202)*FVC*GVC*HVCP1410810
      WRITE(NUVI,1412) AAVC,ABVC                                        P1410820
C*****MULTIPLICATION OF 9 TERMS                                         P1410830
      AVC=(0.80901,0.58778)                                             P1410840
      BVC=(0.30901,0.95105)                                             P1410850
      CVC=(-0.94832,0.31730)                                            P1410860
      DVC=(-0.80901,0.58778)                                            P1410870
      EVC = (1.0,0.0)                                                   P1410880
      FVC=(-0.80901,-0.58778)                                           P1410890
      GVC=(-0.94832,-0.31730)                                           P1410900
      HVC=(0.30901,-0.95105)                                            P1410910
      IVC=(0.80901,-0.58778)                                            P1410920
      AAVC=AVC*BVC*CVC*DVC*EVC*FVC*GVC*HVC*IVC                          P1410930
      ABVC=AVC*(0.30901,0.95105)*CVC*(-0.80901,0.58778)*( 1.0,0.0)*FVC* P1410940
     1GVC*HVC*IVC                                                       P1410950
      WRITE(NUVI,1412) AAVC,ABVC                                        P1410960
C*****MULTIPLICATION OF 10 TERMS                                        P1410970
      AVC=(0.86602,0.5)                                                 P1410980
      BVC=(0.5,0.86602)                                                 P1410990
```

```
      CVC=(0.0,1.0)                                                     P1411000
      DVC=(-0.5,0.86602)                                                P1411010
      EVC=(-0.86602,0.5)                                                P1411020
      FVC=(-1.0,0.0)                                                    P1411030
      GVC=(-0.86602,-0.5)                                               P1411040
      HVC=(-0.5,-0.86602)                                               P1411050
      IVC=(0.0,-1.0)                                                    P1411060
      JVC=(0.0,1.0)                                                     P1411070
      AAVC=AVC*BVC*CVC*DVC*EVC*FVC*GVC*HVC*IVC*JVC                      P1411080
      ABVC=AVC*(0.5,0.86602)*CVC*(-0.5,0.86602)*EVC*FVC*GVC*HVC*(0.0,-1.P1411090
     10)*JVC                                                            P1411100
      WRITE(NUVI,1412) AAVC,ABVC                                        P1411110
      WRITE(NUVI,1413)                                                  P1411120
1413  FORMAT (1H0,35HTEST IS POSITIVE IF NUMBERS PRINTED/1X,            P1411130
     117HABOVE ARE 1.0,0.0)                                             P1411140
      WRITE(NUVI, 1414)                                                 P1411150
1414  FORMAT (//39H  ERROR SHOULD NOT EXCEED + OR - .001  )             P1411160
C*****    END OF TEST SEGMENT 141                                       P1411170
C*****  WHEN EXECUTING ONLY SEGMENT 141, THE STOP AND END CARDS         P1411180
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1411190
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1411200
C=    STOP                                                            P1411210
C=    END                                                             P1411220
      STOP                                                            P141C1
      END                                                             P141C2
C*******************************************************************************P1420010
C*****                                                                 P1420020
C*****                              CPXDV-(142)                        P1420030
C*****                                                                 P1420040
C*******************************************************************************P1420050
C*****                    GENERAL PURPOSE                              P1420060
C*****       TO TEST DIVISION OF COMPLEX NUMBERS                 ASA REFP1420070
C*****                                                             6.1 P1420080
C*****                                                                 P1420090
C*****  S P E C I F I C A T I O N S   SEGMENT 142                       P1420100
C*****                                                                 P0012650
C*****  WHEN EXECUTING ONLY SEGMENT 142, THE SPECIFICATION STATEMENTS  P0012655
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                     P0012660
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0012665
C*****                                                                 P0012670
C=    COMPLEX NUMVC,DENVC,QAVC,QBVC,QCVC,QDVC                         P0012675
      COMPLEX NUMVC,DENVC,QAVC,QBVC,QCVC,QDVC                         P142A1
C*****                                                                 P0012680
C*****  O U T O U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P1420110
C*****                                                                 P0072300
C*****  WHEN EXECUTING ONLY SEGMENT 142, THE FOLLOWING STATEMENT       P0072305
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.    P0072310
C*****                                                                 P0072315
C=    NUVI = 6                                                        P0072320
      NUVI = 6                                                        P142B1
C*****                                                                 P0072325
      WRITE (NUVI, 1421)                                              P1420120
1421  FORMAT(1H1,1X,25HCPXDV - (142) DIVISION OF/16X,                 P1420130
     115HCOMPLEX NUMBERS//15H  ASA REF.- 6.1//2X,7HRESULTS//)         P1420140
C*****  TEST NUMBER 1                                                 P1420150
      NUMVC=(0.36602,1.36602)                                         P1420160
      DENVC=(0.86602,0.5)                                             P1420170
      QAVC=NUMVC/DENVC                                                P1420180
      QBVC=(0.36602,1.3660) /DENVC                                    P1420190
      QCVC=NUMVC/(0.86602,0.5)                                        P1420200
      QDVC=(0.36602,1.36602)/(0.86602,0.5)                            P1420210
      WRITE(NUVI,1422)  QAVC,QBVC,QCVC,QDVC                           P1420220
C*****TEST NUMBER 2                                                   P1420230
      NUMVC=(0.0,1.41420)                                             P1420240
      DENVC=(0.70710,0.70710)                                         P1420250
      QAVC=NUMVC/DENVC                                                P1420260
      QBVC=(0.0,1.41420)/DENVC                                        P1420270
      QCVC=NUMVC/(0.70710,0.70710)                                    P1420280
```

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      QDVC=(0.0,1.41420)/(0.70710,0.70710)                              P1420290
      WRITE(NUVI,1422) QAVC,QBVC,QCVC,QDVC                              P1420300
 1422 FORMAT(2X,2F8.4)                                                  P1420310
C*****TEST NUMBER 3                                                    P1420320
      NUMVC=(-0.36602,1.36602)                                          P1420330
      DENVC=(0.5,0.86602)                                               P1420340
      QAVC=NUMVC/DENVC                                                  P1420350
      QBVC=(-0.36602,1.36602)/DENVC                                     P1420360
      QCVC=NUMVC/(0.5,0.86602)                                          P1420370
      QDVC=(-0.36602,1.36602)/(0.5,0.86602)                             P1420380
      WRITE(NUVI,1422) QAVC,QBVC,QCVC,QDVC                              P1420390
C*****TEST NUMBER 4                                                    P1420400
      NUMVC=(0.73204,2.73204)                                           P1420410
      DENVC=(1.73204,1.0)                                               P1420420
      QAVC=NUMVC/DENVC                                                  P1420430
      QBVC=(0.73204,2.73204)/DENVC                                      P1420440
      QCVC=NUMVC/(1.73204,1.0)                                          P1420450
      QDVC=(0.73204,2.73204)/(1.73204,1.0)                              P1420460
      WRITE(NUVI,1422) QAVC,QBVC,QCVC,QDVC                              P1420470
C*****  TEST NUMBER 5                                                  P1420480
      NUMVC=(0.0,2.82840)                                               P1420490
      DENVC=(1.41420,1.41420)                                           P1420500
      QAVC=NUMVC/DENVC                                                  P1420510
      QBVC=(0.0,2.82840)/DENVC                                          P1420520
      QCVC=NUMVC/(1.41420,1.41420)                                      P1420530
      QDVC=(0.0,2.82840)/(1.41420,1.41420)                              P1420540
      WRITE(NUVI,1422) QAVC,QBVC,QCVC,QDVC                              P1420550
      WRITE(NUVI,1423)                                                  P1420560
1423  FORMAT (//2X,35HTEST IS POSITIVE IF NUMBERS PRINTED/2X,           P1420570
     117HABOVE ARE 1.0,1.0)                                             P1420580
      WRITE (NUVI, 1424)                                                P1420590
1424  FORMAT (//39H  ERROR SHOULD NOT EXCEED + OR - .0001 )             P1420600
C*****    END OF TEST SEGMENT 142                                      P1420610
C*****  WHEN EXECUTING ONLY SEGMENT 142, THE STOP AND END CARDS        P1420620
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                P1420630
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P1420640
C=    STOP                                                            P1420650
C=    END                                                             P1420660
      STOP                                                            P142C1
      END                                                             P142C2
C*******************************************************************************P1430010
C*****                                                                P1430020
C*****                      CPXEX(143)                                P1430030
C*****                                                                P1430040
C*******************************************************************************P1430050
C*****                   GENERAL PURPOSE                              P1430060
C*****    TO TEST EXPONENTIATION OF COMPLEX NUMBERS            ASA REFP1430070
C*****    BY INTEGERS                                            6.1 P1430080
C*****    EXPONENT VALUES VARY FROM 3 TO 100                          P1430090
C*****                                                                P1430100
C*****  S P E C I F I C A T I O N S   SEGMENT 143                     P1430110
C*****                                                                P0012690
C*****  WHEN EXECUTING ONLY SEGMENT 143, THE SPECIFICATION STATEMENTS P0012695
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                    P0012700
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P0012705
C=    INTEGER AVI                                                     P0012710
C=    COMPLEX AVC,BVC,CVC,DVC,EVC                                     P0012715
      COMPLEX AVC,BVC,CVC,DVC,EVC                                     P143A1
      INTEGER AVI                                                     P143A2
C*****  O U T O U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P1430120
C*****                                                                P0072330
C*****  WHEN EXECUTING ONLY SEGMENT 143, THE FOLLOWING STATEMENT      P0072335
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.   P0072340
C*****                                                                P0072345
C=    NUVI = 6                                                        P0072350
      NUVI = 6                                                        P143B1
C*****                                                                P0072355
      WRITE (NUVI, 1431)                                              P1430130
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1431  FORMAT(1H1,1 X,36HCPXEX - (143) COMPLEX EXPONENTIATION//          P1430140
     1 2X,11HASA.REF.6.1//2X,29HRESULTS BASED ON THE FUNCTION//        P1430150
     2 2X,25H1.0 = SIN**2(X)+COS**2(X)//)                              P1430160
C***** EXPONENT=3                                                      P1430170
      AVC    = (-0.5,0.8660254)                                       P1430180
      AVI=3                                                           P1430190
      BVC=AVC**3                                                      P1430200
      CVC    = (-0.5,0.8660254) ** 3                                  P1430210
      DVC    = (-0.5,0.8660254) ** AVI                                P1430220
      EVC=AVC**AVI                                                    P1430230
      WRITE(NUVI,1432) BVC,CVC,DVC,EVC                                P1430240
C***** EXPONENT=4                                                      P1430250
      AVC=(0.0,1.0)                                                   P1430260
      AVI=4                                                           P1430270
      BVC=AVC**4                                                      P1430280
      CVC=(0.0,1.0)**4                                                P1430290
      DVC=(0.0,1.0)**AVI                                              P1430300
      EVC=AVC**AVI                                                    P1430310
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                               P1430320
 1432 FORMAT (2X,2F8.4)                                               P1430330
C***** EXPONENT=6                                                      P1430340
      AVC    = ( 0.5,0.8660254)                                       P1430350
      AVI=6                                                           P1430360
      BVC=AVC**6                                                      P1430370
      CVC    = ( 0.5,0.8660254) ** 6                                  P1430380
      DVC    = ( 0.5,0.8660254) ** AVI                                P1430390
      EVC= AVC**AVI                                                   P1430400
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                               P1430410
C***** EXPONENT=8                                                      P1430420
      AVC    = (0.7071068,0.7071068)                                  P1430430
      AVI=8                                                           P1430440
      BVC=AVC**8                                                      P1430450
      CVC    = (0.7071068,0.7071068) ** 8                             P1430460
      DVC    = (0.7071068,0.7071068) ** AVI                           P1430470
      EVC=AVC**AVI                                                    P1430480
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                               P1430490
C***** EXPONENT=10                                                     P1430500
      AVC    = (0.8090170,0.5877853)                                  P1430510
      AVI=10                                                          P1430520
      BVC=AVC**10                                                     P1430530
      CVC    = (0.8090170,0.5877853) ** 10                            P1430540
      DVC    = (0.8090170,0.5877853) ** AVI                           P1430550
      EVC=AVC**AVI                                                    P1430560
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                               P1430570
C*****EXPONENT=20                                                     P1430580
      AVC    = (0.9510565,0.3090170)                                  P1430590
      AVI=20                                                          P1430600
      BVC=AVC**20                                                     P1430610
      CVC    = (0.9510565,0.3090170) ** 20                            P1430620
      DVC    = (0.9510565,0.3090170) ** AVI                           P1430630
      EVC=AVC**AVI                                                    P1430640
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                               P1430650
C***** EXPONENT=40                                                     P1430660
      AVC    = (0.9876883,0.1564345)                                  P1430670
      AVI=40                                                          P1430680
      BVC=AVC**40                                                     P1430690
      CVC    = (0.9876883,0.1564345) ** 40                            P1430700
      DVC    = (0.9876883,0.1564345) ** AVI                           P1430710
      EVC=AVC**AVI                                                    P1430720
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                               P1430730
C***** EXPONENT=60                                                     P1430740
      AVC    = (0.9945219,0.1045285)                                  P1430750
      AVI=60                                                          P1430760
      BVC=AVC**60                                                     P1430770
      CVC    = (0.9945219,0.1045285) ** 60                            P1430780
      DVC    = (0.9945219,0.1045285) ** AVI                           P1430790
      EVC=AVC**AVI                                                    P1430800
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                               P1430810
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C*****EXPONENT=80                                                       P1430820
      AVI = 80                                                          P1430830
      AVC   = (0.9969173,0.0784591)                                     P1430840
      BVC=AVC**80                                                       P1430850
      CVC   = (0.9969173,0.0784591) ** 80                               P1430860
      DVC   = (0.9969173,0.0784591) ** AVI                              P1430870
      EVC=AVC**AVI                                                      P1430880
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                                 P1430890
C*****  EXPONENT=100                                                    P1430900
      AVC   = (0.9980267,0.0627905)                                     P1430910
      AVI=100                                                           P1430920
      BVC=AVC**100                                                      P1430930
      CVC   = (0.9980267,0.0627905) ** 100                              P1430940
      DVC   = (0.9980267,0.0627905) ** AVI                              P1430950
      EVC=AVC**AVI                                                      P1430960
      WRITE(NUVI,1432)  BVC,CVC,DVC,EVC                                 P1430970
      WRITE (NUVI,1433)                                                 P1430980
 1433 FORMAT (//  37H  TEST IS POSITIVE IF NUMBERS PRINTED/2X,          P1430990
     1  26HABOVE ARE CLOSE TO 1.0,0.0)                                  P1431000
      WRITE (NUVI, 1434)                                                P1431010
1434  FORMAT(// 39H  ERROR SHOULD NOT EXCEED + OR - .0001 )             P1431020
C*****     END OF TEST SEGMENT 143                                      P1431030
C*****   WHEN EXECUTING ONLY SEGMENT 143, THE STOP AND END CARDS        P1431040
C*****   WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                P1431050
C*****   IN COLUMNS  1  AND  2  REMOVED.                                P1431060
C=    STOP                                                            P1431070
C=    END                                                             P1431080
      STOP                                                            P143C1
      END                                                             P143C2
C*******************************************************************************P1440010
C*****                                                                 P1440020
C*****                          CPXOP - (144)                          P1440030
C*****                                                                 P1440040
C*******************************************************************************P1440050
C*****              GENERAL PURPOSE                              ASA REF P1440060
C*****   TO TEST ARITHMETIC OPERATIONS ON COMPLEX NUMBERS.        6.1    P1440070
C*****   OPERATIONS INCLUDE ALL BASIC OPERATORS (+,-,*,**) ACTING       P1440080
C*****   ON COMPLEX NUMBERS                                             P1440090
C*****                                                                 P1440100
C*****   S P E C I F I C A T I O N S   SEGMENT 144                      P1440110
C*****                                                                 P0012730
C*****   WHEN EXECUTING ONLY SEGMENT 144, THE SPECIFICATION STATEMENTS  P0012735
C*****   WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                     P0012740
C*****   IN COLUMNS  1  AND  2  REMOVED.                                P0012745
C*****                                                                 P0012750
C=    INTEGER AVI                                                     P0012755
C=    COMPLEX  AVC, BVC, CVC, DVC, EVC, FVC, GVC,HVC,PVC,RVC,SVC,TVC,UVCP0012760
      INTEGER AVI                                                     P144A1
      COMPLEX  AVC, BVC, CVC, DVC, EVC, FVC, GVC,HVC,PVC,RVC,SVC,TVC,UVCP144A2
C*****                                                                 P0012765
C*****   O U T O U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.    P1440120
C*****                                                                 P0072360
C*****   WHEN EXECUTING ONLY SEGMENT 144, THE FOLLOWING STATEMENT       P0072365
C*****   NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.    P0072370
C*****                                                                 P0072375
C=    NUVI = 6                                                        P0072380
      NUVI = 6                                                        P144B1
C*****                                                                 P0072385
      WRITE (NUVI, 1441)                                              P1440130
 1441  FORMAT(1H1,1X,32HCPXOP - (144) COMPLEX OPERATIONS//2X,          P1440140
     111HASA REF 6.1//2X,7HRESULTS//)                                 P1440150
      AVC = (0.9396926,0.3420201)                                     P1440160
      BVC = (1.2817127,0.5976725)                                     P1440170
      CVC = (0.0, 1.4142136)                                          P1440180
      DVC = (0.7071068, 0.7071068)                                    P1440190
      EVC = (1.0986841, 0.4550899)                                    P1440200
      AVI = 2                                                         P1440210
      RVC=(AVC*BVC+(0.9396926,0.3420201)*BVC+AVC*(1.2817127,0.5976725)- P1440220
```

```
     1(0.9396926,0.3420201)*(1.2817127,0.5976725)+CVC/DVC+(0.0,1.4142136P1440230
     2)/DVC+CVC/(0.7071068,0.7071068)-(0.0,1.4142136)/(0.7071068,       P1440240
     3 0.7071068)+EVC**2-EVC**AVI+(1.0986841,0.4550899)**2+(1.0986841,  P1440250
     4 0.4550899)**AVI)**2/(0.0, 72.0)                                  P1440260
      FVC=(0.0,4.0)                                                     P1440270
      GVC=(0.43301,0.3)                                                 P1440280
      HVC=(0.43301,0.2)                                                 P1440290
      PVC=(1.73204,1.0)                                                 P1440300
      SVC=FVC/((GVC+HVC)*(PVC**2))                                      P1440310
      TVC=(0.0,4.0)/(((0.43301,0.3)+(0.43301,0.2))*((1.73204,1.0)**2))  P1440320
      UVC=FVC/((GVC+(0.43301,0.2))*(PVC**2))                            P1440330
      WRITE (NUVI,1442) RVC,SVC,TVC,UVC                                 P1440340
1442  FORMAT ( 4(2X,2F8.4/) /37H  TEST IS POSITIVE IF NUMBERS PRINTED / P1440350
     12X, 17HABOVE ARE 1.0,0.0 )                                        P1440360
      WRITE (NUVI, 1443)                                                P1440370
1443  FORMAT(// 39H  ERROR SHOULD NOT EXCEED + OR - .0001 )             P1440380
C*****    END OF TEST SEGMENT 144                                       P1440390
C*****  WHEN EXECUTING ONLY SEGMENT 144, THE STOP AND END CARDS         P1440400
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1440410
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1440420
C=    STOP                                                            P1440430
C=    END                                                             P1440440
      STOP                                                            P144C1
      END                                                             P144C2
C*******************************************************************************P1450010
C*****                                                                 P1450020
C*****                         CREAD-(145)                             P1450030
C*****                                                                 P1450040
C*******************************************************************************P1450050
C*****  GENERAL PURPOSE                                        ASA REF P1450060
C*****  TO TEST ADDITION AND SUBTRACTION OF COMPLEX               6.1  P1450070
C*****  AND REAL NUMBERS                                               P1450080
C*****                                                                 P1450090
C*****  S P E C I F I C A T I O N S   SEGMENT 145                      P1450100
C*****                                                                 P0012770
C*****  WHEN EXECUTING ONLY SEGMENT 145, THE SPECIFICATION STATEMENTS  P0012775
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                     P0012780
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0012785
C*****                                                                 P0012790
C=    COMPLEX AVC,BAVC,CAVC,DAVC,ASVC,BSVC,CSVC,AAVC                  P0012795
C=   2 ,       DSVC,AAAVC,ABAVC,ACAVC,ADAVC,AASVC,ABSVC,ACSVC,ADSVC   P0012800
      COMPLEX AVC,BAVC,CAVC,DAVC,ASVC,BSVC,CSVC,AAVC                  P145A1
     2 ,       DSVC,AAAVC,ABAVC,ACAVC,ADAVC,AASVC,ABSVC,ACSVC,ADSVC   P145A2
C*****                                                                 P0012805
C*****  O U T O U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P1450110
C*****                                                                 P0072390
C*****  WHEN EXECUTING ONLY SEGMENT 145, THE FOLLOWING STATEMENT       P0072395
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.    P0072400
C*****                                                                 P0072405
C=    NUVI = 6                                                        P0072410
      NUVI = 6                                                        P145B1
C*****                                                                 P0072415
      WRITE (NUVI, 1450)                                              P1450120
 1450 FORMAT(1H1,1X,38HCREAD - (145) ADDITION AND SUBTRACTION/        P1450130
     1 10X,27HOF COMPLEX AND REAL NUMBERS//2X,                        P1450140
     1 12HASA REF. 6.1//2X,7HRESULTS//)                               P1450150
      AVC=(5.4,7.5)                                                   P1450160
      AVS=4.2                                                         P1450170
C***** ADDITION AND SUBTRACTION OF 2 NUMBERS                          P1450180
      AAVC=AVC-AVS                                                    P1450190
      BAVC=(5.4,7.5)-AVS                                              P1450200
      CAVC=AVC-4.2                                                    P1450210
      DAVC=(5.4,7.5)-4.2                                              P1450220
      ASVC=AVC+AVS                                                    P1450230
      BSVC=(5.4,7.5)+AVS                                              P1450240
      CSVC=AVC+4.2                                                    P1450250
      DSVC=(5.4,7.5)+4.2                                              P1450260
C***** ADDITION AND SUBTRACTION OF 3 NUMBERS                          P1450270
```

```
      AAAVC=AVC-AVS-AAVC                                                P1450280
      ABAVC=(5.4,7.5)-AVS-BAVC                                          P1450290
      ACAVC=AVC-4.2-(1.2,7.5)                                           P1450300
      ADAVC=(5.4,7.5)-4.2-(1.2,7.5)                                     P1450310
      AASVC=AVC+AVS-ASVC                                                P1450320
      ABSVC=(5.4,7.5)+AVS-BSVC                                          P1450330
      ACSVC=AVC+4.2-(9.6,7.5)                                           P1450340
      ADSVC=(5.4,7.5)+4.2-(9.6,7.5)                                     P1450350
      WRITE(NUVI,1451)ABAVC,ACAVC,ADAVC,AASVC,ABSVC,ACSVC,ADSVC,AAAVC   P1450360
1451  FORMAT( 2X, 2F8.4)                                                P1450370
C***** ADDITION AND SUBTRACTION OF 7 NUMBERS                            P1450380
      ADSVC=AVC-(5.4,7.5)+AVS-4.2+ASVC-3.2-(6.4,7.5)                    P1450390
      WRITE(NUVI,1452) ADSVC                                            P1450400
 1452 FORMAT(2X,2F8.4//37H  TEST IS POSITIVE IF NUMBERS PRINTED/2X,     P1450410
     1 17HABOVE ARE 0.0,0.0)                                            P1450420
C*****    END OF TEST SEGMENT 145                                       P1450430
C*****  WHEN EXECUTING ONLY SEGMENT 145, THE STOP AND END CARDS         P1450440
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1450450
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1450460
C=    STOP                                                              P1450470
C=    END                                                               P1450480
      STOP                                                              P145C1
      END                                                               P145C2
C*******************************************************************************P1460010
C*****                                                                  P1460020
C*****                          CREMU - (146)                           P1460030
C*****                                                                  P1460040
C*******************************************************************************P1460050
C*****              GENERAL PURPOSE                              ASA REF P1460060
C*****    TO TEST MULTIPLICATION OF COMPLEX NUMBERS BY            6.1   P1460070
C*****    REAL NUMBERS                                                  P1460080
C*****                                                                  P1460090
C*****  S P E C I F I C A T I O N S   SEGMENT 146                       P1460100
C*****                                                                  P0012810
C*****  WHEN EXECUTING ONLY SEGMENT 146, THE SPECIFICATION STATEMENTS   P0012815
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                      P0012820
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0012825
C*****                                                                  P0012830
C=    COMPLEX AVC,BVC,     MAVC,MBVC,MCVC,MDVC                          P0012835
      COMPLEX AVC,BVC,     MAVC,MBVC,MCVC,MDVC                          P146A1
C*****                                                                  P0012840
C*****  O U T O U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P1460110
C*****                                                                  P0072420
C*****  WHEN EXECUTING ONLY SEGMENT 146, THE FOLLOWING STATEMENT        P0072425
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.     P0072430
C*****                                                                  P0072435
C=    NUVI = 6                                                          P0072440
      NUVI = 6                                                          P146B1
C*****                                                                  P0072445
      WRITE (NUVI, 1461)                                                P1460120
 1461 FORMAT(1H1,1X,39HCREMU - (146) MULTIPLICATION OF COMPLEX/16X,     P1460130
     1 7HBY REAL   //2X,                                                P1460140
     2 11HASA.REF.6.1//2X,7HRESULTS//)                                  P1460150
C*****MULTIPLICATION OF A COMPLEX NUMBER BY A REAL NUMBER               P1460160
      AVC=(1.6,3.2)                                                     P1460170
      AVS=0.625                                                         P1460180
      MAVC=AVC*AVS                                                      P1460190
      MBVC=(1.6,3.2)*AVS                                                P1460200
      MCVC=AVC*0.625                                                    P1460210
      MDVC=(1.6,3.2)*0.625                                              P1460220
      WRITE (NUVI,1463) MAVC,MBVC,MCVC,MDVC                             P1460230
1463  FORMAT(4(2X,2F8.4/)//37H  TEST IS POSITIVE IF NUMBERS PRINTED/,2X,P1460240
     417HABOVE ARE 1.0,2.0 )                                            P1460250
C*****MULTIPLICATION OF 4 TERMS                                         P1460260
      AVS=4.0                                                           P1460270
      BVS=0.25                                                          P1460280
      AVC=(0.93969,0.34202)                                             P1460290
      BVC=(1.28168,0.59764)                                             P1460300
```

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      MAVC=AVS*AVC*BVS*BVC                                              P1460310
      MBVC=4.0*BVS*AVC*BVC                                              P1460320
      MCVC=4.0*BVS*(0.93969,0.34202)*BVC                                P1460330
      MDVC=4.0*0.25*(0.93969,0.34202)*(1.28168,0.59764)                 P1460340
      WRITE (NUVI,1462) MAVC,MBVC,MCVC,MDVC                             P1460350
 1462 FORMAT(//4(2X,2F8.4)//37H  TEST IS POSITIVE IF NUMBERS PRINTEO/   P1460360
     12X,17HABOVE ARE 1.0,1.0)                                          P1460370
      WRITE (NUVI, 1464)                                                P1460380
1464  FORMAT(// 39H  ERROR SHOULD NOT EXCEED + OR - .0001 )             P1460390
C*****    END OF TEST SEGMENT 146                                       P1460400
C*****  WHEN EXECUTING ONLY SEGMENT 146, THE STOP AND END CARDS         P1460410
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1460420
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1460430
C=    STOP                                                              P1460440
C=    END                                                               P1460450
      STOP                                                              P146C1
      END                                                               P146C2
C*******************************************************************************P1470010
C*****                                                                 P1470020
C*****                          CREOV - (147)                          P1470030
C*****                                                                 P1470040
C*******************************************************************************P1470050
C*****              GENERAL PURPOSE                              ASA REF P1470060
C*****  TO TEST DIVISION OF REAL (COMPLEX) NUMBERS BY              6.1   P1470070
C*****  COMPLEX (REAL) NUMBERS                                           P1470080
C*****                                                                 P1470090
C*****  S P E C I F I C A T I O N S   SEGMENT 147                       P1470100
C*****                                                                 P0012850
C*****  WHEN EXECUTING ONLY SEGMENT 147, THE SPECIFICATION STATEMENTS   P0012855
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                      P0012860
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0012865
C*****                                                                 P0012870
C=    COMPLEX AVC,DAVC,OBVC,DCVC,DDVC                                   P0012875
      COMPLEX AVC,DAVC,DBVC,DCVC,DDVC                                   P147A1
C*****                                                                 P0012880
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P1470110
C*****                                                                 P0072450
C*****  WHEN EXECUTING ONLY SEGMENT 147, THE FOLLOWING STATEMENT        P0072455
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.     P0072460
C*****                                                                 P0072465
C=    NUVI = 6                                                          P0072470
      NUVI = 6                                                          P147B1
C*****                                                                 P0072475
      WRITE (NUVI, 1471)                                                P1470120
1471  FORMAT (1H1,1X,33HCREDV - (147) DIVISION OF COMPLEX/16X,16HAND REAP1470130
     1L NUMBERS//2X,11HASA REF 6.1//2X,7HRESULTS//)                     P1470140
C*****DIVISION OF REAL BY COMPLEX                                       P1470150
      AVS=2.0                                                           P1470160
      AVC=(1.0, -1.0)                                                   P1470170
      DAVC=AVS/AVC                                                      P1470180
      DBVC=2.0/AVC                                                      P1470190
      DCVC=AVS/(1.0, -1.0)                                              P1470200
      DDVC=2.0/(1.0, -1.0)                                              P1470210
      WRITE (NUVI,1473) DAVC,DBVC,DCVC,DDVC                             P1470220
1473  FORMAT( 2X, 2F8.4)                                                P1470230
C*****DIVISION OF COMPLEX BY REAL                                       P1470240
      AVS=2.5463                                                        P1470250
      AVC=(2.5463,2.5463)                                               P1470260
      DAVC=AVC/AVS                                                      P1470270
      DBVC=(2.5463,2.5463)/AVS                                          P1470280
      DCVC=AVC/2.5463                                                   P1470290
      DDVC=(2.5463,2.5463)/2.5463                                       P1470300
      WRITE (NUVI,1472) DAVC,DBVC,DCVC,DDVC                             P1470310
1472  FORMAT (4(2X,2F8.4)//37H  TEST IS POSITIVE IF NUMBERS PRINTED/    P1470320
     1 2X,17HABOVE ARE 1.0,1.0)                                         P1470330
      WRITE (NUVI, 1474)                                                P1470340
1474  FORMAT(// 39H  ERROR SHOULD NOT EXCEED + OR - .0001 )             P1470350
C*****    END OF TEST SEGMENT 147                                       P1470360
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C*****  WHEN EXECUTING ONLY SEGMENT 147, THE STOP AND END CARDS          P1470370
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P1470380
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P1470390
C=     STOP                                                             P1470400
C=     END                                                              P1470410
       STOP                                                             P147C1
       END                                                              P147C2
C*******************************************************************************P1480010
C*****                                                                  P1480020
C*****                          CREOP - (148)                           P1480030
C*****                                                                  P1480040
C*******************************************************************************P1480050
C*****                 GENERAL PURPOSE                          ASA REF P1480060
C*****   TO TEST COMBINED OPERATIONS ON COMPLEX AND REAL NUMBERS    6.1 P1480070
C*****DIVISION OF TWO POLYNOMIALS                                       P1480080
C*****                                                                  P1480090
C*****  S P E C I F I C A T I O N S   SEGMENT 148                        P1480100
C*****                                                                  P0012890
C*****  WHEN EXECUTING ONLY SEGMENT 148, THE SPECIFICATION STATEMENTS   P0012895
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                      P0012900
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0012905
C*****                                                                  P0012910
C=     INTEGER AVI                                                      P0012915
C=     COMPLEX, AVC, BVC, CVC, DVC, RVC                                 P0012920
       INTEGER AVI                                                      P148A1
       COMPLEX AVC,BVC,CVC,DVC,RVC                                      P148A2
C*****                                                                  P0012925
C*****  O U T O U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P1480110
C*****                                                                  P0072480
C*****  WHEN EXECUTING ONLY SEGMENT 148, THE FOLLOWING STATEMENT        P0072485
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.     P0072490
C*****                                                                  P0072495
C=     NUVI = 6                                                         P0072500
       NUVI = 6                                                         P148B1
C*****                                                                  P0072505
       WRITE (NUVI, 1481)                                               P1480120
 1481 FORMAT(1H1,1X,36HCREOP - (148) OPERATIONS ON REAL AND/16X,15HCOMPLP1480130
     1EX NUMBERS//  2X,12HASA REF. 6.1//2X, 7HRESULTS//)                P1480140
       AVC=(1.0,1.0)                                                    P1480150
       AVS=1.0                                                          P1480160
       BVS = 2.0                                                        P1480170
       BVC=(1.0,-1.0)                                                   P1480180
       RVC = (BVS + AVC *(1.+AVC * (-1.+(1.0,1.0)*(-1. +AVC))))/        P1480190
     1 (4.0+BVC*(2.0+BVC*(-AVS+BVC*(0.5+BVC))))                         P1480200
       WRITE (NUVI,1483) RVC                                            P1480210
1483  FORMAT(              2X,2F8.4//37H  TEST IS POSITIVE IF NUMBERS PRIP1480220
     3NTED/2X,18HABOVE ARE 2.0,-1.0//)                                  P1480230
C*****COMPLEX ARITHMETIC EXPRESSION                                     P1480240
       AVC=(1.60,3.2)                                                   P1480250
       AVS=0.625                                                        P1480260
       BVS=2.0                                                          P1480270
       BVC=(1.0,-1.0)                                                   P1480280
       CVS=2.5                                                          P1480290
       CVC=(2.5,2.5)                                                    P1480300
       OVC = (1.09866,0.45508)                                          P1480310
       AVI = 2                                                          P1480320
       RVC=(AVC*AVS+(1.6,3.2)*AVS-AVC*0.625-(1.6,3.2)*0.625+BVS/BVC     P1480330
      1-BVS/(1.0,-1.0)+2.0/BVC+2.0/(1.0,-1.0)+CVC/CVS-(2.5,2.5)/CVS+    P1480340
      2CVC/2.5+(2.5,2.5)/2.5+DVC**AVI-(1.09866,0.45508)**2+DVC**2+      P1480350
      3(1.09866,0.45508)**AVI)**2/(0.0,72.0)                            P1480360
       WRITE (NUVI,1482) RVC                                            P1480370
 1482 FORMAT(2X,2F8.4//   37H  TEST IS POSITIVE IF NUMBERS PRINTED/2X,  P1480380
     1 17HABOVE ARE 1.0,0.0)                                            P1480390
       WRITE (NUVI, 1484)                                               P1480400
1484  FORMAT(// 39H  ERROR SHOULD NOT EXCEED + OR - .0001 )             P1480410
C*****    END OF TEST SEGMENT 148                                       P1480420
C*****  WHEN EXECUTING ONLY SEGMENT 148, THE STOP AND END CARDS         P1480430
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1480440
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C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1480450
C=    STOP                                                              P1480460
C=    END                                                               P1480470
      STOP                                                              P148C1
      END                                                               P148C2
C***********************************************************************P1490010
C*****                                                                  P1490020
C*****                         MISC3 - (149)                            P1490030
C*****                                                                  P1490040
C***********************************************************************P1490050
C*****                 GENERAL PURPOSE                          ASA REF P1490060
C*****   TO TEST EFFECT OF BLANKS WITHIN STATEMENT,             3.1.4.1 P1490070
C*****   CONTINUATION OF STATEMENT TO MAX.NO.OF LINES,         3.2.4,3.3P1490080
C*****   AND USE OF SPECIAL CHARACTERS TO INDICATE CONTINUATION   3.2.4 P1490090
C*****   LINE -                                                         P1490100
C*****   FOR BASIC INTEGERS AND REAL NUMBERS                            P1490110
C*****                                                                  P1490120
C*****  S P E C I F I C A T I O N S   SEGMENT 149                       P1490130
C*****                                                                  P0012930
C*****  WHEN EXECUTING ONLY SEGMENT 149, THE SPECIFICATION STATEMENTS   P0012935
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                      P0012940
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0012945
C*****                                                                  P0012950
C=    DIMENSION A1S(5),A2S(2,2)                                         P0012955
C=    INTEGER I1I(5),I2I(2,2)                                           P0012960
      DIMENSION A1S(5),A2S(2,2)                                         P149A1
      INTEGER I1I(5),I2I(2,2)                                           P149A2
C*****                                                                  P0012965
C*****  O U T O U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P1490140
C*****                                                                  P0072510
C*****  WHEN EXECUTING ONLY SEGMENT 149, THE FOLLOWING STATEMENT        P0072515
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.     P0072520
C*****                                                                  P0072525
C=    NUVI = 6                                                          P0072530
      NUVI = 6                                                          P149B1
C*****                                                                  P0072535
      WRITE (NUVI,1490)                                                 P1490150
1490  FORMAT(1H1,1X,37HMISC3 - (149) EFFECT OF BLANKS WITHIN/16X,       P1490160
     122HSTMNT AND CONTINUATION/16X,20HOF STMNT TO 20 LINES//           P1490170
     239H  ASA REFS. - 3.1.4.1  3.2.4.3.3  3.2.4//2X,7HRESULTS  )       P1490180
      J  A  C   V  I        =              1                            P1490190
      I                                                                 P1490200
     =1                                                                 P1490210
     +I                                                                 P1490220
     -(                                                                 P1490230
     *2                                                                 P1490240
     /)                     =2                                          P1490250
      I     2I(   2  ,  1)   =   3                                      P1490260
      A   CV     S    =    -   1  .0    E    0                          P1490270
      A   1   S   (    2)     =     -2     00  .  E   -  2              P1490280
      A   2   S   (   2    ,   1  )    =   -  .0 3    E  +  2           P1490290
      K   B                                                             P1490300
     *        CVI                                                       P1490310
     (                  =                                               P1490320
     )                   J     A                                        P1490330
     $                    C           V                                 P1490340
     .                           I                                      P1490350
     ,                                  +         I                     P1490360
     /                                              1    I              P1490370
     =                                                     (   2        P1490380
     1                                                          )       P1490390
     2                                                                 +P1490400
     3I                                                                 P1490410
     4           2                                                      P1490420
     5                 I                                                P1490430
     6                      (                                           P1490440
     7                                  2                               P1490450
     8   .                                                              P1490460
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     9                                      1                                 P1490470
     A                                      )                                 P1490480
     B                                                       -       6        P1490490
      C          M                                                            P1490500
     =         A                                                              P1490510
     ,                    V       S                                           P1490520
     (                          =                                             P1490530
     $                                 A                                      P1490540
     *                                         C                              P1490550
     .                                                   V                    P1490560
     )                                                                       SP1490570
     / +                                                                      P1490580
     1    A          1                                                        P1490590
     2                  S                                                     P1490600
     3                                                                       (P1490610
     42)                                                                     +P1490620
     5          A                                                             P1490630
     6                 2                                                      P1490640
     7                           S        (                                   P1490650
     8                   2                                    1               P1490660
     9)                                                                       P1490670
     A                +                                                       P1490680
     B                           6          .               0                 P1490690
      W     RI  T  E     (NU  VI  , 1 49 1 ) KB CVI  , CMA  VS                P1490700
1 491 F O RM A T (//I10//F11.1// 2 X, 35HTEST IS POSITIVE IF NUMBERS PRIP1490710
     1NTED/  2    X,    1   1HABOVE ARE 0)                                    P1490720
C*****     END OF TEST SEGMENT 149                                            P1490730
C*****   WHEN EXECUTING ONLY SEGMENT 149, THE STOP AND END CARDS             P1490740
C*****   WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                      P1490750
C*****   IN COLUMNS  1  AND  2  REMOVED.                                     P1490760
C=    STOP                                                                    P1490770
C=    END                                                                     P1490780
      STOP                                                                    P149C1
      END                                                                     P149C2
C***********************************************************************P1500010
C*****                                                                        P1500020
C*****                     MISC4 - (150)                                      P1500030
C*****                                                                        P1500040
C***********************************************************************P1500050
C*****                   GENERAL PURPOSE                              ASA REF P1500060
C*****    TO TEST EFFECT OF BLANKS WITHIN STATEMENT,                  3.1.4.1 P1500070
C*****    CONTINUATION OF STATEMENT TO 20 LINES,                    3.2.4.3.3P1500080
C*****    AND USE OF SPECIAL CHARACTERS TO INDICATE CONTINUATION      3.2.4 P1500090
C*****   CONTINUATION LINE CAN CONTAIN FORTRAN CHARACTERS                     P1500100
C*****   (OTHER THAN C IN COLUMN 1) IN COLUMNS 1 THRU 5 (CLARIFICATION 3)P1500110
C*****                                                                        P1500120
C*****   S P E C I F I C A T I O N S   SEGMENT 150                            P1500130
C*****                                                                        P0012970
C*****   WHEN EXECUTING ONLY SEGMENT 150, THE SPECIFICATION STATEMENTS        P0012975
C*****   WHICH APPEAR AS COMMENTS MUST HAVE THE  C=                            P0012980
C*****   IN COLUMNS  1  AND  2  REMOVED.                                      P0012985
C*****                                                                        P0012990
C=    INTEGER AVI                                                             P0012995
C=    COMPLEX AVC,BVC,CVC,DVC,RVC                                             P0013000
      INTEGER AVI                                                             P150A1
      COMPLEX AVC,BVC,CVC,DVC,RVC                                             P150A2
C*****                                                                        P0013005
C*****   O U T O U T   T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.         P1500140
C*****                                                                        P0072540
C*****   WHEN EXECUTING ONLY SEGMENT 150, THE FOLLOWING STATEMENT             P0072545
C*****   NUVI = 6  MUST HAVE THE C=  IN COLUMNS  1  AND  2  REMOVED.          P0072550
C*****                                                                        P0072555
C=    NUVI = 6                                                                P0072560
      NUVI = 6                                                                P150B1
C*****                                                                        P0072565
      WRITE (NUVI, 1500)                                                      P1500150
1 500 F  O  RM  A  T(  1  H1  ,   1  X     13  HMISC4 - (150)                 P1500160
     X,1X,  2 3  HEFFECT OF BLANKS WITHIN    /   16X,   22HSTMNT AND CONP1500170
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     YTINUATION/ 16X,  20HOF STMNT TO 20 LINES//                          P1500180
     I39H  ASA REFS. - 3.1.4.1  3.2.4.3.3  3.2.4//2X,7HRESULTS//)         P1500190
      AVC = (1    .0    ,   1     .0)                                     P1500200
      AVS = 1.        0                                                   P1500210
      B V S       =                   2 .                 0               P1500220
      BVC=   (1 .0    ,-  1 .0)                                           P1500230
      RVC = (B VS +A  V   C*(  1 . +A VC *(  - 1.+    (1     .0,   1     P1500240
     T.  0   )   *(     -     1  .0+   A  V     C )   ))  )    /(         P1500250
     U4  .0   +     BV    C   *     (2    .   0    +    BVC     *         P1500260
     V(   -    A   V      S   + B  V  C   *(      0   .  5   +  B         P1500270
     WV   C  )      )     )    )                                          P1500280
      RVC         =               RV      C       +(-2.0,     +1      .0) P1500290
      W   RI   T E       (N  UV   I ,  15  02   )     R    VC             P1500300
1502  FORMAT( 2X, 2F8.4)                                                  P1500310
C*****COMPLEX ARITHMETIC EXPRESSION                                       P1500320
C*****  STATEMENT LABEL NOT REFERENCED                               3.4 P1500330
1503  A                                                                   P1500340
VC=1.+V                                                                   P1500350
     -C                                                                   P1500360
     *   =                                                                P1500370
     /      (                                                             P1500380
     (1                                                                   P1500390
     ).                                                                   P1500400
     ,6                                                                   P1500410
     .0                                                                   P1500420
     I,                                                                   P1500430
     J3                                                                   P1500440
     K.                                                                   P1500450
     L2                                                                   P1500460
     M                              )                                     P1500470
C*****  CONTINUE STATEMENT WITH NO LABEL                             3.4 P1500480
      CONTINUE                                                            P1500490
      AVS = 0.625                                                         P1500500
      BVS = 2.0                                                           P1500510
      BVC = (1.0,-1.0)                                                    P1500520
      CVS = 2.5                                                           P1500530
      CVC = (2.5,2.5)                                                     P1500540
      DVC = (1.0986841, 0.4550899)                                        P1500550
      AVI = 2                                                             P1500560
      RVC                          =                                      P1500570
     B(AVC*AVS                                                            P1500580
     C+(1.6,3.2)                                                          P1500590
     D*AVS-AVC                                                            P1500600
     E*0.625                                                              P1500610
     F-(1.6,3.2)                                                          P1500620
     G*0.625                                                              P1500630
     H+BVS/BVC                                                            P1500640
     I-BVS/(1.0,-1.0)                                                     P1500650
     J+2.0/BVC+2.0/                                                       P1500660
     K(1.0,-1.0)+CVC/CVS                                                  P1500670
     L-(2.5,2.5)/CVS+CVC/2.5                                              P1500680
     M+(2.5,2.5)/2.5+DVC**AVI                                             P1500690
     N-(1.0986841,0.4550899)**2                                           P1500700
     O+DVC**2                                                             P1500710
     P+                                                                   P1500720
     Q(1.0986841,0.4550899)                                               P1500730
     R**AVI)                                                              P1500740
     S**2/(0.0,72.0)                                                      P1500750
     T       -(1.0,0.0)                                                   P1500760
      W   R    I  T   E   (  N U V I  ,    1  5 0 1) R  V  C              P1500770
15 01 FORM  AT(/          /2    X  ,  2    F      8        .        4     P1500780
1501 Z/ /  3      7H  TEST IS POSITIVE IF NUMBERS PRINTED/    2X          P1500790
     =,    1   7    HABOVE ARE 0.0,0.0        )                           P1500800
C*****    END OF TEST SEGMENT 150                                         P1500810
C*****  WHEN EXECUTING ONLY SEGMENT 150, THE STOP AND END CARDS           P1500820
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                   P1500830
C*****  IN COLUMNS  1  AND  2  REMOVED.                                   P1500840
C=    STOP                                                                P1500850
```

```
C=    END                                                                   P1500860
      STOP                                                                  P150C1
      END                                                                   P150C2
C*************************************************************************P1600010
C*****                                                                     P1600020
C*****                    BRFCP - (160)                                    P1600030
C*****                                                                     P1600040
C*************************************************************************P1600050
C*****  GENERAL PURPOSE                                          ASA REFP1600060
C*****    1.TO TEST REAL FUNCTIONS                                 8.3.1P1600070
C*****    2.OUMMY ARGUMENTS ARE REAL OR INTEGER VARIABLES,OR             P1600080
C*****      ARRAY NAMES                                                  P1600090
C*****    3.FUNCTIONS CONTAIN UP TO 20 ARGUMENTS                         P1600100
C*****    4.IN REFERENCE, ACTUAL ARGUMENTS ARE VARIABLE NAME,            P1600110
C*****      ARRAY NAME, ARRAY ELEMENT NAME, OR AN ARITHMETIC             P1600120
C*****      EXPRESSION                                             8.3.2P1600130
C*****  RESTRICTIONS OBSERVEO                                          P1600140
C*****    1.ITEMS(2),(3),(4),(5),(6) OF PARAGRAPH 8.3.1                P1600150
C*****    2.LAST SENTENCE OF PARAGRAPH 3.2                             P1600160
C*****    THIS SEGMENT IS TO BE RUN WITH SEGMENTS                      P1600170
C*****     400, 420, 430, 440, 450, 460                    WHICH       P1600180
C*****     CONTAINS ALL FUNCTIONS BEING TESTEO HERE.                    P1600190
C*****                                                                  P1600200
C*****  S P E C I F I C A T I O N S  SEGMENT 160                        P1600210
C*****                                                                  P0013010
C*****  WHEN EXECUTING ONLY SEGMENT 160, THE SPECIFICATION STATEMENTS   P0013015
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                  P0013020
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                 P0013025
C*****                                                                  P0013030
C=    OIMENSION A1S(5),A2S(2,2)                                         P0013035
      DIMENSION A1S(5),A2S(2,2)                                         P160A1
C*****                                                                  P0013040
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P1600220
C*****  WHEN EXECUTING ONLY SEGMENT 160, THE FOLLOWING STATEMENT        P0072570
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 ANO 2 REMOVEO.         P0072575
C*****                                                                  P0072580
C=    NUVI = 6                                                          P0072585
      NUVI = 6                                                          P160B1
      WRITE(NUVI,1604)                                                  P1600230
1604  FORMAT(1H1,1X,37HBRFCP - (160) REAL EXTERNAL FUNCTIONS/           P1600240
     1 /2X,16HASA REF. - 8.3.1//28H  RESULTS SHOULO BE POSITIVE)        P1600250
      IAVI=2                                                            P1600260
      A1S(1)=1.0                                                        P1600270
      A1S(2)=1.0                                                        P1600280
      A2S(2,2)=1.0                                                      P1600290
      A2S(2,1)=1.0                                                      P1600300
      AVS=1.0                                                           P1600310
      BVS=2.0                                                           P1600320
      CVS=1.0                                                           P1600330
      DVS=1.0                                                           P1600340
      EVS=1.0                                                           P1600350
      IVI=AFS(2.0)-8.0                                                  P1600360
      MAVI=1                                                            P1600370
      IF(IVI)1600,1601,1600                                             P1600380
 1605 IVI=BFS(2.0,BVS)-4.0                                              P1600390
      MAVI=2                                                            P1600400
      IF(IVI)1600,1601,1600                                             P1600410
 1606 IVI   CFS(2) -16.0                                                P1600420
      MAV                                                               P1600430
      IF .v  1600,1601,1600                                             P1600440
 1607   .=DFS(2,IAVI)-1.0                                               P1600450
       AVI=4                                                            P1600460
      IF(IVI)1600,1601,1600                                             P1600470
 160  IVI=EFS(A1S)-2.0                                                  P1600480
      MAVI=5                                                            P1600490
      IF(IVI)1600,1601,1600                                             P1600500
 1609 IVI=FFS(IAVI,AVS,+2,-1.0,A1S,IAVI,CVS,A1S,1.0,IAVI,A1S,A1S,BVS,0VSP1600510
     1 ,A1S(1),A2S,A2S,A2S,EVS+1.0,IAVI-1) + 1.0                        P1600520
```

```
      MAVI=6                                                            P1600530
      IF(IVI) 1600,1601,1600                                            P1600540
 1600 WRITE (NUVI,1602)MAVI                                             P1600550
      GO TO 7001                                                        P1600560
 1601 WRITE (NUVI,1603)MAVI                                             P1600570
1602  FORMAT (//2X,5HTEST ,I1,12H IS NEGATIVE)                          P1600580
1603  FORMAT (//2X,5HTEST ,I1,12H IS POSITIVE)                          P1600590
 7001 GO TO (1605,1606,1607,1608,1609,7000  ),MAVI                      P1600600
 7000 CONTINUE                                                          P1600610
C*****    END OF TEST SEGMENT 160                                       P1600620
C*****  WHEN EXECUTING ONLY SEGMENT 160, THE STOP  AND  END CARDS       P1600630
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=  IN              P1600640
C*****  COLUMNS  1  AND  2  REMOVED.                                    P1600650
C=    STOP                                                            P1600660
C=    END                                                             P1600670
      STOP                                                            P160C1
      END                                                             P160C2
C*******************************************************************************P4000010
C*****                                                                 P4000020
C*****                          AFS - (400)                            P4000030
C*****                                                                 P4000040
C*******************************************************************************P4000050
C*****REAL FUNCTION OF REAL ARGUMENT (TEST 1)                          P4000060
      FUNCTION  AFS(AWVS)                                             P4000070
      AFS=4.0*AWVS                                                    P4000080
      RETURN                                                          P4000090
      END                                                             P4000100
C*******************************************************************************P4200010
C*****                                                                 P4200020
C*****                          BFS - (420)                            P4200030
C*****                                                                 P4200040
C*******************************************************************************P4200050
C*****REAL FUNCTION OF REAL ARGUMENTS (TEST 2)                         P4200060
      FUNCTION BFS(AWVS,BWVS)                                         P4200070
      BFS=AWVS+BWVS                                                   P4200080
      RETURN                                                          P4200090
      END                                                             P4200100
C*******************************************************************************P4300010
C*****                                                                 P4300020
C*****                          CFS - (430)                            P4300030
C*****                                                                 P4300040
C*******************************************************************************P4300050
C*****REAL FUNCTION OF INTEGER ARGUMENT  (TEST 3)                      P4300060
      FUNCTION  CFS(IWVI)                                             P4300070
      CFS=4.0**IWVI                                                   P4300080
      RETURN                                                          P4300090
      END                                                             P4300100
C*******************************************************************************P4400010
C*****                                                                 P4400020
C*****                          DFS - (440)                            P4400030
C*****                                                                 P4400040
C*******************************************************************************P4400050
C*****REAL FUNCTION OF INTEGER ARGUMENTS (TEST 4)                      P4400060
      FUNCTION DFS(IWVI,JWVI)                                         P4400070
      KVI  = IWVI - JWVI                                              P4400080
      DFS=4.6**KVI                                                    P4400090
      RETURN                                                          P4400100
      END                                                             P4400110
C*******************************************************************************P4500010
C*****                                                                 P4500020
C*****                          EFS - (450)                            P4500030
C*****                                                                 P4500040
C*******************************************************************************P4500050
C*****REAL FUNCTION OF ARRAY NAME(TEST 5)                              P4500060
      FUNCTION EFS(AW1S)                                              P4500070
      DIMENSION AW1S(2)                                               P4500080
      EFS=AW1S(1)+AW1S(2)                                             P4500090
      RETURN                                                          P4500100
```

```
      END                                                                P4500110
C*************************************************************************P4600010
C*****                                                                   P4600020
C*****                          FFS - (460)                              P4600030
C*****                                                                   P4600040
C*************************************************************************P4600050
C*****REAL FUNCTION OF DIFFERENT TYPES OF ARGUMENTS(TEST 6)              P4600060
      FUNCTION FFS(IWVI,AWVS,JWVI,BWVS,AW1S,KWVI,CWVS,BW1S,DWVS,LWVI,    P4600070
     1CW1S,DW1S,EWVS,FWVS,GWVS,BW2S,CW2S,DW2S,HWVS,MWVI)                 P4600080
      DIMENSION  AW1S(2),BW1S(2),CW1S(2),DW1S(2),BW2S(2,2),CW2S(2,2),    P4600090
     1DW2S(2,2)                                                         P4600100
      FFS=AWVS**IWVI-BWVS**JWVI+AW1S(1)-CWVS**KWVI+BW1S(2)-DWVS+CW1S(1) P4600110
     1**LWVI+DW1S(1)-EWVS+FWVS-GWVS+BW2S(2,1)-CW2S(2,2)+DW2S(2,2)-HWVS**P4600120
     2MWVI                                                              P4600130
      RETURN                                                            P4600140
      END                                                               P4600150
C*************************************************************************P1610010
C*****                                                                   P1610020
C*****                    BIFCP - (161)                                  P1610030
C*****                                                                   P1610040
C*************************************************************************P1610050
C*****  GENERAL PURPOSE                                        ASA REF  P1610060
C*****     1-TO TEST INTEGER FUNCTIONS                          8.3.1P1610070
C*****     2-DUMMY ARGUMENTS ARE REAL OR INTEGER VARIABLES OR          P1610080
C*****       ARRAY NAMES                                        8.3.1P1610090
C*****     3-FUNCTIONS CONTAIN UP TO 20 ARGUMENTS                      P1610100
C*****     4-IN REFERENCE,ACTUAL ARGUMENTS ARE VARIABLE NAME,          P1610110
C*****      ARRAY NAME,ARRAY ELEMENT NAME,OR AN ARITHMETIC             P1610120
C*****      EXPRESSION                                         8.3.2P1610130
C*****RESTRICTIONS OBSERVED                                           P1610140
C*****     1-ITEMS (2),(3),(4),(5),(6) OF PARAGRAPH  8.3.1           P1610150
C*****     2-LAST SENTENCE OF PARAGRAPH 3.2                          P1610160
C*****      THIS SEGMENT IS TO BE RUN WITH SEGMENTS                  P1610170
C*****      401, 421, 431, 441, 451, 461  WHICH                      P1610180
C*****      CONTAINS ALL FUNCTIONS BEING TESTED HERE.                P1610190
C*****                                                               P1610200
C*****  S P E C I F I C A T I O N S  SEGMENT 161                     P1610210
C*****                                                               P0013050
C*****  WHEN EXECUTING ONLY SEGMENT 161, THE SPECIFICATION STATEMENTS P0013055
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=               P0013060
C*****  IN COLUMNS 1  AND  2  REMOVED.                               P0013065
C*****                                                               P0013070
C=    DIMENSION A1S(5)                                               P0013075
C=    INTEGER I1I(5)                                                 P0013080
      DIMENSION A1S(5)                                               P161A1
      INTEGER I1I(5)                                                 P161A2
C*****                                                               P0013085
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.   P1610220
C*****                                                               P0072590
C*****  WHEN EXECUTING ONLY SEGMENT 161, THE STATEMENT  NUVI = 6     P0072595
C*****  MUST HAVE THE C= IN COLUMNS  1  AND 2  REMOVED.              P0072600
C*****                                                               P0072605
C=    NUVI = 6                                                       P0072610
      NUVI = 6                                                       P161B1
C*****                                                               P0072615
      WRITE(NUVI,1614)                                               P1610230
1614  FORMAT(1H1,1X,40HBIFCP - (161) INTEGER EXTERNAL FUNCTIONS/      P1610240
     1 16X,26HWITH INTEGER AND REAL ARGS//2X,16HASA REF. - 8.3.1//    P1610250
     228H  RESULTS SHOULD BE POSITIVE)                               P1610260
      IAVI=2                                                         P1610270
      A1S(1)=1.0                                                     P1610280
      A1S(2)=1.0                                                     P1610290
      I1I(1)=1                                                       P1610300
      I1I(2)=1                                                       P1610310
      AVS=1.0                                                        P1610320
      BVS=2.0                                                        P1610330
      CVS=1.0                                                        P1610340
      DVS=1.0                                                        P1610350
```

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      EVS=1.0                                                          P1610360
      IVI=IAFI(2.0) - 8                                                P1610370
      MAVI=1                                                           P1610380
      IF (IVI) 1610,1611,1610                                          P1610390
 1615 IVI=IBFI(2.0,BVS)-4                                              P1610400
      MAVI=2                                                           P1610410
      IF (IVI) 1610,1611,1610                                          P1610420
 1616 IVI = ICFI(2) - 16                                               P1610430
      MAVI=3                                                           P1610440
      IF (IVI) 1610,1611,1610                                          P1610450
 1617 IVI=IDFI(2,IAVI)-1                                               P1610460
      MAVI=4                                                           P1610470
      IF (IVI) 1610,1611,1610                                          P1610480
1618  IVI=IEFI(I1I)-2                                                  P1610490
      MAVI=5                                                           P1610500
      IF (IVI) 1610,1611,1610                                          P1610510
 1619 IVI=IFFI(IAVI,AVS,2,-1.0,A1S,IAVI,CVS,A1S,1.0,IAVI,A1S,A1S,BVS,  P1610520
     1DVS,A1S(1),A1S,A1S,A1S,EVS+1.0,IAVI-1) + 1                       P1610530
      MAVI=6                                                           P1610540
      IF(IVI) 1610,1611,1610                                           P1610550
 1610 WRITE(NUVI,1612)MAVI                                             P1610560
      GO TO 7002                                                       P1610570
 1611 WRITE(NUVI,1613)MAVI                                             P1610580
1612  FORMAT (//2X,5HTEST ,I1,12H IS NEGATIVE)                         P1610590
1613  FORMAT (//2X,5HTEST ,I1,12H IS POSITIVE)                         P1610600
 7002 GO TO (1615,1616,1617,1618,1619,7003),MAVI                       P1610610
 7003 CONTINUE                                                         P1610620
C*****    END OF TEST SEGMENT 161                                     P1610630
C*****  WHEN EXECUTING ONLY SEGMENT 161, THE  STOP  AND  END  CARDS   P1610640
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=               P1610650
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P1610660
C=    STOP                                                           P1610670
C=    END                                                            P1610680
      STOP                                                           P161C1
      END                                                            P161C2
C*************************************************************************P4010010
C*****                                                                P4010020
C*****                          IAFI - (401)                         P4010030
C*****                                                               P4010040
C*************************************************************************P4010050
C*****INTEGER FUNCTION OF REAL ARGUMENT (TEST 1)                     P4010060
      FUNCTION IAFI(AWVS)                                            P4010070
      IAFI=4.0*AWVS                                                  P4010080
      RETURN                                                         P4010090
      END                                                            P4010100
C*************************************************************************P4210010
C*****                                                                P4210020
C*****                          IBFI - (421)                         P4210030
C*****                                                               P4210040
C*************************************************************************P4210050
C*****INTEGER FUNCTION OF TWO REAL ARGUMENTS (TEST 2)                P4210060
      FUNCTION IBFI(AWVS,BWVS)                                       P4210070
      IBFI=AWVS+BWVS                                                 P4210080
      RETURN                                                         P4210090
      END                                                            P4210100
C*************************************************************************P4310010
C*****                                                                P4310020
C*****                          ICFI - (431)                         P4310030
C*****                                                               P4310040
C*************************************************************************P4310050
C*****INTEGER FUNCTION OF INTEGER ARGUMENT(TEST 3)                   P4310060
      FUNCTION ICFI(IWVI)                                            P4310070
      ICFI=4.0**IWVI                                                 P4310080
      RETURN                                                         P4310090
      END                                                            P4310100
C*************************************************************************P4410010
C*****                                                                P4410020
C*****                          IDFI - (441)                         P4410030
```

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C*****                                                                  P4410040
C*****************************************************************************P4410050
C*****INTEGER FUNCTION OF INTEGER ARGUMENTS (TEST 4)                     P4410060
      INTEGER FUNCTION IDFI (IWVI, JWVI)                                P4410070
      REAL KUVS                                                         P4410080
      IDFI = IWVI - JWVI                                                P4410090
      IDFI = KUVS ** IDFI                                               P4410100
      RETURN                                                            P4410110
      DATA KUVS /4.6/                                                   P4410120
      E N D                                                             P4410130
C*****************************************************************************P4510010
C*****                                                                  P4510020
C*****                          IEFI - (451)                            P4510030
C*****                                                                  P4510040
C*****************************************************************************P4510050
C*****INTEGER FUNCTION OF ARRAY NAME (TEST 5)                            P4510060
      FUNCTION IEFI(IAW1I)                                              P4510070
      DIMENSION IAW1I(2)                                                P4510080
      IEFI=IAW1I(1)+IAW1I(2)                                            P4510090
      RETURN                                                            P4510100
      END                                                               P4510110
C*****************************************************************************P4610010
C*****                                                                  P4610020
C*****                          IFFI - (461)                            P4610030
C*****                                                                  P4610040
C*****************************************************************************P4610050
C*****INTEGER FUNCTION OF DIFFERENT TYPES OF ARGUMENTS(TEST 6)           P4610060
      FUNCTION IFFI(IWVI,AWVS,JWVI,BWVS,AW1S,KWVI,CWVS,BW1S,DWVS,LWVI,  P4610070
     1CW1S,DW1S,EWVS,FWVS,GWVS,EW1S,GW1S,HW1S,HWVS,MWVI)                P4610080
      DIMENSION AW1S(2),BW1S(2),CW1S(2),DW1S(2),EW1S(5), GW1S(5),       P4610090
     1 HW1S(5)                                                          P4610100
      IFFI=AWVS**IWVI-BWVS**JWVI+AW1S(1)-CWVS**KWVI+BW1S(2)-DWVS+CW1S(1)P4610110
     1**LWVI+DW1S(1)-EWVS+FWVS-GWVS+EW1S(1)  -GW1S(2)  +HW1S(2)  -HWVS**P4610120
     2MWVI                                                              P4610130
      RETURN                                                            P4610140
      END                                                               P4610150
C*****************************************************************************P1620010
C*****                                                                  P1620020
C*****                    FRFCP - (162)                                 P1620030
C*****                                                                  P1620040
C*****************************************************************************P1620050
C*****                     GENERAL PURPOSE                        ASA REF P1620060
C*****  1.TO TEST REAL FUNCTIONS IN FULL FORTRAN                        P1620070
C*****  2.THIS SEGMENT COMPLETES SEGMENT (160) IN ORDER TO TEST         P1620080
C*****    FOR ALL FEATURES REQUIRED IN FULL FORTRAN              8.3.1P1620090
C*****  3.DUMMY ARGUMENTS CAN BE INTEGER(TESTED IN 160),REAL(TESTED IN  P1620100
C*****    160),ARRAY NAME(TESTED IN 160),DOUBLE PRECISION,COMPLEX,      P1620110
C*****    LOGICAL OR EXTERNAL PROCEDURE                          8.3.1P1620120
C*****  4.DUMMY ARGUMENTS MAY BE REDEFINED IN SUBPROGRAM(ITEM 4)  8.3.1P1620130
C*****  5.IN REFERENCE, ACTUAL ARGUMENTS MAY BE AS IN (160) AND         P1620140
C*****    BESIDES EXTERNAL PROCEDURE. IN THIS CASE, EXTERNAL     8.3.2P1620150
C*****    PROCEDURE IS REFERENCED BY AN EXTERNAL STATEMENT              P1620160
C*****  6.USE CAN BE MADE OF ADJUSTABLE DIMENSION                       P1620170
C*****RESTRICTIONS OBSERVED                                             P1620180
C*****  1.ITEMS (1), (2), (3), (5) OF 8.3.1                             P1620190
C*****  2.PARAGRAPH 8.3.2, LINE 18 TO END OF PARAGRAPH                  P1620200
C*****     THIS SEGMENT   USES   5 REAL FUNCTIONS                       P1620210
C*****     THIS SEGMENT IS TO BE RUN WITH SEGMENTS                      P1620220
C*****     402, 422, 432, 442, 452   WHICH                              P1620230
C*****    WHICH CONTAINS ALL FUNCTIONS BEING TESTED HERE                P1620240
C*****                                                                  P1620250
C*****  S P E C I F I C A T I O N S  SEGMENT 162                        P1620260
C*****                                                                  P0013090
C*****  WHEN EXECUTING ONLY SEGMENT 162, THE SPECIFICATION STATEMENTS   P0013095
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0013100
C*****  IN COLUMNS 1  AND  2  REMOVED.                                  P0013105
C*****                                                                  P0013110
C=    DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                              P0013115
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```
C=     INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                                P0013120
C=     REAL JRFS,IRFS                                                    P0013125
C=     LOGICAL A1B(2),A2B(2,2),A3B(2,2,2),AVB,BVB                        P0013130
C=     DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                   P0013135
C=     COMPLEX AVC,BVC,A1C(12),A2C(2,2),A3C(2,2,1)                       P0013140
C=     COMMON AXVS,CXVS                                                  P0013145
C=     EXTERNAL GFS                                                      P0013150
       DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                              P162A1
       INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                                P162A2
       REAL JRFS,IRFS                                                    P162A3
       LOGICAL A1B(2),A2B(2,2),A3B(2,2,2),AVB,BVB                        P162A4
       DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                   P162A5
       COMPLEX AVC,BVC,A1C(12),A2C(2,2),A3C(2,2,1)                       P162A6
       COMMON AXVS,CXVS                                                  P162A7
       EXTERNAL GFS                                                      P162A8
C*****                                                                   P0013155
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.       P1620270
C*****                                                                   P0072620
C*****  WHEN EXECUTING ONLY SEGMENT 162, THE STATEMENT  NUVI = 6         P0072625
C*****  MUST HAVE THE C= IN COLUMNS  1  AND 2  REMOVED.                  P0072630
C*****                                                                   P0072635
C=     NUVI = 6                                                          P0072640
       NUVI = 6                                                          P162B1
C*****                                                                   P0072645
       WRITE (NUVI,1624)                                                 P1620280
1624   FORMAT(1H1,1X,33HFRFCP - (162) REAL FUNCTIONS WITH/10X,31HLOGICAL,P1620290
     1 D.P., AND COMPLEX ARGS//16H  ASA REF. 8.3.1//                     P1620300
     228H  RESULTS SHOULD BE POSITIVE)                                   P1620310
C*****TEST 1                                                             P1620320
       AVD = 1.0D0                                                       P1620330
       MAVI = 1                                                          P1620340
       IVI = 1.0-GFS(AVD)                                                P1620350
       IF (IVI) 1620,1621,1620                                           P1620360
C*****TEST 2                                                             P1620370
 1625  MAVI =2                                                           P1620380
       AVC = (1.0,-1.0)                                                  P1620390
       BVC = (1.0,1.0)                                                   P1620400
       IVI = HFS(AVC,BVC)                                                P1620410
       IF (IVI) 1620,1621,1620                                           P1620420
C*****TEST 3                                                             P1620430
 1626  MAVI=3                                                            P1620440
       AVB = .TRUE.                                                      P1620450
       IVI = IRFS(AVB)*2.0                                               P1620460
       AVB = .FALSE.                                                     P1620470
       JVI = IRFS(AVB)*4.0                                               P1620480
       LVI = IVI + JVI - 4                                               P1620490
       IF (LVI) 1620,1621,1620                                           P1620500
C*****TEST 4                                                             P1620510
 1627  MAVI=4                                                            P1620520
       IVI = JRFS(AVD,GFS)                                               P1620530
       IF (IVI-1) 1620,1621,1620                                         P1620540
C*****TEST 5,6,7                                                         P1620550
 1628  AXVS = 1.0                                                        P1620560
       AVS = 1.0                                                         P1620570
       A1S(1) = 1.0                                                      P1620580
       A2S(1,1) = 1.0                                                    P1620590
       A3S(1,1,1) = 1.0                                                  P1620600
       AVB = .FALSE.                                                     P1620610
       A1B(1) = .FALSE.                                                  P1620620
       A2B(1,1) = .FALSE.                                                P1620630
       A3B(1,1,1) = .FALSE.                                              P1620640
       IAVI = 1                                                          P1620650
       I1I(1) = 1                                                        P1620660
       I2I(1,1) =1                                                       P1620670
       I3I(1,1,1) =1                                                     P1620680
       A1C(1) = (1.0,1.0)                                                P1620690
       A2C(1,1) = (1.0,1.0)                                              P1620700
       A3C(1,1,1) = (-2.0,-2.0)                                          P1620710
```

```
      AVD = 1.0D0                                                       P1620720
      A1D(1) = 1.0D0                                                    P1620730
      A2D(1,1) = 1.0D0                                                  P1620740
      A3D(1,1,1) = 1.0D0                                                P1620750
      IVI= RFS(AVS,IAVI,AVB,AVC,AVD,A1S,A2S,A3S,I1I,I2I,I3I,A1B,A2B,A3B,P1620760
     1 A1C,A2C,A3C,A1D,A2D,A3D,GFS)                                     P1620770
      MAVI = 5                                                          P1620780
      IF (IVI) 1620,1621,1620                                           P1620790
 1629 MAVI = 6                                                          P1620800
      BVB = AVB.AND.A1B(1).AND.A2B(1,1).AND.A3B(1,1,1)                  P1620810
      IF (BVB) GO TO 1621                                               P1620820
      GO TO 1620                                                        P1620830
 7010 IVI=REAL(AVC)                                                     P1620840
      JVI = AIMAG(AVC)                                                  P1620850
      MAVI = 7                                                          P1620860
      BVB = IVI.EQ.0.AND.JVI.EQ.0                                       P1620870
      IF (BVB) GO TO 1621                                               P1620880
1620  WRITE (NUVI,1622) MAVI                                            P1620890
      GO TO 7011                                                        P1620900
1621  WRITE (NUVI,1623) MAVI                                            P1620910
 1622 FORMAT(//2X,5HTEST ,I1,13H IS NEGATIVE.)                          P1620920
 1623 FORMAT (//2X,5HTEST ,I1,13H IS POSITIVE.)                         P1620930
 7011 GO TO (1625,1626,1627,1628,1629,7010,7012),MAVI                   P1620940
 7012 CONTINUE                                                          P1620950
C*****     END OF TEST SEGMENT 162                                      P1620960
C*****  WHEN EXECUTING ONLY SEGMENT 162, THE  STOP  AND  END  CARDS     P1620970
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1620980
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1620990
C=    STOP                                                              P1621000
C=    END                                                               P1621010
      STOP                                                              P162C1
      END                                                               P162C2
C*****************************************************************************P4020010
C*****                                                                     P4020020
C*****                          GFS - (402)                               P4020030
C*****                                                                    P4020040
C*****************************************************************************P4020050
C***** REAL FUNCTION OF DOUBLE PRECISION ARGUMENT (TEST 1)                P4020060
      FUNCTION  GFS(AWVD)                                               P4020070
      DOUBLE PRECISION  AWVD                                            P4020080
      GFS = AWVD                                                        P4020090
      RETURN                                                            P4020100
      END                                                               P4020110
C*****************************************************************************P4220010
C*****                                                                     P4220020
C*****                          HFS - (422)                               P4220030
C*****                                                                    P4220040
C*****************************************************************************P4220050
C*****REAL FUNCTION OF COMPLEX ARGUMENT (TEST 2)                         P4220060
      FUNCTION HFS(AWVC,BWVC)                                           P4220070
      COMPLEX  AWVC,BWVC,CVC                                            P4220080
      CVC  = AWVC * BWVC                                                P4220090
      HFS = AIMAG(CVC)                                                  P4220100
      RETURN                                                            P4220110
      END                                                               P4220120
C*****************************************************************************P4320010
C*****                                                                     P4320020
C*****                          IRFS -  (432)                             P4320030
C*****                                                                    P4320040
C*****************************************************************************P4320050
C*****REAL FUNCTION OF LOGICAL ARGUMENT (TEST 3)                         P4320060
      REAL FUNCTION IRFS(AWVB)                                          P4320070
      LOGICAL  AWVB                                                     P4320080
      IF (AWVB) GO TO 4321                                              P4320090
4320  IF (.NOT. AWVB) GO TO 4322                                        P4320100
      RETURN                                                            P4320110
4321  IRFS = 2.0                                                        P4320120
      GO TO 4320                                                        P4320130
```

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4322  IRFS = 0.0                                                        P4320140
      RETURN                                                            P4320150
      END                                                               P4320160
C*******************************************************************************P4420010
C*****                                                                  P4420020
C*****                          JRFS - (442)                            P4420030
C*****                                                                  P4420040
C*******************************************************************************P4420050
C*****REAL FUNCTION OF EXTERNAL PROCEDURE (TEST 4)                      P4420060
      REAL FUNCTION JRFS( BWVD,BWFS)                                    P4420070
      DOUBLE PRECISION BWVD                                             P4420080
      JRFS = BWFS(BWVD)                                                 P4420090
      RETURN                                                            P4420100
      END                                                               P4420110
C*******************************************************************************P4520010
C*****                                                                  P4520020
C*****                          RFS - (452)                             P4520030
C*****                                                                  P4520040
C*******************************************************************************P4520050
C*****REAL FUNCTION OF DIFFERENT TYPES OF ARGUMENTS. USE IS MADE OF      P4520060
C*****ADJUSTABLE DIMENSION (TEST 5, 6, 7)                               P4520070
      FUNCTION RFS(AWVS,IWVI,AWVB,AWVC,AWVD,AW1S,AW2S,AW3S,IW1I,IW2I,   P4520080
     1IW3I,AW1B,AW2B,AW3B,AW1C,AW2C,AW3C,AW1D,AW2D,AW3D,AWFS)           P4520090
      LOGICAL AWVB,AW1B,AW2B,AW3B                                       P4520100
      COMPLEX AWVC,AW1C,AW2C,AW3C                                       P4520110
      DOUBLE PRECISION AWVD, AW1D,AW2D,AW3D                             P4520120
      DIMENSION AW1S(IWVI),AW2S(IWVI,IWVI),AW3S(IWVI,IWVI,IWVI) ,       P4520130
     1          IW1I(IWVI),IW2I(IWVI,IWVI),IW3I(IWVI,IWVI,IWVI) ,       P4520140
     2          AW1B(IWVI),AW2B(IWVI,IWVI),AW3B(IWVI,IWVI,IWVI) ,       P4520150
     3          AW1C(IWVI),AW2C(IWVI,IWVI),AW3C(IWVI,IWVI,IWVI) ,       P4520160
     4          AW1D(IWVI),AW2D(IWVI,IWVI),AW3D(IWVI,IWVI,IWVI)         P4520170
      COMMON BXVS                                                       P4520180
      RFS =AWVS**IWVI+AW1S(IWVI)**IW1I(IWVI)-AW2S(IWVI,IWVI)**IW2I      P4520190
     1 (IWVI,IWVI)+AW3S(IWVI,IWVI,IWVI)**IW3I(IWVI,IWVI,IWVI)-AWVD+     P4520200
     2 AW1D(IWVI)-AW2D(IWVI,IWVI)-AW3D(IWVI,IWVI,IWVI)+AWFS(AWVD)-BXVS  P4520210
      AWVB = IWVI.EQ.1                                                  P4520220
      AW1B(IWVI) = IWVI .EQ. 1                                          P4520230
      AW2B(IWVI,IWVI) = IWVI .EQ. 1                                     P4520240
      AW3B(IWVI,IWVI,IWVI) = IWVI.EQ.1                                  P4520250
      AWVC = AW1C(IWVI) +AW2C(IWVI,IWVI)+AW3C(IWVI,IWVI,IWVI)           P4520260
      RETURN                                                            P4520270
C*****    END OF TEST SEGMENT 402                                       P4520280
      END                                                               P4520290
C*******************************************************************************P1630010
C*****                                                                  P1630020
C*****                    FIFCP - (163)                                 P1630030
C*****                                                                  P1630040
C*******************************************************************************P1630050
C*****                    GENERAL PURPOSE                        ASA REF P1630060
C*****  1.TO TEST INTEGER FUNCTIONS IN FULL FORTRAN                     P1630070
C*****  2.THIS SEGMENT COMPLETES SEGMENT (161) IN ORDER TO TEST         P1630080
C*****    FOR ALL FEATURES REQUIRED IN FULL FORTRAN.            8.3.1   P1630090
C*****  3.DUMMY ARGUMENTS CAN BE INTEGER(TESTED IN 161),REAL(TESTED     P1630100
C*****    IN 161),DOUBLE PRECISION,COMPLEX,LOGICAL,OR EXTERNAL PROCEDUREP1630110
C*****  4.DUMMY ARGUMENTS MAY BE REDIFINED IN SUBPROGRAM(ITEM 4)        P1630120
C*****  5. IN REFERENCE,ACTUAL ARGUMENTS MAY BE AS IN (161) AND BESIDES P1630130
C*****    EXTERNAL PROCEDURE.IN THIS CASE,EXTERNAL PROCEDURE IS         P1630140
C*****    REFERENCED BY AN EXTERNAL STATEMENT.                          P1630150
C*****  6. USE CAN BE MADE OF ADJUSTABLE DIMENSION.                     P1630160
C*****RESTRICTIONS OBSERVED                                            P1630170
C*****   1.ITEMS (1),(2),(3),(5), OF 8.3.1                              P1630180
C*****  2 PARAGRAPH 8.3.2,LINE 18 TO END OF PARAGRAPH                   P1630190
C*****     THIS SEGMENT   USES   5 INTEGER FUNCTIONS                    P1630200
C*****     THIS SEGMENT IS TO BE RUN WITH SEGMENTS                      P1630210
C*****      403, 423, 433, 443, 453                          WHICH      P1630220
C*****    WHICH CONTAINS ALL FUNCTIONS BEING TESTED HERE                P1630230
C*****                                                                  P1630240
C*****  S P E C I F I C A T I O N S  SEGMENT 163                        P1630250
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C*****                                                                  P0013160
C*****  WHEN EXECUTING ONLY SEGMENT 163, THE SPECIFICATION STATEMENTS   P0013165
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0013170
C*****  IN COLUMNS 1  AND  2  REMOVED.                                  P0013175
C*****                                                                  P0013180
C=     EXTERNAL IFI                                                     P0013185
C=     DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                             P0013190
C=     INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                               P0013195
C=     LOGICAL AVB,BVB,A1B(2),A2B(2,2),A3B(2,2,2)                       P0013200
C=     DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                  P0013205
C=     COMPLEX AVC,BVC,A1C(12),A2C(2,2),A3C(2,2,1)                      P0013210
C=     COMMON AXVS,CXVS                                                 P0013215
       EXTERNAL IFI                                                     P163A1
       DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                             P163A2
       INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                               P163A3
       LOGICAL AVB,BVB,A1B(2),A2B(2,2),A3B(2,2,2)                       P163A4
       DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                  P163A5
       COMPLEX AVC,BVC,A1C(12),A2C(2,2),A3C(2,2,1)                      P163A6
       COMMON AXVS,CXVS                                                 P163A7
C*****                                                                  P0013220
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P1630260
C*****                                                                  P0072650
C*****  WHEN EXECUTING ONLY SEGMENT 163, THE STATEMENT  NUVI = 6        P0072655
C*****  MUST HAVE THE C= IN COLUMNS  1  AND 2  REMOVED.                 P0072660
C*****                                                                  P0072665
C=     NUVI = 6                                                         P0072670
       NUVI = 6                                                         P163B1
C*****                                                                  P0072675
       WRITE(NUVI,1634)                                                 P1630270
 1634 FORMAT (1H1,1X,33HFIFCP - (163) INTEGER FUNCTION IN/ 16X,         P1630280
     1 12HFULL FORTRAN//2X,                                             P1630290
     214HASA REF. 8.3.1//28H  RESULTS SHOULD BE POSITIVE)               P1630300
C***** TEST 1                                                           P1630310
       AVD=1.0D0                                                        P1630320
       MAVI=1                                                           P1630330
       IVI=1-IFI(AVD)                                                   P1630340
       IF (IVI) 1630,1631,1630                                          P1630350
C***** TEST 2                                                           P1630360
 1635 MAVI=2                                                            P1630370
       AVC=(1.0, 1.0)                                                   P1630380
       BVC=(1.0,-1.0)                                                   P1630390
       IVI=JFI(AVC,BVC)                                                 P1630400
       IF (IVI) 1630,1631,1630                                          P1630410
C*****TEST 3                                                           P1630420
 1636 MAVI=3                                                            P1630430
       AVB=.TRUE.                                                       P1630440
       IVI=KFI(AVB)*2                                                   P1630450
       AVB=.FALSE.                                                      P1630460
       JVI=IVI+KFI(AVB)-4                                               P1630470
       IF (JVI) 1630,1631,1630                                          P1630480
C***** TEST 4                                                           P1630490
 1637 MAVI=4                                                            P1630500
       IVI=LFI(AVD,IFI)-1                                               P1630510
       IF (IVI) 1630,1631,1630                                          P1630520
C***** TESTS 5,6,7                                                      P1630530
 1638 AXVS=1.0                                                          P1630540
       AVS = 1.                                                         P1630550
       A1S(1)=1.0                                                       P1630560
       A2S(1,1)=1.0                                                     P1630570
       A3S(1,1,1)=1.0                                                   P1630580
       IAVI=1                                                           P1630590
       I1I(1) = 1                                                       P1630600
       I2I(1,1)=1                                                       P1630610
       I3I(1,1,1)=1                                                     P1630620
       A1C(1)=(1.0,1.0)                                                 P1630630
       A2C(1,1)=(1.0,1.0)                                               P1630640
       A3C(1,1,1)=(-2.0,-2.0)                                           P1630650
       AVD=1.0D0                                                        P1630660
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      A1D(1)=1.0D0                                                          P1630670
      A2D(1,1)=1.0D0                                                        P1630680
      A3D(1,1,1)=1.0D0                                                      P1630690
      IVI=MFI(AVS,IAVI,AVB,AVC,AVD,A1S,A2S,A3S,I1I,I2I,I3I,A1B,A2B,A3B,     P1630700
     1A1C,A2C,A3C,A1D,A2D,A3D,IFI)                                          P1630710
      MAVI=5                                                                P1630720
      IF (IVI) 1630,1631,1630                                               P1630730
 1639 MAVI=6                                                                P1630740
      BVB=AVB.AND.A1B(1).AND.A2B(1,1).AND.A3B(1,1,1)                        P1630750
      IF (BVB) GO TO 1631                                                   P1630760
      IF (.NOT.BVB) GO TO 1630                                              P1630770
 7007 IVI=REAL(AVC)                                                         P1630780
      JVI=AIMAG(AVC)                                                        P1630790
      MAVI=7                                                                P1630800
      IF (IVI+JVI) 1630,1631,1630                                           P1630810
 1630 WRITE(NUVI,1632) MAVI                                                 P1630820
      GO TO 7008                                                            P1630830
 1631 WRITE(NUVI,1633) MAVI                                                 P1630840
 1632 FORMAT (//2X,5HTEST ,I2,12H IS NEGATIVE)                              P1630850
 1633 FORMAT(//2X,5HTEST , I2,12H IS POSITIVE)                              P1630860
 7008       GO TO (1635,1636,1637,1638,1639,7007,7009),MAVI                 P1630870
 7009 CONTINUE                                                              P1630880
C*****    END OF TEST SEGMENT 163                                           P1630890
C*****  WHEN EXECUTING ONLY SEGMENT 163, THE  STOP  AND  END  CARDS         P1630900
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                     P1630910
C*****  IN COLUMNS  1  AND  2  REMOVED.                                     P1630920
C=    STOP                                                                  P1630930
C=    END                                                                   P1630940
      STOP                                                                  P163C1
      END                                                                   P163C2
C*******************************************************************************P4030010
C*****                                                                       P4030020
C*****                          IFI - (403)                                  P4030030
C*****                                                                       P4030040
C*******************************************************************************P4030050
C***** INTEGER FUNCTION OF DOUBLE PRECISION ARGUMENT(TEST 1)                 P4030060
      FUNCTION IFI(AWVD)                                                    P4030070
      DOUBLE PRECISION AWVD                                                 P4030080
      IFI=AWVD                                                              P4030090
      RETURN                                                                P4030100
      END                                                                   P4030110
C*******************************************************************************P4230010
C*****                                                                       P4230020
C*****                          JFI - (423)                                  P4230030
C*****                                                                       P4230040
C*******************************************************************************P4230050
C*****INTEGER FUNCTION OF COMPLEX ARGUMENT(TEST 2)                          P4230060
      FUNCTION JFI(AWVC,BWVC)                                               P4230070
      COMPLEX AWVC,BWVC,CVC                                                 P4230080
      CVC =AWVC*BWVC                                                        P4230090
      JFI=AIMAG(CVC)                                                        P4230100
      RETURN                                                                P4230110
      END                                                                   P4230120
C*******************************************************************************P4330010
C*****                                                                       P4330020
C*****                          KFI - (433)                                  P4330030
C*****                                                                       P4330040
C*******************************************************************************P4330050
C*****INTEGER FUNCTION OF LOGICAL ARGUMENT(TEST 3)                          P4330060
      FUNCTION KFI(AWVB)                                                    P4330070
      LOGICAL AWVB                                                          P4330080
      IF (AWVB) GO TO 4331                                                  P4330090
4330  IF (.NOT.AWVB) GO TO 4332                                             P4330100
      RETURN                                                                P4330110
4331  KFI = 2                                                               P4330120
      GO TO 4330                                                            P4330130
4332  KFI = 0                                                               P4330140
      RETURN                                                                P4330150
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      END                                                                P4330160
C***********************************************************************P4430010
C*****                                                                   P4430020
C*****                            LFI - (443)                            P4430030
C*****                                                                   P4430040
C***********************************************************************P4430050
C*****INTEGER FUNCTION OF EXTERNAL PROCEDURE(TEST 4)                      P4430060
      FUNCTION LFI(BWVD,IWFI)                                            P4430070
      DOUBLE PRECISION BWVD                                              P4430080
      LFI=IWFI(BWVD)                                                     P4430090
      RETURN                                                             P4430100
      END                                                                P4430110
C***********************************************************************P4530010
C*****                                                                   P4530020
C*****                            MFI - (453)                            P4530030
C*****                                                                   P4530040
C***********************************************************************P4530050
C*****INTEGER FUNCTION OF DIFFERENT TYPES OF ARGUMENTS.USE IS MADE OF    P4530060
C***** ADJUSTABLE DIMENSION(TEST 5,6,7)                                  P4530070
      FUNCTION MFI(AWVS,IWVI,AWVB,AWVC,AWVD,AW1S,AW2S,AW3S,IW1I,IW2I,    P4530080
     1IW3I,AW1B,AW2B,AW3B,AW1C,AW2C,AW3C,AW1D,AW2D,AW3D,IWFI)            P4530090
      DOUBLE PRECISION AWVD,AW1D,AW2D,AW3D                               P4530100
      LOGICAL AWVB,AW1B,AW2B,AW3B                                        P4530110
      COMPLEX AWVC,AW1C,AW2C,AW3C                                        P4530120
      DIMENSION AW1S(IWVI),AW2S(IWVI,IWVI),AW3S(IWVI,IWVI,IWVI) ,        P4530130
     1          IW1I(IWVI),IW2I(IWVI,IWVI),IW3I(IWVI,IWVI,IWVI) ,        P4530140
     2          AW1B(IWVI),AW2B(IWVI,IWVI),AW3B(IWVI,IWVI,IWVI),         P4530150
     3          AW1C(IWVI),AW2C(IWVI,IWVI),AW3C(IWVI,IWVI,IWVI)  ,       P4530160
     4          AW1D(IWVI),AW2D(IWVI,IWVI),AW3D(IWVI,IWVI,IWVI)          P4530170
      COMMON BXVS                                                        P4530180
      MFI =AWVS**IWVI+AW1S(IWVI)**IW1I(IWVI)-AW2S(IWVI,IWVI)**IW2I       P4530190
     1 (IWVI,IWVI)+AW3S(IWVI,IWVI,IWVI)**IW3I(IWVI,IWVI,IWVI)-AWVD+      P4530200
     2 AW1D(IWVI)-AW2D(IWVI,IWVI)-AW3D(IWVI,IWVI,IWVI)+BXVS**IWFI(AWVD)  P4530210
     3 -1.0                                                              P4530220
      AWVB=IWVI.EQ.1                                                     P4530230
      AW1B(IWVI) = IWVI .EQ. 1                                           P4530240
      AW2B(IWVI,IWVI) = IWVI.EQ.1                                        P4530250
      AW3B(IWVI,IWVI,IWVI) = IWVI.EQ.1                                   P4530260
      AWVC = AW1C(IWVI) +AW2C(IWVI,IWVI)+AW3C(IWVI,IWVI,IWVI)            P4530270
      RETURN                                                             P4530280
      END                                                                P4530290
C***********************************************************************P1640010
C*****                                                                   P1640020
C*****                             CFCCP-(164)                           P1640030
C*****                                                                   P1640040
C***********************************************************************P1640050
C*****                      GENERAL PURPOSE                      ASA REFP1640060
C*****    1.TO TEST COMPLEX FUNCTIONS IN FULL FORTRAN              8.3.1 P1640070
C*****    2.DUMMY ARGUMENTS ARE REAL,INTEGER,COMPLEX,LOGICAL,            P1640080
C*****    DOUBLE PRECISION,EXTERNAL PROCEDURE,ARRAY NAME.                P1640090
C*****    3.FUNCTIONS CONTAIN UP TO 20 ARGUMENTS                         P1640100
C*****    4.IN REFERENCE ACTUAL ARGUMENTS ARE VARIABLE NAME              P1640110
C*****    ARRAY NAME,ARRAY ELEMENT NAME,ARITHMETIC EXPRESSION            P1640120
C*****    EXTERNAL PROCEDURE                                             P1640130
C*****    6.USE CAN BE MADE OF ADJUSTABLE DIMENTION                      P1640140
C*****    7.ARGUMENTS CAN BE PASSED THROUGH COMMON                       P1640150
C*****RESTRICTIONS OBSERVED                                              P1640160
C*****    1.ITEMS(2),(3),(4),(5),(6) OF PARAGRAPH                        P1640170
C*****    2.LAST SENTENCE OF PARAGRAPH 3.2                               P1640180
C*****    THIS SEGMENT  USES   8 COMPLEX FUNCTIONS                       P1640190
C*****     THIS SEGMENT IS TO BE RUN WITH SEGMENTS                       P1640200
C*****     404, 414, 424, 434, 444, 454, 464                             P1640210
C*****    WHICH CONTAIN  ALL FUNCTIONS BEING TESTED HERE                 P1640220
C*****                                                                   P1640230
C*****  S P E C I F I C A T I O N S  SEGMENT 164                         P1640240
C*****                                                                   P0013230
C*****  WHEN EXECUTING ONLY SEGMENT 164, THE SPECIFICATION STATEMENTS    P0013235
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0013240
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C*****  IN COLUMNS 1  AND  2  REMOVED.                                  P0013245
C*****                                                                  P0013250
C=     DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                             P0013255
C=     INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                               P0013260
C=     LOGICAL AVB,A1B(2),A3B(2,2,2),A2B(2,2),BVB                       P0013265
C=     DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                  P0013270
C=     COMPLEX AFC,BFC,CFC,DFC,EFC,FFC,HFC,AVC,BVC                      P0013275
C=    1,A1C(12),A2C(2,2),A3C(2,2,1)                                     P0013280
C=     COMMON AXVS,CXVS                                                 P0013285
C=     EXTERNAL BFC                                                     P0013290
       DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                             P164A1
       INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                               P164A2
       LOGICAL AVB,A1B(2),A3B(2,2,2),A2B(2,2),BVB                       P164A3
       DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                  P164A4
       COMPLEX AFC,BFC,CFC,DFC,EFC,FFC,HFC,AVC,BVC                      P164A5
      1,A1C(12),A2C(2,2),A3C(2,2,1)                                     P164A6
       COMMON AXVS,CXVS                                                 P164A7
       EXTERNAL BFC                                                     P164A8
C*****                                                                  P0013295
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P1640250
C*****                                                                  P0072680
C*****  WHEN EXECUTING ONLY SEGMENT 164, THE STATEMENT  NUVI = 6        P0072685
C*****  MUST HAVE THE C= IN COLUMNS  1  AND 2  REMOVED.                 P0072690
C*****                                                                  P0072695
C=     NUVI = 6                                                         P0072700
       NUVI = 6                                                         P164B1
C*****                                                                  P0072705
       WRITE(NUVI,1641)                                                 P1640260
 1641 FORMAT(1H1,1X,31HCFCCP - (164) COMPLEX FUNCTIONS//2X,             P1640270
     1 21HASA REFS. 8.3.1,8.3.2//2X, 7HRESULTS)                         P1640280
C***** TEST 1                                                           P1640290
       BVC=AFC(1.0)                                                     P1640300
       MAVI=1                                                           P1640310
       WRITE(NUVI,1642) BVC,MAVI                                        P1640320
1642   FORMAT(1H0,2F5.1,9H -- TEST ,I2,20H POSITIVE IF 0.0,0.0)         P1640330
C***** TEST 2                                                           P1640340
        MAVI=2                                                          P1640350
       BVC= BFC(1)-(1.0,1.0)                                            P1640360
       WRITE(NUVI,1642)BVC,MAVI                                         P1640370
C***** TEST 3                                                           P1640380
        MAVI=3                                                          P1640390
       A1S(1)=1.0                                                       P1640400
       A1S(2)=1.0                                                       P1640410
       BVC=CFC(A1S)                                                     P1640420
       WRITE(NUVI,1642)BVC,MAVI                                         P1640430
C***** TEST 4                                                           P1640440
       MAVI=4                                                           P1640450
       BVC = DFC (1.D0)                                                 P1640460
       WRITE(NUVI,1642)BVC,MAVI                                         P1640470
C*****TEST 5                                                           P1640480
       MAVI=5                                                           P1640490
       AVC=(1.0,1.0)                                                    P1640500
       BVC=EFC(AVC)                                                     P1640510
       WRITE(NUVI,1642)BVC,MAVI                                         P1640520
C*****TEST 6                                                           P1640530
       MAVI=6                                                           P1640540
       AVB=.TRUE.                                                       P1640550
       BVC=FFC(AVB)-(1.0,1.0)                                           P1640560
       WRITE(NUVI,1642)BVC,MAVI                                         P1640570
C***** TEST 7                                                           P1640580
        MAVI=7                                                          P1640590
        AVB=.FALSE.                                                     P1640600
        BVC=FFC(AVB)                                                    P1640610
        WRITE(NUVI,1642)BVC,MAVI                                        P1640620
C***** TEST 8,9,10                                                      P1640630
       IVI=1                                                            P1640640
       AVD=1.0D0                                                        P1640650
       A1D(1)=1.0D0                                                     P1640660
```

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      A2D(1,1)=1.0D0                                                    P1640670
      A3D(1,1,1)=1.0D0                                                  P1640680
      AVS=1.0                                                           P1640690
      A1S(1)=1.0                                                        P1640700
      A2S(1,1)=1.0                                                      P1640710
      A3S(1,1,1)=1.0                                                    P1640720
      A1C(1)=(1.0,1.0)                                                  P1640730
      A2C(1,1)=(1.0,1.0)                                                P1640740
      A3C(1,1,1)=(1.0,1.0)                                              P1640750
      I1I(1)=1                                                          P1640760
      I2I(1,1)=1                                                        P1640770
      I3I(1,1,1)=1                                                      P1640780
      AVC = (0.0,0.0)                                                   P1640790
      BVC= HFC(AVS,IVI,AVB,AVC,AVD,A1S,A2S,A3S,I1I,I2I,I3I,A1B,A2B,A3B, P1640800
     1A1C,A2C,A3C,A1D,A2D,A3D,BFC)                                      P1640810
      MAVI = 8                                                          P1640820
      WRITE (NUVI,1642) BVC,MAVI                                        P1640830
      MAVI=9                                                            P1640840
      IF(AXVS) 1643,1644,1643                                           P1640850
 1648 MAVI = 10                                                         P1640860
      BVB=AVB.AND.A1B(1).AND.A2B(1,1).AND. A3B(1,1,1)                   P1640870
      IF (BVB) GO TO 1644                                               P1640880
 1643 WRITE(NUVI,1645)MAVI                                              P1640890
      GO TO 1647                                                        P1640900
 1644 WRITE(NUVI,1646)MAVI                                              P1640910
1645  FORMAT(/15X,5HTEST ,I2,12H IS NEGATIVE)                           P1640920
1646  FORMAT(/15X,5HTEST ,I2,12H IS POSITIVE)                           P1640930
1647  IF (MAVI  - 9) 1649,1648,1649                                     P1640940
1649  CONTINUE                                                          P1640950
C*****    END OF TEST SEGMENT 164                                       P1640960
C*****  WHEN EXECUTING ONLY SEGMENT 164, THE  STOP  AND  END  CARDS     P1640970
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1640980
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1640990
C=    STOP                                                              P1641000
C=    END                                                               P1641010
      STOP                                                              P164C1
      END                                                               P164C2
C*******************************************************************************P4040010
C*****                                                                  P4040020
C*****                          AFC - (404)                             P4040030
C*****                                                                  P4040040
C*******************************************************************************P4040050
C*****COMPLEX FUNCTION OF REAL ARGUMENT (TEST 1)                        P4040060
      COMPLEX FUNCTION AFC(AWVS)                                        P4040070
      AFC = (-1.0,0.0)+AWVS                                             P4040080
      RETURN                                                            P4040090
      END                                                               P4040100
C*******************************************************************************P4140010
C*****                                                                  P4140020
C*****                          BFC - (414)                             P4140030
C*****                                                                  P4140040
C*******************************************************************************P4140050
C*****COMPLEX FUNCTION OF INTEGER ARGUMENT (TEST 2)                     P4140060
      COMPLEX FUNCTION BFC(IWVI)                                        P4140070
      BFC=(1.0,1.0)**IWVI                                               P4140080
      RETURN                                                            P4140090
      END                                                               P4140100
C*******************************************************************************P4240010
C*****                                                                  P4240020
C*****                          CFC - (424)                             P4240030
C*****                                                                  P4240040
C*******************************************************************************P4240050
C*****COMPLEX FUNCTION OF ARRAY NAME (TEST 3)                           P4240060
      COMPLEX FUNCTION CFC(AW1S)                                        P4240070
      DIMENSION AW1S(2)                                                 P4240080
      CFC = (2.0,0.0)-AW1S(1)-AW1S(2)                                   P4240090
      RETURN                                                            P4240100
      END                                                               P4240110
```

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C*******************************************************************************P4340010
C*****                                                                          P4340020
C*****                          OFC - (434)                                     P4340030
C*****                                                                          P4340040
C*******************************************************************************P4340050
C*****COMPLEX FUNCTION OF OOUBLE PRECISION ARGUMENT (TEST 4)                    P4340060
      COMPLEX FUNCTION OFC(AWVO)                                                P4340070
      OOUBLE PRECISION AWVO                                                     P4340080
      AVS  = AWVO                                                               P4340090
      OFC = (1.0,1.0) * AVS - (1.0,1.0)                                         P4340100
      RETURN                                                                    P4340110
      ENO                                                                       P4340120
C*******************************************************************************P4440010
C*****                                                                          P4440020
C*****                          EFC - (444)                                     P4440030
C*****                                                                          P4440040
C*******************************************************************************P4440050
C*****COMPLEX FUNCTION OF COMPLEX ARGUMENT (TEST 5)                             P4440060
      COMPLEX FUNCTION EFC(AWVC)                                                P4440070
      COMPLEX AWVC                                                              P4440080
      EFC=AWVC- (1.0,1.0)                                                       P4440090
      RETURN                                                                    P4440100
      ENO                                                                       P4440110
C*******************************************************************************P4540010
C*****                                                                          P4540020
C*****                          FFC - (454)                                     P4540030
C*****                                                                          P4540040
C*****COMPLEX FUNCTION OF LOGICAL ARGUMENT(TESTS 6,7)                           P4540050
      COMPLEX FUNCTION FFC(AWVB)                                                P4540060
      LOGICAL AWVB                                                              P4540070
      IF (AWVB) GO TO 4541                                                      P4540080
4540  IF (.NOT.AWVB) GO TO 4542                                                 P4540090
      RETURN                                                                    P4540100
4541  FFC = (1.0,1.0)                                                           P4540110
      GO TO 4540                                                                P4540120
4542  FFC = (0.0,0.0)                                                           P4540130
      RETURN                                                                    P4540140
      ENO                                                                       P4540150
C*******************************************************************************P4640010
C*****                                                                          P4640020
C*****                          HFC - (464)                                     P4640030
C*****                                                                          P4640040
C*******************************************************************************P4640050
C*****COMPLEX FUNCTION OF OIFFERENT TYPES OF ARGUMENTS (TESTS 8,9,10            P4640060
      COMPLEX FUNCTION  HFC(AWVS,IWVI,AWVB,AWVC,AWVO,AW1S,AW2S,AW3S,            P4640070
     1 IW1I,IW2I,IW3I,AW1B,AW2B,AW3B,AW1C,AW2C,AW3C,AW1O,AW2O,AW3O,AWFC)        P4640080
       OIMENSION AW1S(IWVI),AW2S(IWVI,IWVI),AW3S(IWVI,IWVI,IWVI),               P4640090
     1           IW1I(IWVI),IW2I(IWVI,IWVI),IW3I(IWVI,IWVI,IWVI),               P4640100
     2           AW1B(IWVI),AW2B(IWVI,IWVI),AW3B(IWVI,IWVI,IWVI),               P4640110
     3           AW1C(IWVI),AW2C(IWVI,IWVI),AW3C(IWVI,IWVI,IWVI),               P4640120
     4           AW1O(IWVI),AW2D(IWVI,IWVI),AW3O(IWVI,IWVI,IWVI)                P4640130
      COMMON BXVS                                                               P4640140
      LOGICAL AWVB,AW1B,AW2B,AW3B                                               P4640150
      COMPLEX AWVC,AW1C,AW2C,AW3C, AWFC                                         P4640160
      DOUBLE PRECISION AWVD,AW1O,AW2D,AW3D                                      P4640170
      HFC = AWVC                                                                P4640180
      BXVS=AWVS**IWVI+AW1S(IWVI)**IW1I(IWVI)-AW2S(IWVI,IWVI)**IW2I              P4640190
     1 (IWVI,IWVI)+AW3S(IWVI,IWVI,IWVI)**IW3I(IWVI,IWVI,IWVI)-AWVO+             P4640200
     2 AW1O(IWVI)-AW2O(IWVI,IWVI)-AW3O(IWVI,IWVI,IWVI)                          P4640210
      AWVB = IWVI.EQ.1                                                          P4640220
      AW1B(IWVI) = IWVI.EQ.1                                                    P4640230
      AW2B(IWVI,IWVI) = IWVI .EQ. 1                                             P4640240
      AW3B(IWVI,IWVI,IWVI) = IWVI.EQ.1                                          P4640250
      RETURN                                                                    P4640260
C*****    ENO OF TEST SEGMENT 464                                               P4640270
      ENO                                                                       P4640280
C*******************************************************************************P1650010
C*****                                                                          P1650020
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C*****                          DPFCP-(165)                                  P1650030
C*****                                                                       P1650040
C*************************************************************************** P1650050
C*****                          GENERAL PURPOSE                              P1650060
C*****    1.TO TEST DOUBLE PRECISION FUNCTIONS IN FULL FORTRAN     8.3.1P1650070
C*****    2.DUMMY ARGUMENTS ARE REAL,INTEGER,COMPLEX,LOGICAL,              P1650080
C*****    DOUBLE PRECISION,EXTERNAL PROCEDURE,ARRAY NAME                   P1650090
C*****    3.FUNCTIONS CONTAIN UP TO 20 ARGUMENTS                           P1650100
C*****    4.IN REFERENCE,ACTUAL ARGUMENTS ARE VARIABLE1NAME,               P1650110
C*****     ARRAY NAME,ARRAY ELEMENT NAME,OR ARITHMETIC EXPRESSION. 8.3.2P1650120
C*****RESTRICTIONS OBSERVED                                                P1650130
C*****    1.ITEMS(2),(3),(4),(5),(6) OF PARAGRAPH 8.3.1                    P1650140
C*****    2 LAST SENTENCE  OF PARAGRAPH 3.2                                P1650150
C*****     THIS SEGMENT IS TO BE RUN WITH SEGMENTS                         P1650160
C*****     405, 415, 425, 435, 445, 455, 465, 475                          P1650170
C*****     WHICH CONTAINS ALL FUNCTIONS BEING TESTED HERE.                 P1650180
C*****                                                                      P1650190
C*****  S P E C I F I C A T I O N S  SEGMENT 165                            P1650200
C*****                                                                      P0013300
C*****  WHEN EXECUTING ONLY SEGMENT 165, THE SPECIFICATION STATEMENTS       P0013305
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                      P0013310
C*****  IN COLUMNS  1  AND  2  REMOVED.                                     P0013315
C*****                                                                      P0013320
C=     DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                                P0013325
C=     INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                                  P0013330
C=     LOGICAL A1B(2),A2B(2,2),A3B(2,2,2),AVB,BVB                          P0013335
C=     DOUBLE PRECISION AFD, BFD, CFD, DFD, EFD, FFD, GFD, HFD,AVD         P0013340
C=    1, A1D(4),A2D(2,2),A3D(2,2,2)                                        P0013345
C=     COMPLEX AVC,A1C(12),A2C(2,2),A3C(2,2,1)                             P0013350
C=     COMMON AXVS,CXVS                                                    P0013355
C=      EXTERNAL  CFD,AFD                                                  P0013360
       DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                                P165A1
       INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                                  P165A2
       LOGICAL A1B(2),A2B(2,2),A3B(2,2,2),AVB,BVB                          P165A3
       DOUBLE PRECISION AFD, BFD, CFD, DFD, EFD, FFD, GFD, HFD,AVD         P165A4
      1, A1D(4),A2D(2,2),A3D(2,2,2)                                        P165A5
       COMPLEX AVC,A1C(12),A2C(2,2),A3C(2,2,1)                             P165A6
       COMMON AXVS,CXVS                                                    P165A7
        EXTERNAL  CFD,AFD                                                  P165A8
C*****                                                                     P0013365
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.         P1650210
C*****  WHEN EXECUTING ONLY SEGMENT 165, THE FOLLOWING STATEMENT           P0072710
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.            P0072715
C*****                                                                     P0072720
C=     NUVI = 6                                                            P0072725
       NUVI = 6                                                            P165B1
       WRITE (NUVI,1650)                                                   P1650220
 1650  FORMAT(1H1,1X,30HDPFCP - (165) DOUBLE PRECISION/ 16X, 9HFUNCTIONS   P1650230
      1 //2X,21HASA REFS. 8.3.1,8.3.2//2X, 7HRESULTS)                      P1650240
C***** TEST 1                                                              P1650250
       MAVI = 1                                                            P1650260
       IVI = AFD(1.0) - 1.0D0                                              P1650270
        IF (IVI)  1652,1653,1652                                           P1650280
C***** TEST 2                                                              P1650290
 1657  MAVI =2                                                             P1650300
       IVI=BFD(1)-1.0D0                                                    P1650310
       IF(IVI)1652,1653,1652                                               P1650320
C***** TEST 3                                                              P1650330
 1658  MAVI =3                                                             P1650340
        AVD=1.0D0                                                          P1650350
       IVI=CFD(AVD)-1.0D0                                                  P1650360
        IF(IVI) 1652,1653,1652                                             P1650370
C***** TEST 4 .ONE ARGUMENT IS ARRAY ELEMENT NAME                          P1650380
 1659  MAVI =4                                                             P1650390
       AVC = (1.0,1.0)                                                     P1650400
       A1C(1)=(1.0,-1.0)                                                   P1650410
       IVI=DFD(AVC,A1C(1))                                                 P1650420
       IF (IVI) 1652,1653,1652                                             P1650430
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C***** TEST 5,6                                                          P1650440
 7014 MAVI =5                                                            P1650450
      AVB=.TRUE.                                                         P1650460
      IVI=EFD(AVB)-1.0D0                                                 P1650470
      IF(IVI)1652,1653,1652                                              P1650480
 7015 MAVI = 6                                                           P1650490
      AVB=.FALSE.                                                        P1650500
      IVI=EFD(AVB)                                                       P1650510
      IF(IVI)1652,1653,1652                                              P1650520
C***** TEST 7                                                           P1650530
 7016 MAVI = 7                                                           P1650540
      IVI = FFD (1.E0,AFD) - 1.0D0                                       P1650550
      IF (IVI) 1652,1653,1652                                            P1650560
C***** TEST 8                                                           P1650570
 7017 MAVI = 8                                                           P1650580
      A1D(1)=1.0D0                                                       P1650590
      A1D(2)=-1.0D0                                                      P1650600
      IVI=GFD(A1D)                                                       P1650610
      IF (IVI) 1652,1653,1652                                            P1650620
C***** TESTS 9,10,11,12                                                 P1650630
 7018 IAVI = 1                                                           P1650640
      AVD=1.0D0                                                          P1650650
      A1D(1)=1.0D0                                                       P1650660
      A2D(1,1)=1.0D0                                                     P1650670
      A3D(1,1,1)= 1.0D0                                                  P1650680
      AVS=1.0                                                            P1650690
      A1S(1)=1.0                                                         P1650700
      A2S(1,1)=1.0                                                       P1650710
      A3S(1,1,1)=1.0                                                     P1650720
      A1C(1)=(1.0,1.0)                                                   P1650730
      A2C(1,1)=(1.0,1.0)                                                 P1650740
      A3C(1,1,1)=(1.0,1.0)                                               P1650750
      I1I(1)=1                                                           P1650760
      I2I(1,1)=1                                                         P1650770
      I3I(1,1,1)=1                                                       P1650780
      MAVI = 9                                                           P1650790
      IVI=HFD(AVS,IAVI,AVB,AVC,AVD,A1S,A2S,A3S,I1I,I2I,I3I ,A1B,A2B,A3B,P1650800
     1A1C,A2C,A3C,A1D,A2D,A3D,CFD)                                       P1650810
      IF (IVI)   1652,1653,1652                                          P1650820
 7019 MAVI = 10                                                          P1650830
      IVI=AXVS                                                           P1650840
      IF (IVI) 1652,1653,1652                                            P1650850
 7020 MAVI = 11                                                          P1650860
      WRITE (NUVI,1656) AVC,MAVI                                         P1650870
1656  FORMAT(//2F5.1//2X,5HTEST ,I2,31H IS POSITIVE IF NUMBERS PRINTED/ P1650880
     1 2X,17HABOVE ARE 0.0,0.0)                                          P1650890
 7021 MAVI = 12                                                          P1650900
      BVB = AVB.AND.A1B(1).AND.A2B(1,1).AND.A3B(1,1,1)                   P1650910
      IF(BVB) GO TO 1653                                                 P1650920
 1652 WRITE(NUVI,1654)MAVI                                               P1650930
      GO TO 1651                                                         P1650940
 1653 WRITE(NUVI,1655)MAVI                                               P1650950
 1654 FORMAT(/2X,5HTEST ,I2,12H IS NEGATIVE)                             P1650960
 1655 FORMAT(/2X,5HTEST ,I2,12H IS POSITIVE)                             P1650970
 1651 GO TO (1657,1658,1659,7014,7015,7016,7017,7018,7019,7020,7021,     P1650980
     1 7022) ,MAVI                                                       P1650990
 7022 CONTINUE                                                           P1651000
C*****    END OF TEST SEGMENT 165                                       P1651010
C*****  WHEN EXECUTING ONLY SEGMENT 165, THE  STOP  AND  END CARDS      P1651020
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1651030
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1651040
C=    STOP                                                              P1651050
C=    END                                                               P1651060
      STOP                                                              P165C1
      END                                                               P165C2
C*************************************************************************P4050010
C*****                                                                  P4050020
C*****                          AFD - (405)                             P4050030
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C*****                                                                  P4050040
C*********************************************************************P4050050
C*****DOUBLE PRECISION FUNCTION OF REAL ARGUMENT (TEST 1)               P4050060
      DOUBLE PRECISION FUNCTION  AFD(AWVS)                              P4050070
      AFD=AWVS                                                          P4050080
      RETURN                                                            P4050090
      END                                                               P4050100
C*********************************************************************P4150010
C*****                                                                  P4150020
C*****                          BFD -(415)                              P4150030
C*****                                                                  P4150040
C*********************************************************************P4150050
C*****DOUBLE PRECISION FUNCTION OF INTEGER ARGUMENT(TEST2)              P4150060
      DOUBLE PRECISION FUNCTION BFD(IWVI)                               P4150070
      BFD=1.0D0**IWVI                                                   P4150080
      RETURN                                                            P4150090
      END                                                               P4150100
C*********************************************************************P4250010
C*****                                                                  P4250020
C*****                          CFD - (425)                             P4250030
C*****                                                                  P4250040
C*********************************************************************P4250050
C*****DOUBLE PRECISION FUNCTION OF DOUBLE PRECISION ARGUMENT(TEST 3)    P4250060
      DOUBLE PRECISION FUNCTION CFD(AWVD)                               P4250070
      DOUBLE PRECISION AWVD                                             P4250080
      CFD=AWVD                                                          P4250090
      RETURN                                                            P4250100
      END                                                               P4250110
C*********************************************************************P4350010
C*****                                                                  P4350020
C*****                          DFD -(435)                              P4350030
C*****                                                                  P4350040
C*********************************************************************P4350050
C*****DOUBLE PRECISION FUNCTION OF COMPLEX ARGUMENT(TEST 4)             P4350060
      DOUBLE PRECISION FUNCTION DFD(AWVC,BWVC)                          P4350070
      COMPLEX AWVC,BWVC,CVC                                             P4350080
      CVC =BWVC*AWVC                                                    P4350090
      DFD=AIMAG(CVC)                                                    P4350100
      RETURN                                                            P4350110
      END                                                               P4350120
C*********************************************************************P4450010
C*****                                                                  P4450020
C*****                          EFD - (445)                             P4450030
C*****                                                                  P4450040
C*********************************************************************P4450050
C*****DOUBLE PRECISION FUNCTION OF LOGICAL ARGUMENT(TEST 5,6)           P4450060
      DOUBLE PRECISION FUNCTION EFD(AWVB)                               P4450070
      LOGICAL AWVB                                                      P4450080
      IF(AWVB) GO TO 4451                                               P4450090
4450  IF(.NOT.AWVB) GO TO 4452                                          P4450100
      RETURN                                                            P4450110
4451  EFD = 1.0D0                                                       P4450120
      GO TO 4450                                                        P4450130
4452  EFD = 0.0D0                                                       P4450140
      RETURN                                                            P4450150
      END                                                               P4450160
C*********************************************************************P4550010
C*****                                                                  P4550020
C*****                          FFD - (455)                             P4550030
C*****                                                                  P4550040
C*********************************************************************P4550050
C*****DOUBLE PRECISION FUNCTION OF EXTERNAL PROCEDURE (TEST 7)          P4550060
      DOUBLE PRECISION FUNCTION FFD(BWVS,BWFD)                          P4550070
      DOUBLE PRECISION      BWFD                                        P4550080
      FFD = BWFD (BWVS)                                                 P4550090
      RETURN                                                            P4550100
      END                                                               P4550110
C*********************************************************************P4650010
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C*****                                                                  P4650020
C*****                          GFO - (465)                             P4650030
C*****                                                                  P4650040
C*************************************************************************P4650050
C*****DOUBLE PRECISION FUNCTION OF  ARRAY NAME (TEST 8)                  P4650060
      DOUBLE PRECISION FUNCTION GFD(AW1D)                               P4650070
      OIMENSION AW1D(2)                                                 P4650080
      OOUBLE PRECISION AW10                                             P4650090
      GFO= AW10(1)+AW10(2)                                              P4650100
      RETURN                                                            P4650110
      ENO                                                               P4650120
C*************************************************************************P4750010
C*****                                                                  P4750020
C*****                          HFO - (475)                             P4750030
C*****                                                                  P4750040
C*************************************************************************P4750050
C*****DOUBLE PRECISION FUNCTION OF OIFFERENT TYPES OF ARGUMENTS.USE CAN P4750060
C*****BE MAOE OF AOJUSTABLE OIMENSION.SOME ARGUMENTS CAN BE PASSED       P4750070
C*****THROUGH A COMMON STATEMENT.                                       P4750080
      DOUBLE PRECISION FUNCTION HFD(AWVS,IWVI,AWVB,AWVC,AWVD,AW1S,AW2S, P4750090
     1 AW3S,IW1I,IW2I,IW3I,AW1B,AW2B,AW3B,AW1C,AW2C,AW3C,AW10,AW20,      P4750100
     2 AW3D,CWFO)                                                       P4750110
       DIMENSION  AW1S(IWVI),AW2S(IWVI,IWVI),AW3S(IWVI,IWVI,IWVI),      P4750120
     1            IW1I(IWVI),IW2I(IWVI,IWVI),IW3I(IWVI,IWVI,IWVI),    P4750130
     2            AW1C(IWVI),AW2C(IWVI,IWVI),AW3C(IWVI,IWVI,IWVI),    P4750140
     3            AW10(IWVI),AW20(IWVI,IWVI),AW30(IWVI,IWVI,IWVI),    P4750150
     4            AW1B(IWVI),AW2B(IWVI,IWVI),AW3B(IWVI,IWVI,IWVI)     P4750160
      OOUBLE PRECISION  AWVO,AW10,AW20,AW30, CWFO                       P4750170
      COMPLEX AWVC,AW1C,AW2C,AW3C                                       P4750180
      REAL AW1S, AW2S, AW3S                                             P4750190
      LOGICAL  AWVB,AW1B,AW2B,AW3B                                      P4750200
      COMMON BXVS                                                       P4750210
      HFO = AWVD - AW1D(IWVI)+AW20(IWVI,IWVI)-AW3D(IWVI,IWVI,IWVI)      P4750220
     1 + CWFD(AWVO) - 1.000                                             P4750230
      AWVC=AW1C(IWVI)+AW2C(IWVI,IWVI)-AW3C(IWVI,IWVI,IWVI)-(1.0,1.0)    P4750240
      BXVS=AWVS**IWVI-AW1S(IWVI)**IW1I(IWVI)+AW2S(IWVI,IWVI)**IW2I      P4750250
     1  (IWVI,IWVI)-AW3S(IWVI,IWVI,IWVI)**IW3I(IWVI,IWVI,IWVI)          P4750260
       AWVB=IWVI.EQ.1                                                   P4750270
      AW1B(IWVI)=IWVI.EQ.1                                              P4750280
      AW2B(IWVI,IWVI)=IWVI.EQ.1                                         P4750290
      AW3B(IWVI,IWVI,IWVI)=IWVI.EQ.1                                    P4750300
      RETURN                                                            P4750310
      ENO                                                               P4750320
C*************************************************************************P1660010
C*****                                                                  P1660020
C*****                          BFCCP-(166)                             P1660030
C*****                                                                  P1660040
C*************************************************************************P1660050
C*****                        GENERAL PURPOSE                           P1660060
C*****     1.TO TEST LOGICAL FUNCTIONS IN FULL FORTRAN                  P1660070
C*****     2.OUMMY ARGUMENTS ARE REAL,INTEGER,COMPLEX,LOGICAL,          P1660080
C*****     OOUBLE PRECISION,EXTERNAL PROCEOURE,ARRAY NAME.              P1660090
C*****     3.FUNCTIONS CONTAIN UP TO 20 ARGUMENTS                       P1660100
C*****     4.IN REFERENCE ACTUAL ARGUMENTS ARE VARIABLE NAME            P1660110
C*****     ARRAY NAME,ARRAY ELEMENT NAME,ARITHMETIC EXPRESSION          P1660120
C*****     EXTERNAL PROCEOURE                                           P1660130
C*****     6.USE CAN BE MAOE OF ADJUSTABLE OIMENTION                    P1660140
C*****     7.ARGUMENTS CAN BE PASSEO THROUGH COMMON                     P1660150
C*****RESTRICTIONS OBSERVEO                                             P1660160
C*****     1.ITEMS(2),(3),(4),(5),(6) OF PARAGRAPH                      P1660170
C*****     2.LAST SENTENCE OF PARAGRAPH 3.2                             P1660180
C*****      THIS SEGMENT IS TO BE RUN WITH SEGMENTS                     P1660190
C*****       406, 416, 426, 436, 446, 456, 466, 476          WHICH      P1660200
C*****     CONTAINS ALL FUNCTIONS BEING TESTEO HERE.                    P1660210
C*****LOGICAL FUNCTION OF REAL ARGUMENT(TEST 1)                         P1660220
C*****                                                                  P1660230
C*****  S P E C I F I C A T I O N S  SEGMENT 166                        P1660240
C*****                                                                  P0013370
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C*****  WHEN EXECUTING ONLY SEGMENT 166, THE SPECIFICATION STATEMENTS   P0013375
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE C=                       P0013380
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0013385
C*****                                                                  P0013390
C=     DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                             P0013395
C=     INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                               P0013400
C=     LOGICAL AVB,AFB,BFB,CFB,DFB,EFB,FFB,GFB,HFB                      P0013405
C=    1, A1B(2),A2B(2,2),A3B(2,2,2)                                     P0013410
C=     DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                  P0013415
C=     COMPLEX AVC,A1C(12),A2C(2,2),A3C(2,2,1)                          P0013420
C=     COMMON AXVS,CXVS                                                 P0013425
C=      EXTERNAL AFB                                                    P0013430
       DIMENSION A1S(5),A2S(2,2),A3S(3,3,3)                             P166A1
       INTEGER I1I(5),I2I(2,2),I3I(2,2,2)                               P166A2
       LOGICAL AVB,AFB,BFB,CFB,DFB,EFB,FFB,GFB,HFB                      P166A3
      1, A1B(2),A2B(2,2),A3B(2,2,2)                                     P166A4
       DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                  P166A5
       COMPLEX AVC,A1C(12),A2C(2,2),A3C(2,2,1)                          P166A6
       COMMON AXVS,CXVS                                                 P166A7
        EXTERNAL AFB                                                    P166A8
C*****                                                                  P0013435
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P1660250
C*****                                                                  P0072730
C*****  WHEN EXECUTING ONLY SEGMENT 166, THE FOLLOWING STATEMENT        P0072735
C*****  NUVI  =  6  MUST HAVE THE C= IN COLUMNS 1  AND  2  REMOVED.     P0072740
C=     NUVI = 6                                                         P0072745
       NUVI = 6                                                         P166B1
       MAVI=1                                                           P1660260
       WRITE(NUVI,1662)                                                 P1660270
 1662 FORMAT(1H1,1X,31HBFCCP - (166) LOGICAL FUNCTIONS//2X,             P1660280
     1 13HASA REF 8.3.1//2X,7HRESULTS)                                  P1660290
       AVB=AFB(1.0)                                                     P1660300
       IF (AVB) GO TO 1664                                              P1660310
       WRITE(NUVI,1661) MAVI                                            P1660320
       GO TO 1665                                                       P1660330
1660   FORMAT (/7H  TEST ,I2,12H IS POSITIVE)                           P1660340
1661   FORMAT (/7H  TEST ,I2,12H IS NEGATIVE)                           P1660350
1664   WRITE(NUVI,1660) MAVI                                            P1660360
       GO TO (1665,1666,1667,1668,1669,7030,7031,7032,7033,7034), MAVI  P1660370
C***** LOGICAL FUNCTION OF INTEGER ARGUMENT (TEST 2)                    P1660380
1665   MAVI=2                                                           P1660390
       AVB=BFB(1)                                                       P1660400
       IF (AVB) GO TO 1664                                              P1660410
       WRITE(NUVI,1661) MAVI                                            P1660420
C*****LOGICAL FUNCTION OF DOUBLE PRECISION ARGUMENT(TEST 3)             P1660430
1666   MAVI=3                                                           P1660440
       AVD=1.0D0                                                        P1660450
       AVB=CFB(AVD)                                                     P1660460
       IF (AVB) GO TO 1664                                              P1660470
       WRITE(NUVI,1661) MAVI                                            P1660480
C***** LOGICAL FUNCTION OF LOGICAL ARGUMENT(TEST 4)                     P1660490
1667   MAVI=4                                                           P1660500
       AVB=DFB(.TRUE.)                                                  P1660510
       IF (AVB) GO TO 1664                                              P1660520
       WRITE(NUVI,1661) MAVI                                            P1660530
C*****LOGICAL FUNCTION OF COMPLEX ARGUMENT(TEST 5)                      P1660540
1668   MAVI=5                                                           P1660550
       AVB=EFB((1.0,1.0))                                               P1660560
       IF (AVB) GO TO 1664                                              P1660570
       WRITE(NUVI,1661) MAVI                                            P1660580
C***** LOGICAL FUNCTION OF ARRAY NAME (TEST 6)                          P1660590
1669    MAVI=6                                                          P1660600
        A1S(1)=1.0                                                      P1660610
        A1S(2)=0.0                                                      P1660620
        AVB=FFB(A1S)                                                    P1660630
       IF (AVB) GO TO 1664                                              P1660640
       WRITE(NUVI,1661) MAVI                                            P1660650
C***** LOGICAL FUNCTION OF EXTERNAL PROCEDURE(TEST 7)                   P1660660
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7030    MAVI=7                                                          P1660670
        AVB= GFB(AFB,1.0)                                               P1660680
        IF (AVB) GO TO 1664                                             P1660690
        WRITE(NUVI,1661) MAVI                                           P1660700
C*****LOGICAL FUNCTION OF DIFFERENT TYPES OF ARGUMENTS                  P1660710
7031    MAVI=8                                                          P1660720
        AVD = 1.0D0                                                     P1660730
        AVC = (1.0,1.0)                                                 P1660740
        IAVI = 1                                                        P1660750
        AVB=.TRUE.                                                      P1660760
        A1B(1)=.TRUE.                                                   P1660770
        A2B(1,1)=.TRUE.                                                 P1660780
        A3B(1,1,1)=.TRUE.                                               P1660790
        A1C(1)=(1.0,1.0)                                                P1660800
        A2C(1,1)=(1.0,1.0)                                              P1660810
        A3C(1,1,1)=(-2.0,-2.0)                                          P1660820
        A1D(1)=1.0D0                                                    P1660830
        A2D(1,1)=1.0D0                                                  P1660840
        A3D(1,1,1)=-2.0D0                                               P1660850
        I1I(1)=1                                                        P1660860
        I2I(1,1)=1                                                      P1660870
        I3I(1,1,1)=1                                                    P1660880
        A1S(1)=1.0                                                      P1660890
        A2S(1,1)=1.0                                                    P1660900
        A3S(1,1,1)=1.0                                                  P1660910
        AXVS=1.0                                                        P1660920
        AVB= HFB(AVS,IAVI,AVB,AVD,AVC,A1S,A2S,A3S,I1I,I2I,I3I,A1B,A2B,  P1660930
       1A3B,A1C,A2C,A3C,A1D,A2D,A3D,AFB)                                P1660940
        IF (AVB) GO TO 1664                                             P1660950
        WRITE(NUVI,1661) MAVI                                           P1660960
7032    MAVI = 9                                                        P1660970
        IAVI=AVD                                                        P1660980
        IF(IAVI.EQ.0) GO TO 1664                                        P1660990
        WRITE(NUVI,1661) MAVI                                           P1661000
7033    IAVI=1                                                          P1661010
        MAVI=10                                                         P1661020
        IAVI=AVS                                                        P1661030
        IF(IAVI.EQ.0) GO TO 1664                                        P1661040
        WRITE(NUVI,1661) MAVI                                           P1661050
7034    MAVI=11                                                         P1661060
        WRITE(NUVI,1663) AVC,MAVI                                       P1661070
1663    FORMAT (//2F8.4//7H  TEST ,I2,31H IS POSITIVE IF NUMBERS PRINTED/ P1661080
     119H  ABOVE ARE 0.0,0.0//2X,12HEND OF (166))                       P1661090
C*****    END OF TEST SEGMENT 166                                       P1661100
C*****  WHEN EXECUTING ONLY SEGMENT 166, THE STOP AND END CARDS         P1661110
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C= IN               P1661120
C***** COLUMNS  1  AND  2  REMOVED.                                     P1661130
C=      STOP                                                            P1661140
C=      END                                                             P1661150
        STOP                                                            P166C1
        END                                                             P166C2
C*******************************************************************************P4060010
C*****                                                                  P4060020
C*****                          AFB - (406)                             P4060030
C*****                                                                  P4060040
C*******************************************************************************P4060050
C*****LOGICAL FUNCTION OF REAL ARGUMENT (TEST 1)                        P4060060
        LOGICAL FUNCTION AFB(AWVS)                                      P4060070
        AFB= AWVS.GT.0.0                                                P4060080
        RETURN                                                          P4060090
        END                                                             P4060100
C*******************************************************************************P4160010
C*****                                                                  P4160020
C*****                          BFB - (416)                             P4160030
C*****                                                                  P4160040
C*******************************************************************************P4160050
C*****LOGICAL FUNCTION OF INTEGER ARGUMENT (TEST 2)                     P4160060
        LOGICAL FUNCTION BFB(IWVI)                                      P4160070
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```
      BFB= IWVI.GT.0                                                    P4160080
      RETURN                                                            P4160090
      END                                                               P4160100
C*************************************************************************P4260010
C*****                                                                  P4260020
C*****                          CFB - (426)                             P4260030
C*****                                                                  P4260040
C*************************************************************************P4260050
C*****LOGICAL FUNCTION OF DOUBLE PRECISION ARGUMENT(TEST 3)              P4260060
      LOGICAL FUNCTION CFB(AWVD)                                        P4260070
      DOUBLE PRECISION AWVD                                             P4260080
      CFB= AWVD.GT.0.0D0                                                P4260090
      RETURN                                                            P4260100
      END                                                               P4260110
C*************************************************************************P4360010
C*****                                                                  P4360020
C*****                          DFB - (436)                             P4360030
C*****                                                                  P4360040
C*************************************************************************P4360050
C*****LOGICAL FUNCTION OF LOGICAL ARGUMENT (TEST 4)                     P4360060
      LOGICAL FUNCTION DFB(AWVB)                                        P4360070
      LOGICAL AWVB                                                      P4360080
      DFB=AWVB                                                          P4360090
      RETURN                                                            P4360100
      END                                                               P4360110
C*************************************************************************P4460010
C*****                                                                  P4460020
C*****                          EFB - (446)                             P4460030
C*****                                                                  P4460040
C*************************************************************************P4460050
C*****LOGICAL FUNCTION OF COMPLEX ARGUMENT (TEST 5)                     P4460060
      LOGICAL FUNCTION EFB(AWVC)                                        P4460070
      COMPLEX AWVC                                                      P4460080
      AVS =AIMAG(AWVC)                                                  P4460090
      EFB = AVS .GT.0.0                                                 P4460100
      RETURN                                                            P4460110
      END                                                               P4460120
C*************************************************************************P4560010
C*****                                                                  P4560020
C*****                          FFB - (456)                             P4560030
C*****                                                                  P4560040
C*************************************************************************P4560050
C*****LOGICAL FUNCTION OF ARRAY NAME (TEST 6)                           P4560060
      LOGICAL FUNCTION FFB(AW1S)                                        P4560070
      DIMENSION AW1S(2)                                                 P4560080
      BVS =AW1S(1)+AW1S(2)                                              P4560090
      FFB= BVS .GT.0.0                                                  P4560100
      RETURN                                                            P4560110
      END                                                               P4560120
C*************************************************************************P4660010
C*****                                                                  P4660020
C*****                          GFB - (466)                             P4660030
C*****                                                                  P4660040
C*************************************************************************P4660050
C*****LOGICAL FUNCTION OF EXTERNAL PROCEDURE (TEST 7)                   P4660060
      LOGICAL FUNCTION  GFB(AWFB,AWVS)                                  P4660070
      LOGICAL AWFB                                                      P4660080
      GFB= AWFB(AWVS)                                                   P4660090
      RETURN                                                            P4660100
      END                                                               P4660110
C*************************************************************************P4760010
C*****                                                                  P4760020
C*****                          HFB - (476)                             P4760030
C*****                                                                  P4760040
C*************************************************************************P4760050
C*****LOGICAL FUNCTION OF DIFFERENT TYPES OF ARGUMENTS(TEST 8,9,10,11)  P4760060
      LOGICAL FUNCTION HFB(AWVS,IWVI,AWVB,AWVD,AWVC,AW1S,AW2S,AW3S,     P4760070
     1IW1I,IW2I,IW3I,AW1B,AW2B,AW3B,AW1C,AW2C,AW3C,AW1D,AW2D,AW3D,AWFB) P4760080
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      COMMON BXVS                                                       P4760090
      COMPLEX AWVC,AW1C,AW2C,AW3C                                       P4760100
      DOUBLE PRECISION AWVD,AW1D,AW3D, AW2D                             P4760110
      LOGICAL AWVB,AW1B,AW2B,AW3B,AWFB                                  P4760120
      DIMENSION   AW1C(IWVI),AW2C(IWVI,2),AW3C(IWVI,2,2),               P4760130
     1            AW1B(IWVI),AW2B(IWVI,2),AW3B(IWVI,2,2)    ,          P4760140
     2            AW1S(IWVI),AW2S(IWVI,2),AW3S(IWVI,2,2)    ,          P4760150
     3            AW1D(IWVI),AW2D(IWVI,2),AW3D(IWVI,2,2)    ,          P4760160
     4            IW1I(IWVI),IW2I(IWVI,2),IW3I(IWVI,2,2)              P4760170
      HFB = AWVB.AND.AW1B(IWVI).AND.AW2B(IWVI,IWVI).AND.AW3B(IWVI,      P4760180
     1 IWVI,IWVI).AND.AWFB(1.0)                                         P4760190
      AWVC=AW1C(IWVI)+AW2C(IWVI,IWVI)+AW3C(IWVI,IWVI,IWVI)              P4760200
      AWVD=AW1D(IWVI)+AW2D(IWVI,IWVI)+AW3D(IWVI,IWVI,IWVI)              P4760210
      AWVS=BXVS+AW1S(IWVI)**IW1I(IWVI)-AW2S(IWVI,IWVI)**IW2I(IWVI,IWVI) P4760220
     1  -AW3S(IWVI,IWVI,IWVI)**IW3I(IWVI,IWVI,IWVI)                     P4760230
      RETURN                                                            P4760240
      END                                                               P4760250
C*****************************************************************************P1670010
C*****                                                                     P1670020
C*****                          SBRTN - (167)                              P1670030
C*****                                                                     P1670040
C*****************************************************************************P1670050
C*****  GENERAL PURPOSE                                        ASA REFS  P1670060
C*****    TO TEST SUBROUTINE SUBPROGRAMS                        8.4.1    P1670070
C*****  RESTRICTIONS OBSERVED                                            P1670080
C*****    SYMBOLIC NAME OF A SUBROUTINE MAY NOT APPEAR IN ANY 8.4.1.//19P1670090
C*****    STATEMENT IN THIS SUBROUTINE EXCEPT IN THE                     P1670100
C*****    SUBROUTINE STATEMENT ITSELF                                    P1670110
C*****  * SYMBOLIC NAMES OF DUMMY ARGUMENTS MAY NOT APPEAR    8.4.1.1/23P1670120
C*****    IN EQUIVALENCE OR COMMON STATEMENTS IN THE SUBPROGRAM          P1670130
C*****  * SUBROUTINES MAY NOT CONTAIN A FUNCTION STATEMENT,   8.4.1.//29P1670140
C*****    ANOTHER SUBROUTINE STATEMENT, OR ANY STATEMENT THAT            P1670150
C*****    DIRECTLY OR INDIRECTLY REFERENCES THE SUBROUTINE               P1670160
C*****    BEING DEFINED.                                                 P1670170
C*****  * AT LEAST ONE RETURN STATEMENT MUST BE IN A SUBROUTINE          P1670180
C*****                                                  8.4.1.1/33P1670190
C*****  GENERAL COMMENTS                                                 P1670200
C*****    THIS SEGMENT IS TO BE RUN WITH SEGMENT 407, 417, 427           P1670210
C*****                                                                   P1670220
C*****  S P E C I F I C A T I O N S  SEGMENT 167                         P1670230
C*****                                                                   P0013440
C*****  WHEN EXECUTING ONLY SEGMENT 167, THE SPECIFICATION STATEMENTS    P0013445
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0013450
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0013455
C*****                                                                   P0013460
C=    DIMENSION IAB1I(4), IAB2I(3,3), AB1S(4), AB2S(3,3)                 P0013465
C=    COMMON AXVS, CXVS, IXVI, IAX1I(4), IAX2I(3,3), IAX3I(2,2,2),      P0013470
C=   1       BXVS, AX1S(4), AX2S(3,3)                                    P0013475
C=    EXTERNAL SORT                                                    P0013480
      DIMENSION IAB1I(4), IAB2I(3,3), AB1S(4), AB2S(3,3)               P167A1
      COMMON AXVS, CXVS, IXVI, IAX1I(4), IAX2I(3,3), IAX3I(2,2,2),     P167A2
     1       BXVS, AX1S(4), AX2S(3,3)                                  P167A3
      EXTERNAL SORT                                                    P167A4
C*****                                                                 P0013485
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P1670240
C*****                                                                 P0072750
C*****  WHEN EXECUTING ONLY SEGMENT 167, THE FOLLOWING STATEMENT       P0072755
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.         P0072760
C=    NUVI = 6                                                         P0072765
      NUVI = 6                                                         P167B1
C*****                                                                 P0072770
C*****    WRITE HEADING                                                P1670250
      WRITE (NUVI,1670)                                                P1670260
1670  FORMAT(1H1,1X,35HSBRTN - (167) SUBROUTINE SUBPROGRAM/            P1670270
     1 /2X,16HASA REF. - 8.4.1//2X,7HRESULTS)                          P1670280
C*****    SET ALL VARIABLES AND SOME ELEMENTS IN ARRAYS TO ZERO        P1670290
      IAVI = 4                                                         P1670300
      AVS = 0.0                                                        P1670310
```

```
      IAB1I(1) = 0                                                      P1670320
      IAB1I(3) = 0                                                      P1670330
      IAB2I(1,2) = 0                                                    P1670340
      IAB2I(3,3) = 0                                                    P1670350
C*****                                                                  P1670360
      AB1S(1) = 0.0                                                     P1670370
      AB1S(4) = 0.0                                                     P1670380
      AB2S(1,3) = 0.0                                                   P1670390
      AB2S(2,3) = 0.0                                                   P1670400
C*****                                                                  P1670410
      IXVI = 0                                                          P1670420
      BXVS = 0.0                                                        P1670430
      IAX1I(2) = 0                                                      P1670440
      IAX2I(1,2) = 0                                                    P1670450
C*****                                                                  P1670460
      AX1S(2) = 0.0                                                     P1670470
      AX2S(1,2) = 0.0                                                   P1670480
C*****                                                                  P1670490
C*****    SET ELEMENTS IN INTEGER AND REAL ARRAY TO 1 TO TEST           P1670500
C*****    EXPRESSIONS IN SUBROUTINE ARGUMENT                            P1670510
      IAB1I(2) = 1                                                      P1670520
      IAB1I(4) = 1                                                      P1670530
      IAB2I(2,1) = 1                                                    P1670540
      IAB2I(2,2) = 1                                                    P1670550
C*****                                                                  P1670560
      AB1S(2) = 1.0                                                     P1670570
      AB1S(3) = 1.0                                                     P1670580
      AB2S(1,2) = 1.0                                                   P1670590
      AB2S(2,2) = 1.0                                                   P1670600
C*****                                                                  P1670610
      CALL  AAQ(IAVI, AVS, IAB1I, IAB2I, AB1S, AB2S, SQRT,              P1670620
     1IAB1I(2)+IAB1I(4)*IAB2I(2,1)-IAB2I(2,2),                          P1670630
     2AB1S(2)+AB1S(3)*AB2S(1,2)-AB2S(2,2),1.0)                          P1670640
      CALL ACQ                                                          P1670650
C*****    WRITE RESULTS                                                 P1670660
      WRITE (NUVI,1671) IAVI, AVS, IAB1I(1), IAB1I(3), IAB2I(1,2),      P1670670
     A                  IAB2I(3,3), AB1S(1), AB1S(4),                  P1670680
     B                  AB2S(1,3), AB2S(2,3), IXVI, BXVS,              P1670690
     C                  IAX1I(2), IAX2I(1,2), AX1S(2),                 P1670700
     D                  AX2S(1,2)                                      P1670710
1671  FORMAT  (//I10/F11.1/4(I10/),4(F11.1/),I10/F11.1/2(I10/),2(F11.1/ P1670720
     A))                                                                P1670730
      WRITE (NUVI,1672)                                                 P1670740
1672  FORMAT (//2X,38HTEST SUCCESSFUL IF ALL RESULTS EQUAL 1//)         P1670750
C*****    END OF TEST SEGMENT 167                                       P1670760
C*****  WHEN EXECUTING ONLY SEGMENT 167, THE STOP AND END CARDS         P1670770
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=                 P1670780
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1670790
C=    STOP                                                              P1670800
C=    END                                                               P1670810
      STOP                                                              P167C1
      END                                                               P167C2
C*******************************************************************************P4070010
C*****                                                                  P4070020
C*****                          AAQ - (407)                             P4070030
C*****                                                                  P4070040
C*******************************************************************************P4070050
C*****    THIS SUBROUTINE IS TO BE RUN WITH SEGMENT 167                 P4070060
      SUBROUTINE AAQ (IWVI, AWVS, IAW1I, IAW2I, AW1S, AW2S, SQFI,       P4070070
     1MWVI, BWVS, CWVS)                                                 P4070080
      DIMENSION  IAW1I(4), IAW2I(3,3), AW1S(4),                         P4070090
     1           AW2S(3,3)                                            P4070100
      IWVI = INT(SQFI(FLOAT(IWVI) + .5)) - 1                            P4070110
      AWVS = AWVS + 1.0                                                 P4070120
      IAVI = 5                                                          P4070130
      IAW1I(1) = MWVI                                                   P4070140
      IAW1I(3) = IAW1I(3) + 1                                           P4070150
      IAW2I(3,3) = IAW2I(3,3) + 1                                       P4070160
```

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      AW1S(1) = BWVS                                                    P4070170
      AW2S(1,3) = CWVS                                                  P4070180
C*****                                                                  P4070190
C*****    CALL A SUBROUTINE FROM ANOTHER SUBROUTINE                     P4070200
      CALL ABQ(IAW2I, AW1S, AW2S)                                       P4070210
      RETURN                                                            P4070220
      END                                                               P4070230
C*******************************************************************************P4170010
C*****                                                                  P4170020
C*****                          ABQ - (417)                             P4170030
C*****                                                                  P4170040
C*******************************************************************************P4170050
      SUBROUTINE ABQ(ICW2I, CW1S, CW2S)                                 P4170060
      DIMENSION ICW2I(3,3), CW1S(4), CW2S(3,3)                          P4170070
      ICW2I(1,2) = ICW2I(1,2) + 1                                       P4170080
C*****                                                                  P4170090
      CW1S(4) = CW1S(4) + 1.0                                           P4170100
      CW2S(2,3) = CW2S(2,3) + 1.0                                       P4170110
      RETURN                                                            P4170120
      END                                                               P4170130
C*******************************************************************************P4270010
C*****                                                                  P4270020
C*****                          ACQ - (427)                             P4270030
C*****                                                                  P4270040
C*******************************************************************************P4270050
      SUBROUTINE ACQ                                                    P4270060
      DIMENSION  IDX1I(4), IDX2I(3,3), IDX3I(2,2,2)                     P4270070
     1          ,AAX1S(4), AAX2S(3,3)                                   P4270080
      COMMON ABXVS, ACXVS, IAXVI, IDX1I, IDX2I, IDX3I,                  P4270090
     1       AAXVS, AAX1S, AAX2S                                        P4270100
      IAXVI = IAXVI+1                                                   P4270110
      AAXVS = AAXVS +1.0                                                P4270120
      IDX1I(2) = IDX1I(2) + 1                                           P4270130
      IDX2I(1,2) = IDX2I(1,2) + 1                                       P4270140
C*****                                                                  P4270150
      AAX1S(2) = AAX1S(2) * 2. + 1.0                                    P4270160
      AAX2S(1,2) = AAX2S(1,2) + 4.0 - 3.0                               P4270170
C*****                                                                  P4270180
      RETURN                                                            P4270190
C*****    END OF TEST SEGMENT 427                                       P4270200
      END                                                               P4270210
C*******************************************************************************P1680010
C*****                                                                  P1680020
C*****                          FSBRT - (168)                           P1680030
C*****                                                                  P1680040
C*******************************************************************************P1680050
C*****  GENERAL PURPOSE                                    ASA REFS    P1680060
C*****    TO TEST SUBROUTINE SUBPROGRAM IN FORTRAN          8.4.1     P1680070
C*****  RESTRICTIONS OBSERVED                                         P1680080
C*****    SYMBOLIC NAME OF A SUBROUTINE MAY NOT APPEAR IN ANY 8.4.1.1/56P1680090
C*****    STATEMENT IN THIS SUBROUTINE EXCEPT IN THE                  P1680100
C*****    SUBROUTINE STATEMENT ITSELF.                                P1680110
C*****  * SYMBOLIC NAME OF DUMMY ARGUMENTS MAY NOT APPEAR     8.4.1.1/39P1680120
C*****    IN EQUIVALENCE OR COMMON STATEMENTS IN THE SUBPROGRAM       P1680130
C*****  * SUBROUTINES MAY NOT CONTAIN A FUNCTION STATEMENT,   8.4.1.1/45P1680140
C*****    ANOTHER SUBROUTINE STATEMENT, OR ANY STATEMENT THAT         P1680150
C*****    DIRECTLY OR INDIRECTLY REFERENCES THE SUBROUTINE            P1680160
C*****    BEING DEFINED.                                              P1680170
C*****  * AT LEAST ONE RETURN STATEMENT MUST BE IN A SUBROUTINE       P1680180
C*****                                                  8.4.1.1/49P1680190
C*****  GENERAL COMMENTS                                              P1680200
C*****    THIS SEGMENT IS TO BE RUN WITH SEGMENT 408 , 418, 428       P1680210
C*****                                                                P1680220
C*****  S P E C I F I C A T I O N S  SEGMENT 168                      P1680230
C*****                                                                P0013490
C*****  WHEN EXECUTING ONLY SEGMENT 168, THE SPECIFICATION STATEMENTS P0013495
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE C=                     P0013500
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P0013505
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C*****                                                                  P0013510
C=    DIMENSION IAB1I(4), IAB2I(3,3), IAB3I(2,2,2), AB1S(4), AB2S(3,3), P0013515
C=   A          AB3S(2,2,2)                                             P0013520
C=    COMMON AXVS, CXVS, IXVI, IAX1I(4), IAX2I(3,3), IAX3I(2,2,2),      P0013525
C=   A      BXVS, AX1S(4), AX2S(3,3), AX3S(2,2,2), AXVD, AX1D(2),       P0013530
C=   B      AX2D(2,2), AX3D(2,2,2), AXVC, AX1C(2), AX2C(2,2),           P0013535
C=   C      AX3C(2,2,2), AXVB, AX1B(2), AX2B(2,2), AX3B(2,2,2)          P0013540
C=    DOUBLE PRECISION AXVD, AX1D, AX2D, AX3D                           P0013545
C=    DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                   P0013550
C=    COMPLEX AXVC, AX1C, AX2C, AX3C                                    P0013555
C=    COMPLEX AVC,A1C(12),A2C(2,2),A3C(2,2,1)                           P0013560
C=    LOGICAL AXVB, AX1B, AX2B, AX3B                                    P0013565
C=    LOGICAL A1B(2),A2B(2,2),A3B(2,2,2),AVB                            P0013570
      DIMENSION IAB1I(4), IAB2I(3,3), IAB3I(2,2,2), AB1S(4), AB2S(3,3), P168A1
     A          AB3S(2,2,2)                                             P168A2
      COMMON AXVS, CXVS, IXVI, IAX1I(4), IAX2I(3,3), IAX3I(2,2,2),      P168A3
     A      BXVS, AX1S(4), AX2S(3,3), AX3S(2,2,2), AXVD, AX1D(2),       P168A4
     B      AX2D(2,2), AX3D(2,2,2), AXVC, AX1C(2), AX2C(2,2),           P168A5
     C      AX3C(2,2,2), AXVB, AX1B(2), AX2B(2,2), AX3B(2,2,2)          P168A6
      DOUBLE PRECISION AXVD, AX1D, AX2D, AX3D                           P168A7
      DOUBLE PRECISION AVD,A1D(4),A2D(2,2),A3D(2,2,2)                   P168A8
      COMPLEX AXVC, AX1C, AX2C, AX3C                                    P168A9
      COMPLEX AVC,A1C(12),A2C(2,2),A3C(2,2,1)                           P168AA
      LOGICAL AXVB, AX1B, AX2B, AX3B                                    P168AB
      LOGICAL A1B(2),A2B(2,2),A3B(2,2,2),AVB                            P168AC
C*****                                                                  P0013575
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P1680240
C*****                                                                  P0072780
C*****  WHEN EXECUTING ONLY SEGMENT 168, THE FOLLOWING STATEMENT        P0072785
C*****  NUVI  =  6  MUST HAVE THE C= IN COLUMNS 1  AND  2  REMOVED.     P0072790
C=    NUVI = 6                                                          P0072795
      NUVI = 6                                                          P168B1
C*****    SET INTEGER VARIABLES AND SOME ELEMENTS IN ARRAYS TO ZERO     P1680250
C*****    WRITE HEADING                                                 P1680260
      WRITE (NUVI,1680)                                                 P1680270
1680  FORMAT (1H1,1X,36HFSBRT - (168) SUBROUTINE SUBPROGRAMS/           P1680280
     A/18H  ASA REF. - 8.4.1//2X,7HRESULTS)                             P1680290
      IAVI = 0                                                          P1680300
      IAB1I(1) = 0                                                      P1680310
      IAB2I(1,2) = 0                                                    P1680320
      IAB3I(1,1,2) = 0                                                  P1680330
      IXVI = 0                                                          P1680340
      IAX1I(1) = 0                                                      P1680350
      IAX2I(1,2) = 0                                                    P1680360
      IAX3I(1,1,2) = 0                                                  P1680370
C*****    SET REAL VARIABLES AND SOME ELEMENTS IN ARRAYS TO ONE         P1680380
      AVS = 1.                                                          P1680390
      AB1S(1) = 1.                                                      P1680400
      AB2S(1,2) = 1.                                                    P1680410
      AB3S(1,1,2) = 1.                                                  P1680420
      BXVS = 1.                                                         P1680430
      AX1S(2) = 1.                                                      P1680440
      AX2S(1,2) = 1.                                                    P1680450
      AX3S(1,1,2) = 1.                                                  P1680460
C*****    SET DP VARIABLES AND SOME ELEMENTS IN ARRAY TO TWO             P1680470
      AVD = 2.0D0                                                       P1680480
      A1D(1) = 2.0D0                                                    P1680490
      A2D(1,2) = 2.0D0                                                  P1680500
      A3D(1,1,2) = 2.0D0                                                P1680510
      AXVD = 2.0D0                                                      P1680520
      AX1D(1) = 2.0D0                                                   P1680530
      AX2D(1,2) = 2.D0                                                  P1680540
      AX3D(1,1,2) = 2.0D0                                               P1680550
C*****    SET COMPLEX VARIABLES AND SOME ELEMENTS IN ARRAYS TO (3.0,3.0)P1680560
      AVC = (3.0,3.0)                                                   P1680570
      A1C(1) = (3.0,3.0)                                                P1680580
      A2C(1,2) = (3.0,3.0)                                              P1680590
      A3C(1,2,1) = (3.0,3.0)                                            P1680600
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      AXVC = (3.0,3.0)                                                  P1680610
      AX1C(1) = (3.0,3.0)                                               P1680620
      AX2C(1,2) = (3.0,3.0)                                             P1680630
      AX3C(1,1,2) = (3.0,3.0)                                           P1680640
C*****    SET LOGICAL VARIABLES AND SOME ELEMENTS IN ARRAYS TO .FALSE.  P1680650
      AVB = .FALSE.                                                     P1680660
      A1B(1) = .FALSE.                                                  P1680670
      A2B(1,2) = .FALSE.                                                P1680680
      A3B(1,1,2) = .FALSE.                                              P1680690
      AXVB = .FALSE.                                                    P1680700
      AX1B(1) = .FALSE.                                                 P1680710
      AX2B(1,2) = .FALSE.                                               P1680720
      AX3B(1,1,2) = .FALSE.                                             P1680730
C*****    SET INTEGER AND REAL VARIABLES FOR EXPRESSION USAGE IN        P1680740
C*****    DUMMY ARGUMENT                                                P1680750
      IAB1I(4) = 0                                                      P1680760
      IAB1I(2) = 0                                                      P1680770
      AB1S(4) = 0.0                                                     P1680780
      AB1S(2) = 0.0                                                     P1680790
      JAVI = 1                                                          P1680800
      KAVI = 1                                                          P1680810
      LAVI = 1                                                          P1680820
      MAVI = 1                                                          P1680830
      NAVI = 1                                                          P1680840
      ABVS = 1.                                                         P1680850
      ACVS = 1.                                                         P1680860
      ADVS = 2.                                                         P1680870
      AEVS = 2.                                                         P1680880
      AFVS = 2.                                                         P1680890
      CALL ADQ(IAVI,IAB1I, IAB2I, IAB3I, AVS, AB1S, AB2S, AB3S, AVD,    P1680900
     A          A1D, A2D, A3D, AVC, A1C, A2C, A3C, AVB, A1B, A2B, A3B,  P1680910
     B          JAVI+KAVI*LAVI-MAVI/NAVI,1,ABVS+ACVS*ADVS-AEVS/AFVS,2.) P1680920
      WRITE (NUVI,1681)                                                 P1680930
      CALL AFQ                                                          P1680940
1681  FORMAT ( /28H  TEST IS SUCCESSFUL IF EACH/                        P1680950
     A28H  GROUP CONTAINS SAME VALUES)                                  P1680960
      WRITE (NUVI,1682) IAVI, IAB1I(1), IAB1I(2), IAB1I(4), IAB2I(1,2), P1680970
     A                  IAB3I(1,1,2), IXVI, IAX1I(1), IAX2I(1,2),      P1680980
     B                  IAX3I(1,1,2), AVS, AB1S(1), AB2S(1,2), AB3S(1,1,P1680990
     C2),AB1S(2),AB1S(4),   BXVS, AX1S(2), AX2S(1,2), AX3S(1,1,2), AVD, P1681000
     D                  A1D(1), A2D(1,2), A3D(1,1,2), AXVD, AX1D(1),   P1681010
     E                  AX2D(1,2), AX3D(1,1,2), AVC, A1C(1), A2C(1,2), P1681020
     F                  A3C(1,2,1), AXVC, AX1C(1), AX2C(1,2),          P1681030
     G                  AX3C(1,1,2), AVB, A1B(1), A2B(1,2), A3B(1,1,2), P1681040
     H                  AXVB, AX1B(1), AX2B(1,2), AX3B(1,1,2)          P1681050
1682  FORMAT (  10(I10/)/                                               P1681060
     1            10(F11.1/)/                                          P1681070
     2             8(1PD15.1/)/                                        P1681080
     3             8(0PF5.1,F5.1/)/                                    P1681090
     4             8(L10/) )                                           P1681100
C*****    END OF TEST SEGMENT 168                                       P1681110
C*****  WHEN EXECUTING ONLY SEGMENT 168, THE STOP AND END CARDS         P1681120
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C= IN               P1681130
C***** COLUMNS  1  AND  2  REMOVED.                                     P1681140
C=    STOP                                                            P1681150
C=    END                                                             P1681160
      STOP                                                            P168C1
      END                                                             P168C2
C*******************************************************************P4080010
C*****                                                               P4080020
C*****                          ADQ - (408)                          P4080030
C*****                                                               P4080040
C*******************************************************************P4080050
C*****  SUBROUTINE ADQ CALLED BY SEG. FSBRT(168)                     P4080060
      SUBROUTINE ADQ(IWVI,IAW1I,IAW2I,IAW3I,AWVS,AW1S,AW2S,AW3S,      P4080070
     A               AWVD,AW1D,AW2D,AW3D,AWVC,AW1C,AW2C,AW3C,         P4080080
     B               AWVB,AW1B,AW2B,AW3B,KWVI,MWVI,BWVS,CWVS)         P4080090
      DIMENSION IAW1I(4), IAW2I(3,3), IAW3I(2,2,2), AW1S(4), AW2S(3,3), P4080100
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     A           AW3S(2,2,2), AW1D(2), AW2D(2,2), AW3D(2,2,2), AW1C(2), P4080110
     B          AW2C(2,2), AW3C(2,2,1), AW1B(2), AW2B(2,2),             P4080120
     C           AW3B(2,2,2)                                            P4080130
      DOUBLE PRECISION  AWVD, AW1D, AW2D, AW3D                         P4080140
      COMPLEX           AWVC, AW1C, AW2C, AW3C                         P4080150
      LOGICAL           AWVB, AW1B, AW2B, AW3B                         P4080160
C*****    STORE INTEGER AND REAL EXPRESSIONS                           P4080170
      IAW1I(4) = KWVI                                                  P4080180
      IAW1I(2) = MWVI                                                  P4080190
      AW1S(4) = BWVS                                                   P4080200
      AW1S(2) = CWVS                                                   P4080210
      CALL AEQ (IWVI,IAW1I,IAW2I,IAW3I,AWVS,AW1S,AW2S,AW3S)            P4080220
C*****    INCREMENT DOUBLE PRECISION                                   P4080230
      AWVD = AWVD + AWVD                                               P4080240
      AW1D(1) = AW1D(1) + AW1D(1)                                      P4080250
      AW2D(1,2) = AW2D(1,2) + AW2D(1,2)                                P4080260
      AW3D(1,1,2) = AW3D(1,1,2) + AW3D(1,1,2)                          P4080270
C*****    INCREMENT COMPLEX                                            P4080280
      AWVC = AWVC + AWVC                                               P4080290
      AW1C(1) = AW1C(1) + AW1C(1)                                      P4080300
      AW2C(1,2) = AW2C(1,2) + AW2C(1,2)                                P4080310
      AW3C(1,2,1) = AW3C(1,2,1) + AW3C(1,2,1)                          P4080320
C*****    CHANGE LOGICAL                                               P4080330
      AWVB = .NOT. AWVB                                                P4080340
      AW1B(1) = .NOT. AW1B(1)                                          P4080350
      AW2B(1,2) = .NOT. AW2B(1,2)                                      P4080360
      AW3B(1,1,2) = .NOT. AW3B(1,1,2)                                  P4080370
      RETURN                                                           P4080380
      END                                                              P4080390
C*******************************************************************P4180010
C*****                                                                P4180020
C*****                        AEQ - (418)                             P4180030
C*****                                                                P4180040
C*******************************************************************P4180050
C*****  SUBROUTINE AEQ CALLED BY SEG  ADQ(408) WHICH IS               P4180060
C*****  CALLED BY SEG. FSBRT(168)                                     P4180070
      SUBROUTINE AEQ(KWVI, KAW1I, KAW2I, KAW3I, AAWVS, AAW1S, AAW2S,   P4180080
     A                AAW3S)                                          P4180090
      DIMENSION KAW1I(4),KAW2I(3,3),KAW3I(2,2,2),AAW1S(4),AAW2S(3,3),  P4180100
     A           AAW3S(2,2,2)                                         P4180110
C*****    INCREMENT INTEGERS                                           P4180120
      KWVI = KWVI + 1                                                  P4180130
      KAW1I(1) = KAW1I(1) + 1                                          P4180140
      KAW2I(1,2) = KAW2I(1,2) + 1                                      P4180150
      KAW3I(1,1,2) = KAW3I(1,1,2)+1                                    P4180160
C*****    INCREMENT REAL                                               P4180170
      AAWVS = AAWVS + 1.                                               P4180180
      AAW1S(1) = AAW1S(1) + 1.                                         P4180190
      AAW2S(1,2) = AAW2S(1,2) + 1.                                     P4180200
      AAW3S(1,1,2) = AAW3S(1,1,2) + 1.                                 P4180210
      RETURN                                                           P4180220
      END                                                              P4180230
C*******************************************************************P4280010
C*****                                                                P4280020
C*****                        AFQ - (428)                             P4280030
C*****                                                                P4280040
C*******************************************************************P4280050
C*****  SUBROUTINE AFQ CALLED BY SEG. FSBRT(168)                      P4280060
      SUBROUTINE AFQ                                                   P4280070
      COMMON ABXVS, ACXVS, IAXVI, IAX1I(4), IAX2I(3,3), IAX3I(2,2,2),  P4280080
     A       AXVS, AX1S(4), AX2S(3,3), AX3S(2,2,2), AXVD, AX1D(2),     P4280090
     2       AX2D(2,2), AX3D(2,2,2),AXVC, AX1C(2), AX2C(2,2), AX3C(2,2,2)P4280100
     3      ,AXVB, AX1B(2), AX2B(2,2), AX3B(2,2,2)                    P4280110
      DOUBLE PRECISION AXVD, AX1D, AX2D, AX3D                          P4280120
      COMPLEX AXVC, AX1C, AX2C, AX3C                                   P4280130
      LOGICAL AXVB, AX1B, AX2B, AX3B                                   P4280140
C*****    SET INTEGERS TO 1                                            P4280150
      IAXVI = 1                                                        P4280160
```

```
      IAX1I(1) = 1                                                      P4280170
      IAX2I(1,2) = 1                                                    P4280180
      IAX3I(1,1,2) = 1                                                  P4280190
C*****    SET REAL TO 2                                                 P4280200
      AXVS = 2.                                                         P4280210
      AX1S(2) = 2.                                                      P4280220
      AX2S(1,2) = 2.                                                    P4280230
      AX3S(1,1,2) = 2.                                                  P4280240
C*****    SET DP TO 4                                                   P4280250
      AXVD = 4.0D0                                                      P4280260
      AX1D(1) = 4.0D0                                                   P4280270
      AX2D(1,2) = 4.0D0                                                 P4280280
      AX3D(1,1,2) = 4.0D0                                               P4280290
C*****    SET COMPLEX TO 6                                              P4280300
      AXVC = (6.0,6.0)                                                  P4280310
      AX1C(1) = (6.0,6.0)                                               P4280320
      AX2C(1,2) = (6.0,6.0)                                             P4280330
      AX3C(1,1,2) = (6.0,6.0)                                           P4280340
C*****    CHANGE LOGICAL                                                P4280350
      AXVB = .TRUE.                                                     P4280360
      AX1B(1) = .TRUE.                                                  P4280370
      AX2B(1,2) = .TRUE.                                                P4280380
      AX3B(1,1,2) = .TRUE.                                              P4280390
      RETURN                                                            P4280400
      END                                                               P4280410
C*****************************************************************************P1690010
C*****                                                                 P1690020
C*****                          BLKDT - (169)                          P1690030
C*****                                                                 P1690040
C*****************************************************************************P1690050
C*****  GENERAL PURPOSE                                        ASA REFSP1690060
C*****    TD TEST BLDCK DATA SUBPRDGRAM                          8.5   P1690070
C*****  GENERAL CDMMENTS                                              P1690080
C*****    THIS SEGMENT IS TO BE RUN WITH SEGMENT 409.  THIS           P1690090
C*****    SEGMENT WRITES DUT THE DATA FORMED IN SEGMENT 409.          P1690100
C*****                                                                P1690110
C*****  S P E C I F I C A T I D N S  SEGMENT 169                      P1690120
C*****                                                                P0013580
C*****  WHEN EXECUTING DNLY SEGMENT 169, THE SPECIFICATIDN STATEMENTS P0013585
C*****  WHICH APPEAR AS COMMENTS MUST HAVE THE C=                     P0013590
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P0013595
C*****                                                                P0013600
C=    COMMON /BLK1/JXVI, JAX1I(2), JAX2I(3,3)                         P0013605
C=   A       /BLK2/DXVS, DX1S(2), DX2S(2,2)                           P0013610
C=   B       /BLK3/DXVD, DX1D(2), DX2D(2,2)                           P0013615
C=   C       /BLK4/DXVC, DX1C(2), DX2C(2,2)                           P0013620
C=   D       /BLK5/DXVB, DX1B(2), DX2B(2,2)                           P0013625
C=   E       /BLK6/JAX3I(2,2,2), DX3S(2,2,2), DX3D(2,2,2),            P0013630
C=   F             DZ3C(2,2,2), DX3B(2,2,2)                           P0013635
C=    DOUBLE PRECISIDN DXVD, DX1D, DX2D, DX3D                         P0013640
C=    COMPLEX          DXVC, DX1C, DX2C, DZ3C                         P0013645
C=    LOGICAL          DXVB, DX1B, DX2B, DX3B                         P0013650
      COMMON /BLK1/JXVI, JAX1I(2), JAX2I(3,3)                         P169A1
     A       /BLK2/DXVS, DX1S(2), DX2S(2,2)                           P169A2
     B       /BLK3/DXVD, DX1D(2), DX2D(2,2)                           P169A3
     C       /BLK4/DXVC, DX1C(2), DX2C(2,2)                           P169A4
     D       /BLK5/DXVB, DX1B(2), DX2B(2,2)                           P169A5
     E       /BLK6/JAX3I(2,2,2), DX3S(2,2,2), DX3D(2,2,2),            P169A6
     F             DZ3C(2,2,2), DX3B(2,2,2)                           P169A7
      DOUBLE PRECISIDN DXVD, DX1D, DX2D, DX3D                         P169A8
      CDMPLEX          DXVC, DX1C, DX2C, DZ3C                         P169A9
      LDGICAL          DXVB, DX1B, DX2B, DX3B                         P169AA
C*****                                                                P0013655
C*****  D U T P U T  T A P E  ASSIGNMENT STATEMENT.  ND INPUT TAPE.    P1690130
C*****                                                                P0072800
C*****  WHEN EXECUTING DNLY SEGMENT 169, THE FOLLDWING STATEMENT      P0072805
C*****  NUVI  =  6  MUST HAVE THE C= IN COLUMNS 1  AND  2  REMOVED.   P0072810
C=    NUVI = 6                                                        P0072815
```

```
      NUVI = 6                                                          P169B1
C*****    WRITE HEADING FOR SEGMENT 169                                 P1690140
      WRITE (NUVI,1690)                                                 P1690150
1690  FORMAT (1H1,1X,35HBLKDT - (169) BLOCK DATA SUBPROGRAM//           P1690160
     A16H  ASA REF. - 8.5//2X,7HRESULTS)                                P1690170
      WRITE (NUVI,1691)                                                 P1690180
1691  FORMAT ( /28H  TEST IS SUCCESSFUL IF EACH/                        P1690190
     A28H  GROUP CONTAINS SAME VALUES)                                  P1690200
      WRITE (NUVI,1692) JAX2I(1,1), JAX1I(2), JAX2I(2,1), JAX3I(2,2,1)  P1690210
     A     ,DX3S(1,2,1), DX1S(1), DX2S(1,1), DX3S(2,2,1), DX2D(2,2)     P1690220
     B     ,DX1D(2), DX2D(2,1), DX3D(2,2,1), DX2C(2,2), DX1C(2)         P1690230
     C     ,DX2C(2,1), DZ3C(2,1,1), DX2B(2,2),  DX1B(2), DX2B(2,1)      P1690240
     D     ,DX3B(2,2,1), JAX2I(3,1),                                    P1690250
     E     DX3B(2,1,2), DX2S(2,2)                                       P1690260
1692  FORMAT (// 4(I10/)//                                              P1690270
     A            4(F12.1/)//                                          P1690280
     B            4(1PD16.1/)//                                        P1690290
     C            4(0PF6.1,F6.1/)//                                    P1690300
     D            4(L10/)//                                            P1690310
     F            3(2H  ,A2/))                                         P1690320
C*****    END OF TEST SEGMENT 169                                       P1690330
C*****  WHEN EXECUTING ONLY SEGMENT 169, THE STOP AND END CARDS         P1690340
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C= IN               P1690350
C***** COLUMNS  1  AND  2  REMOVED.                                      P1690360
C=    STOP                                                            P1690370
C=    END                                                             P1690380
      STOP                                                            P169C1
      END                                                             P169C2
C*******************************************************************************P4090010
C*****                                                                 P4090020
C*****                          BLOCK - (409)                          P4090030
C*****                                                                 P4090040
C*******************************************************************************P4090050
C*****  GENERAL PURPOSE                                                P4090060
C*****    THIS SEGMENT CONTAINS ONE BLOCK DATA SUBPROGRAM.             P4090070
C*****    IT IS TO BE RUN WITH SEGMENT 169                             P4090080
C*****  GENERAL COMMENTS                                               P4090090
C*****    THIS SEGMENT USES ALL THE PERMISSIBLE STATEMENTS IN A        P4090100
C*****    BLOCK DATA SUBPROGRAM. THE DATA STATEMENT CONSISTS OF ALL    P4090110
C*****    TYPES OF VARIABLES AND ARRAYS.  A HOLLERITH CONSTANT         P4090120
C*****    IS ASSIGNED TO INTEGER, REAL AND LOGICAL                     P4090130
      BLOCK DATA                                                      P4090140
      COMMON /BLK1/JXVI, JAX1I(2), JAX2I(3,3)                         P4090150
     A       /BLK2/DXVS, DX1S(2), DX2S(2,2)                           P4090160
     B       /BLK3/DXVD, DX1D(2), DX2D(2,2)                           P4090170
     C       /BLK4/DXVC, DX1C(2), DX2C(2,2)                           P4090180
     D       /BLK5/DXVB, DX1B(2), DX2B(2,2)                           P4090190
     E       /BLK6/JAX3I(2,2,2), DX3S(2,2,2), DX3D(2,2,2),            P4090200
     F             DZ3C(2,2,2), DX3B(2,2,2)                           P4090210
      DIMENSION CY3C(2,2,2)                                           P4090220
      DOUBLE PRECISION DXVD, DX1D, DX2D, DX3D                         P4090230
      COMPLEX          DXVC, DX1C, DX2C, DZ3C, CY3C                   P4090240
      LOGICAL          DXVB, DX1B, DX2B, DX3B                         P4090250
      INTEGER JXVI                                                    P4090260
      REAL DXVS                                                       P4090270
      EQUIVALENCE (DZ3C(1,1,1), CY3C(1,1,1))                          P4090280
      DATA JAX2I(1,1), JAX1I(2), JAX2I(2,1), JAX3I(2,2,1),DX3S(1,2,1),P4090290
     A     DX1S(1), DX2S(1,1), DX3S(2,2,1), DX2D(2,2), DX1D(2),       P4090300
     B     DX2D(2,1), DX3D(2,2,1), DX2C(2,2), DX1C(2), DX2C(2,1),     P4090310
     C     DZ3C(2,1,1), DX2B(2,2), DX1B(2), DX2B(2,1), DX3B(2,2,1),   P4090320
     D     JAX2I(3,1),DX3B(2,1,2),DX2S(2,2)/4*2,4*3.0,4*4.0D0,4*(4.,5.),P4090330
     E      4*.TRUE.,                  2HAB, 2HAB, 2HAB/               P4090340
C*****    END OF TEST SEGMENT 409                                       P4090350
      END                                                             P4090360
C*******************************************************************************P1790010
C*****                                                                 P1790020
C*****                          BLKDA - (179)                          P1790030
C*****                                                                 P1790040
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C*******************************************************************************P1790050
C*****  GENERAL PURPOSE                                                  ASA REF P1790060
C*****     TO TEST BLOCK DATA SUBPROGRAMS                                 8.5    P1790070
C*****     THIS SEGMENT IS TO BE RUN WITH SEGMENTS 419, 429, 439.   THIS P1790080
C*****     SEGMENT WRITES OUT THE DATA FORMED IN SEGMENT 419, 429, 439   P1790090
C*****                                                                   P1790100
C*****  S P E C I F I C A T I O N S  SEGMENT 179                         P1790110
C*****                                                                   P0013660
C*****  WHEN EXECUTING ONLY SEGMENT 179, THE SPECIFICATION STATEMENTS    P0013665
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                   P0013670
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0013675
C*****                                                                   P0013680
C=     DOUBLE PRECISION DXVD, DX1D, DX2D, DX3D                          P0013685
C=     COMPLEX          DXVC, DX1C, DX2C, DZ3C                          P0013690
C=     COMMON /BLK1/JXVI, JAX1I(2), JAX2I(3,3)                          P0013695
C=    A       /BLK2/DXVS, DX1S(2), DX2S(2,2)                            P0013700
C=    B       /BLK3/DXVD, DX1D(2), DX2D(2,2)                            P0013705
C=    C       /BLK4/DXVC, DX1C(2), DX2C(2,2)                            P0013710
C=    D       /BLK5/DXVB, DX1B(2), DX2B(2,2)                            P0013715
C=    E       /BLK6/JAX3I(2,2,2), DX3S(2,2,2), DX3D(2,2,2),             P0013720
C=    F             DZ3C(2,2,2), DX3B(2,2,2)                            P0013725
C=     LOGICAL          DXVB, DX1B, DX2B, DX3B                          P0013730
      DOUBLE PRECISION DXVD, DX1D, DX2D, DX3D                          P179A1
      COMPLEX          DXVC, DX1C, DX2C, DZ3C                          P179A2
      COMMON /BLK1/JXVI, JAX1I(2), JAX2I(3,3)                          P179A3
     A       /BLK2/DXVS, DX1S(2), DX2S(2,2)                            P179A4
     B       /BLK3/DXVD, DX1D(2), DX2D(2,2)                            P179A5
     C       /BLK4/DXVC, DX1C(2), DX2C(2,2)                            P179A6
     D       /BLK5/DXVB, DX1B(2), DX2B(2,2)                            P179A7
     E       /BLK6/JAX3I(2,2,2), DX3S(2,2,2), DX3D(2,2,2),             P179A8
     F             DZ3C(2,2,2), DX3B(2,2,2)                            P179A9
      LOGICAL          DXVB, DX1B, DX2B, DX3B                          P179AA
C*****                                                                   P0013735
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P1790120
C*****  WHEN EXECUTING ONLY SEGMENT 179, THE FOLLOWING STATEMENT         P0072820
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.          P0072825
C*****                                                                   P0072830
C=     NUVI = 6                                                         P0072835
      NUVI = 6                                                         P179B1
C*****     WRITE HEADING FOR SEGMENT 179                                 P1790130
      WRITE (NUVI,1790)                                                P1790140
1790  FORMAT (1H1,1X,32HBLKDA - (179) SEVERAL BLOCK DATA/ 16X,          P1790150
     1 11HSUBPROGRAMS/ 2X, 14HASA REF. - 8.5// 9H  RESULTS)            P1790160
      WRITE (NUVI,1791)                                                P1790170
1791  FORMAT (//28H  TEST IS SUCCESSFUL IF EACH/                       P1790180
     A28H  GROUP CONTAINS SAME VALUES)                                 P1790190
      WRITE (NUVI,1792) JXVI, JAX1I(1), JAX2I(1,2), JAX3I(1,1,2), DXVS, P1790200
     A                  DX1S(2), DX2S(1,2), DX3S(1,1,2), DXVD, DX1D(1), P1790210
     B                  DX2D(1,2), DX3D(1,1,2), DXVC, DX1C(1),DX2C(1,2),P1790220
     C                  DZ3C(1,1,2), DXVB, DX1B(1), DX2B(1,2),        P1790230
     D                  DX3B(1,1,2), JAX2I(1,3),                      P1790240
     E                  DX3B(2,2,2), DX2S(2,1)                        P1790250
1792  FORMAT (// 4(I10/)//                                            P1790260
     A             4(F12.1/)//                                       P1790270
     B             4(1PD16.1/)//                                     P1790280
     C             4(0PF6.1,F6.1/)//                                 P1790290
     D             4(L10/)//                                         P1790300
     E             3(2H  ,A2/))                                      P1790310
C*****     END OF TEST SEGMENT 179                                       P1790320
C*****  WHEN EXECUTING ONLY SEGMENT 179, THE  STOP  AND  END  CARDS      P1790330
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P1790340
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P1790350
C=     STOP                                                             P1790360
C=     END                                                              P1790370
      STOP                                                             P179C1
      END                                                              P179C2
C*******************************************************************************P4190010
C*****                                                                   P4190020
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C*****                          BLAKD - (419)                                  P4190030
C*****                                                                         P4190040
C*****************************************************************************P4190050
C*****  GENERAL PURPOSE                                                       P4190060
C*****    THIS SEGMENT CONTAINS THE FIRST OF THREE BLOCK DATA SUBPROGRAMSP4190070
C*****    TO BE RUN WITH SEGMENT 179                                          P4190080
C*****    THESE SEGMENTS USE ALL THE PERMISSIBLE STATEMENTS IN A              P4190090
C*****    BLOCK DATA SUBPROGRAM. THE DATA STATEMENTS CONSIST OF ALL           P4190100
C*****    TYPES OF VARIABLES AND ARRAYS. A HOLLERITH CONSTANT IS              P4190110
C*****  ASSIGNED TO INTEGER , REAL, AND LOGICAL                               P4190120
      BLOCK DATA                                                             P4190130
      DOUBLE PRECISION DXVD, DX1D, DX2D                                      P4190140
      COMMON /BLK1/JXVI, JAX1I(2), JAX2I(3,3)                                P4190150
     A       /BLK2/ DXVS, DX1S(2), DX2S(2,2)                                 P4190160
     B       /BLK3/ DXVD, DX1D(2), DX2D(2,2)                                 P4190170
      INTEGER JXVI                                                           P4190180
      REAL DXVS                                                              P4190190
      DATA JXVI, JAX1I(1), JAX2I(1,2), DXVS, DX1S(2)                         P4190200
     A    ,DX2S(1,2), DXVD, DX1D(1), DX2D(1,2)/ 3 * 1                       P4190210
     B    ,3 * 2.0,3*4.0D0/,  JAX2I(1,3),DX2S(2,1)/2HHP,2HHP/               P4190220
C*****   END OF TEST SEGMENT 419                                             P4190230
      END                                                                    P4190240
C*****************************************************************************P4290010
C*****                                                                       P4290020
C*****                            BLBKD - (429)                              P4290030
C*****                                                                       P4290040
C*****************************************************************************P4290050
C*****   TO BE RUN WITH SEGMENT 179                                          P4290060
C*****   THIS SEGMENT CONTAINS THE 2ND OF THREE BLOCK DATA SUBPROGRAMS       P4290070
C*****   TO BE RUN WITH SEGMENT 179                                          P4290080
      BLOCK DATA                                                             P4290090
      COMPLEX DXVC, DX1C, DX2C                                               P4290100
      COMMON /BLK4/ DXVC,DX1C(2), DX2C(2,2)                                  P4290110
     C       /BLK5/DXVB, DX1B(2), DX2B(2,2)                                  P4290120
      LOGICAL DXVB, DX1B, DX2B                                               P4290130
      DATA DXVC, DX1C(1), DX2C(1,2),DXVB, DX1B(1),DX2B(1,2)/                 P4290140
     D     3 * (3.,4.), 3 *.FALSE./                                          P4290150
C*****   END OF TEST SEGMENT 429                                             P4290160
      END                                                                    P4290170
C*****************************************************************************P4390010
C*****                                                                       P4390020
C*****                            BLCKD - (439)                              P4390030
C*****                                                                       P4390040
C*****************************************************************************P4390050
C*****   THIS SEGMENT CONTAINS THE THIRD OF THREE BLOCK DATA SUBPROGRAMSP4390060
C*****   TO BE RUN WITH SEGMENT 179                                          P4390070
      BLOCK DATA                                                             P4390080
      COMMON /BLK6/JAX3I(2,2,2),DX3S(2,2,2),DX3D(2,2,2)                      P4390090
     E       ,DZ3C(2,2,2), DX3B(2,2,2)                                       P4390100
      DOUBLE PRECISION DX3D                                                  P4390110
      DIMENSION CY3C(2,2,2)                                                  P4390120
      COMPLEX DZ3C,CY3C                                                      P4390130
      EQUIVALENCE (DZ3C(1,1,1), CY3C(1,1,1))                                 P4390140
      LOGICAL DX3B                                                           P4390150
      DATA JAX3I(1,1,2),DX3S(1,1,2),DX3D(1,1,2),CY3C(1,1,2),DX3B(1,1,2)/P4390160
     F 1, 2.0, 4.0D0, (3.,4.),.FALSE./          ,DX3B(2,2,2)/               P4390170
     G 2HHP/                                                                 P4390180
C*****   END OF TEST SEGMENT 439                                             P4390190
      END                                                                    P4390200
C*****************************************************************************P1800010
C*****                                                                       P1800020
C*****                          UNFRW - (180)                                P1800030
C*****                                                                       P1800040
C*****************************************************************************P1800050
C*****  GENERAL PURPOSE                                        ASA REF P1800060
C*****    TEST OF UNFORMATTED READ AND WRITE STATEMENTS       7.1.3.2.4P1800070
C*****                                                        7.1.3.2.5P1800080
C*****  S P E C I F I C A T I O N S  SEGMENT 180                          P1800090
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C*****                                                                  P0013740
C*****  WHEN EXECUTING ONLY SEGMENT 180, THE SPECIFICATION STATEMENTS   P0013745
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=                P0013750
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0013755
C*****                                                                  P0013760
C=     DIMENSION CMA1S(5), CMB1S(5), AC1S(25)                           P0013765
       DIMENSION CMA1S(5), CMB1S(5), AC1S(25)                           P180A1
C*****                                                                  P0013770
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENTS.  NO INPUT TAPE.    P1800100
C*****                                                                  P0072840
C*****  WHEN EXECUTING ONLY SEGMENT 180, THE FOLLOWING STATEMENTS       P0072845
C*****  NUVI=6 AND INVI=9  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED. P0072850
C*****                                                                  P0072855
C=     NUVI = 6                                                         P0072860
C=     INVI = 9                                                         P0072865
       NUVI = 6                                                         P180B1
       INVI = 9                                                         P180B2
C*****                                                                  P0072870
       WRITE (NUVI,0180)                                                P1800110
180    FORMAT(1H1,1X,30HUNFRW - (180) UNFORMATTED READ/ 14X,            P1800120
      122H  AND WRITE STATEMENTS//36H  ASA REFS - 7.1.3.2.4 AND 7.1.3.2.5P1800130
      2//10H  RESULTS )                                                 P1800140
C*****    HEADER FOR SEGMENT 180 WRITTEN                                P1800150
       CMAVS = 1.5E01                                                   P1800160
       CMBVS = -2.75E-0                                                 P1800170
       MCAVI = 5                                                        P1800180
       MCBVI = -10                                                      P1800190
       DPAVS = 1.02E0                                                   P1800200
       DPBVS = 9876.0E-2                                                P1800210
       CMA1S(1) = 1.0E0                                                 P1800220
       CMA1S(2) = 2.0E0                                                 P1800230
       CMA1S(3) = 3.0E0                                                 P1800240
       CMA1S(4) = 4.0E0                                                 P1800250
       CMA1S(5) = 5.0E0                                                 P1800260
C*****    WRITE AND READ VARIABLES OF THE SAME TYPE                     P1800270
       REWIND INVI                                                      P1800280
       WRITE (INVI) CMAVS, CMBVS                                        P1800290
       WRITE (INVI) MCAVI, MCBVI                                        P1800300
       WRITE (INVI) DPAVS, DPBVS                                        P1800310
       WRITE (INVI) CMA1S                                               P1800320
       WRITE (INVI) (CMA1S(IVI), IVI = 1,5,1 )                          P1800330
       REWIND INVI                                                      P1800340
       READ (INVI) CMCVS, CMDVS                                         P1800350
       READ (INVI) MCCVI, MCDVI                                         P1800360
       READ (INVI) DPCVS, DPDVS                                         P1800370
       READ (INVI) CMB1S                                                P1800380
       READ (INVI) (AC1S(IVI), IVI = 1,5,1 )                            P1800390
C*****    CHECK RECORDS BY SUBTRACTING CORRESPONDING VALUES.            P1800400
       CMEVS = CMAVS - CMCVS                                            P1800410
       CMFVS = CMBVS - CMDVS                                            P1800420
       MCEVI = MCAVI - MCCVI                                            P1800430
       MCFVI = MCBVI - MCDVI                                            P1800440
       DPEVS = DPAVS - DPCVS                                            P1800450
       DPFVS = DPBVS - DPDVS                                            P1800460
       ACVS = CMA1S(1) - CMB1S(1)                                       P1800470
       BCVS = CMA1S(2) - CMB1S(2)                                       P1800480
       CCVS = CMA1S(3) - CMB1S(3)                                       P1800490
       DCVS = CMA1S(4) - CMB1S(4)                                       P1800500
       FFCVS = CMA1S(5)- CMB1S(5)                                       P1800510
       CMGVS = CMA1S(1) - AC1S(1)                                       P1800520
       CMHVS = CMA1S(2) - AC1S(2)                                       P1800530
       CMIVS = CMA1S(3) - AC1S(3)                                       P1800540
       CMJVS = CMA1S(4) - AC1S(4)                                       P1800550
       CMKVS = CMA1S(5) - AC1S(5)                                       P1800560
       WRITE (NUVI,181) CMEVS, CMFVS, MCEVI, MCFVI, DPEVS, DPFVS,       P1800570
      1         ACVS, BCVS, CCVS, DCVS, FFCVS, CMGVS, CMHVS, CMIVS, CMJVS,P1800580
      2         CMKVS                                                   P1800590
0181   FORMAT (//2(F20.10/),2(I19/),7(F20.10/))                         P1800600
```

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C*****    READ AND WRITE VARIABLES OF DIFFERENT TYPES                    P1800610
      REWIND INVI                                                        P1800620
      WRITE (INVI) CMAVS, MCAVI                                          P1800630
      WRITE (INVI) CMA1S(1), CMA1S(2), CMBVS, MCBVI                      P1800640
      WRITE (INVI) CMA1S(3), CMA1S(4), CMA1S(5), DPAVS, DPBVS            P1800650
      REWIND INVI                                                        P1800660
      READ (INVI) CMCVS, MCCVI                                           P1800670
      READ (INVI) CMB1S(1), CMB1S(2), CMDVS, MCDVI                       P1800680
      READ (INVI) CMB1S(3), CMB1S(4), CMB1S(5), DPCVS, DPDVS             P1800690
      CMEVS = CMAVS - CMCVS                                              P1800700
      CMFVS = CMBVS - CMDVS                                              P1800710
      MCEVI = MCAVI - MCCVI                                              P1800720
      MCFVI = MCBVI - MCDVI                                              P1800730
      DPEVS = DPAVS - DPCVS                                              P1800740
      DPFVS = DPBVS - DPDVS                                              P1800750
      CMGVS = CMA1S(1) - CMB1S(1)                                        P1800760
      CMHVS = CMA1S(2) - CMB1S(2)                                        P1800770
      CMIVS = CMA1S(3) - CMB1S(3)                                        P1800780
      CMJVS = CMA1S(4) -CMB1S(4)                                         P1800790
      CMKVS = CMA1S(5) - CMB1S(5)                                        P1800800
      WRITE (NUVI,0182) CMEVS, CMFVS, MCEVI, MCFVI, DPEVS, DPFVS, CMGVS,P1800810
     1 CMHVS, CMIVS, CMJVS, CMKVS                                        P1800820
0182  FORMAT (//2(F20.10/),2(I19/),7(F20.10/))                           P1800830
C*****    TEST UNFORMATTED READ WITH NO LIST                             P1800840
      REWIND INVI                                                        P1800850
      WRITE (INVI) CMAVS, MCAVI                                          P1800860
      WRITE (INVI) CMA1S                                                 P1800870
      WRITE (INVI) CMBVS, MCBVI                                          P1800880
      WRITE (INVI) CMA1S(5),CMA1S(4),CMA1S(3),CMA1S(2),CMA1S(1)          P1800890
C*****    ENDFILE CAN NOT BE TESTED, BUT INCLUDED FOR ACCEPTANCE AS      P1800900
C*****    A STATEMENT.                                                   P1800910
      ENDFILE INVI                                                       P1800920
      REWIND INVI                                                        P1800930
C*****CHECK THAT A RECORD IS READ WHEN NO LIST IS SUPPLIED BY COMPARING P1800940
C***** VALUES OF THE THIRD RECORD                                        P1800950
      READ (INVI) CMCVS, MCCVI                                           P1800960
      READ (INVI)                                                        P1800970
      READ (INVI) CMDVS, MCDVI                                           P1800980
      CMEVS = CMAVS - CMCVS                                              P1800990
      CMFVS = CMBVS - CMDVS                                              P1801000
      MCEVI = MCAVI - MCCVI                                              P1801010
      MCFVI = MCBVI - MCDVI                                              P1801020
      WRITE (NUVI, 0183)  CMEVS, CMFVS, MCEVI, MCFVI                     P1801030
  183 FORMAT(//2(F20.10/),2(I19/))                                       P1801040
      WRITE (NUVI,0184)                                                  P1801050
  184 FORMAT(37H0 ALL ABOVE ANSWERS SHOULD BE ZERO IF /                  P1801060
     1       37H  THE READ AND WRITE RECORDS COMPARE. )                  P1801070
      REWIND INVI                                                        P1801080
C*****    END OF TEST SEGMENT 180                                        P1801090
C*****  WHEN EXECUTING ONLY SEGMENT 180, THE  STOP  AND  END             P1801100
C*****  CARDS WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE C=            P1801110
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P1801120
C=    STOP                                                               P1801130
C=    END                                                                P1801140
      STOP                                                               P180C1
      END                                                                P180C2
C*******************************************************************************P1820010
C*****                                                                   P1820020
C*****                              BACUP (182)                          P1820030
C*****                                                                   P1820040
C******  ***************************************************************P1820050
C*****  GENERAL PURPOSE                                        ASA REF  P1820060
C*****    WRITE A BLOCK, 1024 WORDS IN LENGTH, UNFORMATTED,    7.1.3.2.5P1820070
C***     TO TAPE,BACKSPACE, READ TO MEMORY                    7.1.3.3.2P1820080
C*****                                                         7.1.3.2.4P1820090
C*****  S P E C I F I C A T I O N S  SEGMENT 182                         P1820100
C*****                                                                  P0013780
C*****  WHEN EXECUTING ONLY SEGMENT 182, THE SPECIFICATION STATEMENTS   P0013785
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C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                    P0013790
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                   P0013795
C*****                                                                    P0013800
C=     DIMENSION IV1I(1024)                                               P0013805
       DIMENSION IV1I(1024)                                               P182A1
C*****                                                                    P0013810
C*****  O U T P U T   T A P E   ASSIGNMENT STATEMENTS.  NO INPUT TAPE.     P1820110
C*****                                                                    P0072880
C*****  WHEN EXECUTING ONLY SEGMENT 182, THE FOLLOWING STATEMENTS         P0072885
C*****  NUVI=6 AND IRVI=9 MUST HAVE THE C= IN COLUMNS 1 ANO 2 REMOVED.    P0072890
C*****                                                                    P0072895
C=     NUVI = 6                                                           P0072900
C=     INVI = 9                                                           P0072905
       NUVI = 6                                                           P182B1
       INVI = 9                                                           P182B2
C*****                                                                    P0072910
1820   FORMAT(1H1,1X,28HBACUP - (182) BACKSPACE TAPE//2X,18HASA REF. 7.1.P1820120
      33.3.2//9H  RESULTS)                                               P1820130
       WRITE(NUVI,1820)                                                   P1820140
C*****  HEAOER FOR SEGMENT 182 WRITTEN                                    P1820150
C*****                                                                    P1820160
       REWIND INVI                                                        P1820170
C*****  CREATE A LIST, 1024 WORDS IN LENGTH, CONTAINING                   P1820180
C*****  THE INTEGERS 1 TO 1024, ONE INTEGER PER WORD.                     P1820190
       ISVI = 0                                                           P1820200
       MRRVI = 1                                                          P1820210
1821   ISVI = ISVI + 1                                                    P1820220
       IV1I(ISVI) = ISVI                                                  P1820230
       IF (ISVI - 1024) 1821, 1822, 1823                                  P1820240
C*****  WRITE THE LIST TO AN INTERMEOIATE TAPE                            P1820250
1822   WRITE (INVI) IV1I                                                  P1820260
       WRITE(NUVI,1828) MRRVI, (IV1I(JCVI), JCVI=1,9),                    P1820270
      1 (IV1I(KCVI),KCVI=1016,1024)                                       P1820280
C*****  CHANGE MEMORY VALUES TO 5 TIMES THE ORIGINAL VALUES               P1820290
       MRRVI = 2                                                          P1820300
       ISVI = 0                                                           P1820310
1825   ISVI = ISVI + 1                                                    P1820320
       IV1I(ISVI) = 5 * ISVI                                              P1820330
       IF (ISVI - 1024) 1825,1826,1823                                    P1820340
1826   BACKSPACE  INVI                                                    P1820350
C*****  WRITE THE CHANGED VALUES                                          P1820360
       WRITE(NUVI,1828) MRRVI, (IV1I(JCVI), JCVI=1,9),                    P1820370
      1 (IV1I(KCVI),KCVI=1016,1024)                                       P1820380
       MRRVI = 3                                                          P1820390
C*****  READ INTERMEDIATE TAPE WHICH HAS BEEN BACKSPACED                  P1820400
       READ(INVI) IV1I                                                    P1820410
       REWINO INVI                                                        P1820420
C*****  WRITE INITIAL VALUES FROM BACKSPACED TAPE.                        P1820430
       WRITE(NUVI,1828) MRRVI,(IV1I(LVI), LVI=1,9),(IV1I(KVI),KVI=       P1820440
      1   1016, 1024)                                                     P1820450
1823   WRITE (NUVI,1829)                                                  P1820460
1828   FORMAT(//7H  GROUP,I3,3(/2X,3(I6)), 3(/2X,3(I6)))                  P1820470
1829   FORMAT(//2X,33HGROUPS 1 ANO 3 SHOULO BE THE SAME/                  P1820480
      I  30H  ANO GROUP 2, 5 TIMES GROUP 1)                               P1820490
C*****     ENO OF TEST SEGMENT 182                                        P1820500
C*****  WHEN EXECUTING ONLY SEGMENT 182, THE  STOP  ANO  ENO              P1820510
C*****  CAROS WHICH APPEAR AS COMMENT CAROS, MUST HAVE THE C=             P1820520
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                   P1820530
C=     STOP                                                               P1820540
C=     END                                                                P1820550
       STOP                                                               P182C1
       END                                                                P182C2
C***************************************************************************P1900010
C*****                                                                    P1900020
C*****                          OOTRM - (190)                             P1900030
C*****                                                                    P1900040
C***************************************************************************P1900050
C*****                                                                    P1900060
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C*****  GENERAL PURPOSE                                          ASA REF P1900070
C*****    DO LOOPS TESTED WITH ALL ALLOWABLE                     7.1.2.8 P1900080
C*****    TERMINAL STATEMENTS (I/O TESTED SEPARATELY)                    P1900090
C*****    CONTINUE, ASSIGN, LOGICAL IF                                   P1900100
C*****  RESTRICTIONS OBSERVED                                            P1900110
C*****  * M1, M2 AND M3 ARE GREATER THAN ZERO                 7.1.2.8/23P1900120
C*****  * TERMINAL STATEMENT OF EACH DO PHYSICALLY FOLLOWS    7.1.2.8/08P1900130
C*****    THE DO AND IS IN THE SAME PROGRAM UNIT                         P1900140
C*****  * TERMINAL STATEMENT IS EXECUTABLE BUT NOT A          7.1.2.8/07P1900150
C*****    GO TO, ARITHMETIC IF, RETURN, STOP, PAUSE OR       7.1.2.8/10P1900160
C*****    DO STATEMENT                                                   P1900170
C*****  * M1, M2 AND M3 ARE NOT REDEFINED WITHIN DO        7.1.2.8.2/54P1900180
C*****  * BRANCHES TO TERMINAL STATEMENT FOR MORE THAN     7.1.2.8.2/01P1900190
C*****    ONE DO ARE CONTAINED IN INNERMOST DO OF A NEST                 P1900200
C*****  * CONTROL IS NEVER PASSED INTO RANGE OF DO FROM    7.1.2.8.2/44P1900210
C*****    OUTSIDE ITS RANGE                                              P1900220
C*****                                                                   P1900230
C*****  S P E C I F I C A T I O N S  SEGMENT 190                         P1900240
C*****                                                                   P0013820
C*****  WHEN EXECUTING ONLY SEGMENT 190, THE SPECIFICATION STATEMENTS    P0013825
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=                 P0013830
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P0013835
C*****                                                                   P0013840
C=     DIMENSION IAC1I(5)                                               P0013845
       DIMENSION IAC1I(5)                                               P190A1
C*****                                                                   P0013850
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT. NO INPUT TAPE.       P1900250
C*****                                                                   P0072920
C*****  WHEN EXECUTING ONLY SEGMENT 190, THE FOLLOWING STATEMENT         P0072925
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0072930
C*****                                                                   P0072935
C=     NUVI = 6                                                         P0072940
       NUVI = 6                                                         P190B1
C*****                                                                   P0072945
       WRITE (NUVI,8906)                                                P1900260
8906   FORMAT (1H1,1X,25HDOTRM - (190) DO TERMINAL//2X,                 P1900270
      -17HASA REF - 7.1.2.8//2X,7HRESULTS)                              P1900280
C*****     HEADER FOR SEGMENT 190                                       P1900290
C*****     CONTINUE WITH EXPLICIT INCREMENT**********************7.1.2.8 P1900300
       WRITE (NUVI,8905)                                                P1900310
8905   FORMAT   (//2X,23HTEST1 CONTINUE EXPLICIT)                       P1900320
C*****     HEADER FOR CONTINUE EXPLICIT TEST                            P1900330
       DO 1901 JACVI = 1,4,1                                            P1900340
            IAC1I(JACVI) = JACVI                                        P1900350
1901   CONTINUE                                                         P1900360
       IF (IAC1I(1)-1) 1909,1902,1909                                   P1900370
1902   IF (IAC1I(2)-2) 1909,1903,1909                                   P1900380
1903   IF (IAC1I(3)-3) 1909,1904,1909                                   P1900390
1904   IF (IAC1I(4)-4) 1909,1905,1909                                   P1900400
C*****     WRITE OUT ERROR MESSAGE                                      P1900410
1909   MRRVI=1                                                          P1900420
       WRITE (NUVI,8904)MRRVI                                           P1900430
8904   FORMAT    (/2X,6H**TEST,I1,1X,17HINDICATES ERROR**)              P1900440
C*****     ERROR  FOR CONTINUE EXPLICIT TEST                            P1900450
       GO TO 8909                                                       P1900460
C*****     NO ERROR                                                     P1900470
C*****     WRITE OUT CONTINUE EXPLICIT TEST IS SUCCESS                  P1900480
1905   MRRVI=1                                                          P1900490
       WRITE (NUVI,8903)MRRVI                                           P1900500
8903   FORMAT    (/2X,6H**TEST,I1,1X,12HSUCCESSFUL**)                  P1900510
C*****    SUCCESS FOR CONTINUE EXPLICIT TEST                           P1900520
C*****     CONTINUE TERMINAL IMPLIED TEST************************7.1.2.8 P1900530
       WRITE (NUVI,8902)                                                P1900540
8902   FORMAT   (//2X,22HTEST2 CONTINUE IMPLIED)                        P1900550
C*****     HEADER FOR CONTINUE IMPLIED TEST                             P1900560
8909   LCCVI=2                                                          P1900570
       DO  7900   KBCVI = LCCVI,4                                       P1900580
7900   IAC1I(KBCVI) = KBCVI + 1                                         P1900590
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C*****     CHECK VALUES IN IAC1I ARRAY                                  P1900600
      IF (IAC1I(2)-3) 7909,8900,7909                                    P1900610
8900  IF (IAC1I(3)-4) 7909,8901,7909                                    P1900620
8901  IF (IAC1I(4)-5) 7909,7901,7909                                    P1900630
7909  MRRVI=2                                                           P1900640
      WRITE (NUVI,8904)MRRVI                                            P1900650
C*****     ERROR IN CONTINUE IMPLIED TEST                               P1900660
      GO TO 8908                                                        P1900670
C*****     WRITE OUT CONTINUE IMPLIED IS SUCCESS                        P1900680
7901  MRRVI=2                                                           P1900690
      WRITE (NUVI,8903)MRRVI                                            P1900700
C*****     SUCCESS IN CONTINUE IMPLIED TEST                             P1900710
C*****     ASSIGN TERMINAL TEST **********************************7.1.2.8 P1900720
      WRITE (NUVI,9908)                                                 P1900730
9908  FORMAT    (//2X,12HTEST3 ASSIGN)                                  P1900740
C*****     HEADER FOR ASSIGN TEST                                       P1900750
8908  MDCVI = 0                                                         P1900760
      ASSIGN 7904 TO JFCVI                                              P1900770
      DO  7902  NECVI = 2,5,2                                           P1900780
          MDCVI = MDCVI +1                                              P1900790
7902  ASSIGN 7903 TO JFCVI                                              P1900800
      GO TO JFCVI, (7903,7904,7904)                                     P1900810
C*****     AN ERROR IN ASSIGN TEST                                      P1900820
7904  MRRVI=3                                                           P1900830
      WRITE (NUVI,8904)MRRVI                                            P1900840
C*****     ERROR FOR ASSIGN TEST                                        P1900850
      GO TO 8907                                                        P1900860
7903  IF (MDCVI-2) 7904,7905,7904                                       P1900870
C*****     ASSIGN TEST IS SUCCESS                                       P1900880
7905  MRRVI=3                                                           P1900890
      WRITE (NUVI,8903)MRRVI                                            P1900900
C*****     SUCCESS FOR ASSIGN TEST                                      P1900910
C*****     LOGICAL IF TERMINAL TEST*******************************7.1.2.8 P1900920
      WRITE (NUVI,9905)                                                 P1900930
9905  FORMAT    (//2X,16HTEST4 LOGICAL IF)                              P1900940
C*****     HEADER FOR LOGICAL IF TEST                                   P1900950
8907  KGCVI = 1                                                         P1900960
      LHCVI = 3                                                         P1900970
      ASSIGN 7908 TO KCVI                                               P1900980
      DO  7906  JCVI = 1,3                                              P1900990
      KGCVI = KGCVI +1                                                  P1901000
7906  IF (KGCVI .EQ. LHCVI) ASSIGN 7907 TO KCVI                         P1901010
      GO TO KCVI, (7908,7907,7908)                                      P1901020
C*****     TEST IS SUCCESS                                              P1901030
7907  MRRVI=4                                                           P1901040
      WRITE (NUVI,8903)MRRVI                                            P1901050
C*****     SUCCESS FOR LOGICAL IF TEST                                  P1901060
      GO TO 9902                                                        P1901070
C*****     LOGICAL IF IS NOT SUCCESS                                    P1901080
7908  MRRVI=4                                                           P1901090
      WRITE (NUVI,8904)MRRVI                                            P1901100
C*****     ERROR FOR LOGICAL IF TEST                                    P1901110
9902  CONTINUE                                                          P1901120
C*****     END OF TEST SEGMENT 190                                      P1901130
C*****  WHEN EXECUTING ONLY SEGMENT 190, THE  STOP  AND  END  CARDS     P1901140
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1901150
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1901160
C=    STOP                                                              P1901170
C=    END                                                               P1901180
      STOP                                                              P190C1
      END                                                               P190C2
C*******************************************************************************P1910010
C*****                                                                  P1910020
C*****                          DOLMT - (191)                           P1910030
C*****                                                                  P1910040
C*******************************************************************************P1910050
C*****  GENERAL PURPOSE                                        ASA REF  P1910060
C*****     TEST DO LOOPS WHERE                                7.1.2.8/18P1910070
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C*****          INITIAL                                                 P1910080
C*****          TERMINAL                                                P1910090
C*****          INCREMENT VALUES                                        P1910100
C*****     ARE COMPUTED AND SET AT OBJECT TIME                          P1910110
C*****   RESTRICTIONS OBSERVED                                          P1910120
C*****   * M1, M2 AND M3 ARE GREATER THAN ZERO                7.1.2.8/21P1910130
C*****   * TERMINAL STATEMENT OF EACH DO PHYSICALLY FOLLOWS    7.1.2.8/08P1910140
C*****     THE DO AND IS IN THE SAME PROGRAM UNIT                       P1910150
C*****   * TERMINAL STATEMENT IS EXECUTABLE BUT NOT A          7.1.2.8/07P1910160
C*****     GO TO, ARITHMETIC IF, RETURN, STOP, PAUSE OR       7.1.2.8/10P1910170
C*****     DO STATEMENT                                                 P1910180
C*****   * M1, M2 AND M3 ARE NOT REDEFINED WITHIN DO        7.1.2.8.2/54P1910190
C*****   * BRANCHES TO TERMINAL STATEMENT FOR MORE THAN     7.1.2.8.2/01P1910200
C*****     ONE DO ARE CONTAINED IN INNERMOST DO OF A NEST              P1910210
C*****   * CONTROL IS NEVER PASSED INTO RANGE OF DO FROM    7.1.2.8.2/44P1910220
C*****     OUTSIDE ITS RANGE                                          P1910230
C*****                                                                P1910240
C*****   O U T P U T   T A P E   ASSIGNMENT STATEMENT. NO INPUT TAPE.  P1910250
C*****                                                                P0072950
C*****   WHEN EXECUTING ONLY SEGMENT 191, THE FOLLOWING STATEMENT     P0072955
C*****   NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.       P0072960
C*****                                                                P0072965
C=     NUVI = 6                                                      P0072970
       NUVI = 6                                                      P191B1
C*****                                                               P0072975
       WRITE (NUVI,1914)                                             P1910260
1914   FORMAT (1H1,1X,27HDOLMT - (191) DO SET LIMITS//2X,            P1910270
     - 18HASA REF. - 7.1.2.8//2X,7HRESULTS)                          P1910280
C*****     HEADER FOR SEGMENT 191 WRITTEN                            P1910290
       JACVI = 1                                                     P1910300
       KBCVI = 3                                                     P1910310
       LCCVI = 1                                                     P1910320
       NECVI = 0                                                     P1910330
       DO  1911 MDCVI = JACVI, KBCVI, LCCVI                          P1910340
         NECVI = NECVI + JACVI + KBCVI + MDCVI + LCCVI               P1910350
1911   CONTINUE                                                      P1910360
       IF (NECVI-21) 1913,1912,1913                                  P1910370
C*****     ERROR                                                     P1910380
1913   WRITE (NUVI,1915)                                             P1910390
1915   FORMAT    (/2X,24H**TEST INDICATES ERROR**//2X,10H**********)  P1910400
C*****     DOLMT TEST FAILS,LIMIT VALUE SET INCORRECTLY              P1910410
       GO TO 1917                                                    P1910420
C*****     CORRECT                                                   P1910430
1912   WRITE (NUVI,1916)                                             P1910440
1916   FORMAT    (/2X,19H**TEST SUCCESSFUL**)                        P1910450
C*****     DOLMT TEST IS SUCCESSFUL                                  P1910460
1917   CONTINUE                                                      P1910470
C*****     END OF TEST SEGMENT 191                                   P1910480
C*****   WHEN EXECUTING ONLY SEGMENT 191, THE  STOP  AND  END  CARDS P1910490
C*****   WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=             P1910500
C*****   IN COLUMNS  1  AND  2  REMOVED.                             P1910510
C=     STOP                                                          P1910520
C=     END                                                           P1910530
       STOP                                                          P191C1
       END                                                           P191C2
C*******************************************************************P1920010
C*****                                                               P1920020
C*****                        DONSC - (192)                          P1920030
C*****                                                               P1920040
C*******************************************************************P1920050
C*****   GENERAL PURPOSE                                  ASA REF    P1920060
C*****     TEST NESTED DO LOOPS                          7.1.2.8/28P1920070
C*****     WITH 2, 3, 4, 5 LEVELS                                    P1920080
C*****   SPECIAL CONSIDERATION                                       P1920090
C*****     5 LEVELS ARBITRARILY ASSIGNED AS MINIMUM REQUIREMENT      P1920100
C*****   RESTRICTIONS OBSERVED                                       P1920110
C*****   * M1, M2 AND M3 ARE GREATER THAN ZERO                7.1.2.8/21P1920120
C*****   * TERMINAL STATEMENT OF EACH DO PHYSICALLY FOLLOWS    7.1.2.8/08P1920130
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C*****     THE DO AND IS IN THE SAME PROGRAM UNIT                          P1920140
C*****   * TERMINAL STATEMENT IS EXECUTABLE BUT NOT A          7.1.2.8/07P1920150
C*****     GO TO, ARITHMETIC IF, RETURN, STOP, PAUSE OR        7.1.2.8/10P1920160
C*****     DO STATEMENT                                                    P1920170
C*****   * M1, M2 AND M3 ARE NOT REDEFINED WITHIN DO          7.1.2.8.2/54P1920180
C*****   * BRANCHES TO TERMINAL STATEMENT FOR MORE THAN       7.1.2.8.2/01P1920190
C*****     ONE DO ARE CONTAINED IN INNERMOST DO OF A NEST                  P1920200
C*****                                                                     P1920210
C*****   S P E C I F I C A T I O N S  SEGMENT 192                          P1920220
C*****                                                                     P0013860
C*****   WHEN EXECUTING ONLY SEGMENT 192, THE SPECIFICATION STATEMENTS     P0013865
C*****   WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                    P0013870
C*****   IN COLUMNS  1  AND  2  REMOVED.                                   P0013875
C*****                                                                     P0013880
C=       INTEGER MCA3I(2,3,3)                                            P0013885
         INTEGER MCA3I(2,3,3)                                            P192A1
C*****                                                                     P0013890
C*****   O U T P U T  T A P E  ASSIGNMENT STATEMENT. NO INPUT TAPE.        P1920230
C*****                                                                     P0072980
C*****   WHEN EXECUTING ONLY SEGMENT 192, THE FOLLOWING STATEMENT          P0072985
C*****   NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.            P0072990
C*****                                                                     P0072995
C=       NUVI = 6                                                        P0073000
         NUVI = 6                                                        P192B1
C*****                                                                     P0073005
         WRITE (NUVI,8920)                                               P1920240
8920     FORMAT (1H1,1X,26HDONSC - (192) NESTED LOOPS// 2X,              P1920250
        -18HASA REF. - 7.1.2.8//2X,7HRESULTS)                            P1920260
C*****     HEADER FOR SEGMENT 192 WRITTEN                                P1920270
C*****     TWO LEVELS OF NESTING**********************************************P1920280
         MRRVI=2                                                         P1920290
         WRITE (NUVI,8921)MRRVI                                          P1920300
8921     FORMAT   (//2X,I1,1X,17HLEVELS OF NESTING)                      P1920310
C*****     HEADER FOR TWO LEVELS                                         P1920320
         JACVI = 0                                                       P1920330
         DO  1922 KBCVI = 1, 2, 1                                        P1920340
         JACVI = KBCVI*3 + JACVI                                         P1920350
           DO  1921  LCCVI = 1,5,  2                                     P1920360
           JACVI = JACVI + LCCVI                                         P1920370
1921       CONTINUE                                                      P1920380
1922     CONTINUE                                                        P1920390
C*****     TEST JACVI FOR VALUE OF 27                                    P1920400
         IF (JACVI-27) 1924,1923,1924                                    P1920410
C*****     CORRECT                                                       P1920420
1923     WRITE (NUVI,8922)                                               P1920430
8922     FORMAT  (2X,19H**TEST SUCCESSFUL**)                             P1920440
C*****     TWO LEVELS OF NESTING IS CORRECT                              P1920450
         GO TO 7927                                                      P1920460
C*****     ERROR                                                         P1920470
1924     WRITE (NUVI,8923)                                               P1920480
8923     FORMAT  (2X,24H**TEST INDICATES ERROR**)                        P1920490
C*****     TWO LEVELS OF NESTING IN ERROR                                P1920500
C*****     THREE LEVELS OF NESTING********************************************P1920510
7927     MRRVI=3                                                         P1920520
         WRITE (NUVI,8921)MRRVI                                          P1920530
C*****     HEADER FOR THREE LEVELS                                       P1920540
         MDCVI = 0                                                       P1920550
         DO  1927  LCCVI = 6,7                                           P1920560
           DO 1926  KBCVI = 8,10,2                                       P1920570
             DO 1925  JACVI = 1,3,1                                      P1920580
             MDCVI = MDCVI + JACVI + KBCVI + LCCVI                       P1920590
1925         CONTINUE                                                    P1920600
1926       CONTINUE                                                      P1920610
1927     CONTINUE                                                        P1920620
C*****     TEST MDCVI FOR VALUE OF 210                                   P1920630
         IF (MDCVI - 210) 1928,1929,1928                                 P1920640
C*****     ERROR                                                         P1920650
1928     WRITE (NUVI,8923)                                               P1920660
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C*****     THREE LEVELS OF NESTING IN ERROR                              P1920670
      GO TO 7928                                                         P1920680
C*****     CORRECT                                                       P1920690
1929  WRITE (NUVI,8922)                                                  P1920700
C*****     THREE LEVELS OF NESTING IS CORRECT                            P1920710
C*****     FOUR LEVELS OF NESTING*****************************************P1920720
7928  MRRVI=4                                                            P1920730
      WRITE (NUVI,8921)MRRVI                                             P1920740
C*****     HEADER FOR FOUR LEVELS                                        P1920750
      IHDVI = 0                                                          P1920760
      IGDVI = 0                                                          P1920770
      IFDVI = 0                                                          P1920780
      IEDVI = 0                                                          P1920790
      ICVI = 1                                                           P1920800
      DO  7920  MDCVI = 2,3                                              P1920810
      IHDVI = IHOVI + MDCVI + IEDVI                                      P1920820
        DO 7920  LCCVI = 3,5,3                                           P1920830
        IGOVI = IGOVI + LCCVI + IHDVI                                    P1920840
          DO 7920 KBCVI = 1,2,ICVI                                       P1920850
          IFOVI = IFDVI + KBCVI + IGDVI                                  P1920860
            DO 7920  JACVI = 4,5,2                                       P1920870
            IEOVI = IEDVI + JACVI + IFDVI                                P1920880
7920  CONTINUE                                                           P1920890
C*****     TEST IEOVI FOR VALUE OF 185                                   P1920900
      IF (IEOVI - 185)  7921,7922,7921                                   P1920910
C*****     ERROR                                                         P1920920
7921  WRITE (NUVI,8923)                                                  P1920930
C*****     FOUR LEVELS OF NESTING IN ERROR                               P1920940
      GO TO 7929                                                         P1920950
C*****     CORRECT                                                       P1920960
7922  WRITE (NUVI,8922)                                                  P1920970
C*****     FOUR LEVELS OF NESTING IS CORRECT                             P1920980
C*****     FIVE LEVELS OF NESTING*****************************************P1920990
7929  MRRVI=5                                                            P1921000
      WRITE (NUVI,8921)MRRVI                                             P1921010
C*****     HEAOER FOR FIVE LEVELS                                        P1921020
      IGDVI = 0                                                          P1921030
      DO  7923  NECVI = 10,11,1                                          P1921040
        DO 7923 MOCVI = 4,5,1                                            P1921050
          DO 7924 LCCVI = 1,2,3                                          P1921060
            DO 7924 KBCVI = 6, 8, 4                                      P1921070
              DO 7924 JACVI = 1,3,2                                      P1921080
              IGOVI=IGOVI+JACVI-KBCVI+LCCVI-MDCVI+NECVI                  P1921090
7924  CONTINUE                                                           P1921100
7923  CONTINUE                                                           P1921110
C*****     TEST IGOVI FOR VALUE OF 24                                    P1921120
      IF (IGOVI - 24)  7925, 7926,7925                                   P1921130
C*****     ERROR                                                         P1921140
7925  WRITE (NUVI,8923)                                                  P1921150
C*****    FIVE LEVELS IN ERROR                                           P1921160
      GO TO 9923                                                         P1921170
7926  WRITE (NUVI,8922)                                                  P1921180
C*****     FIVE LEVELS CORRECT                                           P1921190
C*****  CONTROL VARIABLES FOR 3 DO LOOPS USED IN SUBSCRIPT EXPRESSIONS   P1921200
C*****  FOR A 3 OIMENSIONAL ARRAY                                        P1921210
9923  WRITE(NUVI, 9920)                                                  P1921220
9920  FORMAT(//2X,34HCONTROL VARIABLE USEO IN SUBSCRIPT )                P1921230
      IVI = 1                                                            P1921240
      KVI = 0                                                            P1921250
8924  KVI = KVI + 1                                                      P1921260
      JVI = 0                                                            P1921270
8925  JVI = JVI + 1                                                      P1921280
      MCA3I(IVI,JVI,KVI) = IVI + 2*(JVI-1)+ 6*(KVI-1)                    P1921290
      MCA3I(IVI+1,JVI,KVI) = IVI+1 +2*(JVI-1)+6*(KVI-1)                  P1921300
      IF(JVI-3) 8925,8926,8929                                           P1921310
8926  IF(KVI-3)8924,8927,8929                                            P1921320
8927  IIVI = 1                                                           P1921330
      DO 8928 KVI =1,3                                                   P1921340
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       DO 8928  JVI = 1,3                                                      P1921350
         DO 8928  IVI = 1,2                                                   P1921360
      IAVI =MCA3I(IVI,JVI,KVI) - IIVI                                         P1921370
      IF (IAVI) 8929, 8928, 8929                                              P1921380
8928  IIVI = IIVI + 1                                                         P1921390
      WRITE (NUVI, 8922)                                                      P1921400
      GO TO 9921                                                              P1921410
8929  WRITE (NUVI, 8923)                                                      P1921420
9921  CONTINUE                                                                P1921430
C*****    END OF TEST SEGMENT 192                                             P1921440
C*****  WHEN EXECUTING ONLY SEGMENT 192, THE  STOP  AND  END  CARDS           P1921450
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                       P1921460
C*****  IN COLUMNS  1  AND  2  REMOVED.                                       P1921470
C=    STOP                                                                    P1921480
C=    END                                                                     P1921490
      STOP                                                                    P192C1
      END                                                                     P192C2
C*****************************************************************************P1930010
C*****                                                                       P1930020
C*****                          DONSI - (193)                                P1930030
C*****                                                                       P1930040
C*****************************************************************************P1930050
C*****  GENERAL PURPOSE                                          ASA REF P1930060
C*****    TESTS INCOMPLETE DO LOOP                          7.1.2.8.1/19P1930070
C*****  RESTRICTIONS OBSERVED                                              P1930080
C*****  * M1, M2 AND M3 ARE GREATER THAN ZERO                7.1.2.8/21P1930090
C*****  * TERMINAL STATEMENT OF EACH DO PHYSICALLY FOLLOWS    7.1.2.8/08P1930100
C*****    THE DO AND IS IN THE SAME PROGRAM UNIT                           P1930110
C*****  * TERMINAL STATEMENT IS EXECUTABLE BUT NOT A          7.1.2.8/07P1930120
C*****    GO TO, ARITHMETIC IF, RETURN, STOP, PAUSE OR       7.1.2.8/10P1930130
C*****    DO STATEMENT                                                     P1930140
C*****  * M1, M2 AND M3 ARE NOT REDEFINED WITHIN DO        7.1.2.8.1/54P1930150
C*****  * BRANCHES TO TERMINAL STATEMENT FOR MORE THAN     7.1.2.8.1/01P1930160
C*****    ONE DO ARE CONTAINED IN INNERMOST DO OF A NEST                   P1930170
C*****                                                                     P1930180
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT. NO INPUT TAPE.         P1930190
C*****                                                                     P0073010
C*****  WHEN EXECUTING ONLY SEGMENT 193, THE FOLLOWING STATEMENT           P0073015
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.             P0073020
C*****                                                                     P0073025
C=    NUVI = 6                                                            P0073030
      NUVI = 6                                                            P193B1
C*****                                                                    P0073035
      WRITE (NUVI,1935)                                                   P1930200
1935  FORMAT (1H1,1X,27HDONSI - (193) INCOMPLETE DO//2X,                  P1930210
     - 18HASA REF. - 7.1.2.8//2X,7HRESULTS)                               P1930220
C*****    HEADER FOR SEGMENT 193 WRITTEN                                  P1930230
      KBCVI = 0                                                           P1930240
      DO  1931  JACVI = 1,5,1                                             P1930250
      KBCVI = KBCVI + JACVI                                               P1930260
      IF(KBCVI - 6) 1931, 1930, 1931                                      P1930270
1930  GO TO 1932                                                          P1930280
1931  CONTINUE                                                            P1930290
C*****    ERROR EXIT                                                      P1930300
      WRITE (NUVI,1936)                                                   P1930310
1936  FORMAT (1H0,2X,28H**INCOMPLETE LOOP IN ERROR**)                     P1930320
C*****   INCOMPLETE LOOP TEST IN ERROR                                    P1930330
      GO TO 1937                                                          P1930340
C*****    TEST JACVI FOR VALUE OF 3                          7.1.2.8.1/21P1930350
1932  IF (JACVI - 3) 1933,1934,1933                                       P1930360
C*****    ERROR IN INDUCTION VARIABLE                                     P1930370
1933  WRITE (NUVI,1938)                                                   P1930380
1938  FORMAT (1H0,2X,31H**INDUCTION VARIABLE IN ERROR**)                  P1930390
C*****    INDUCTION VARIABLE SET INCORRECTLY OUTSIDE LOOP                 P1930400
      GO TO 1937                                                          P1930410
1934  WRITE (NUVI,1939)                                                   P1930420
1939  FORMAT (1H0,1X,30H**INCOMPLETE LOOP SUCCESSFUL**)                   P1930430
C*****    INCOMPLETE LOOP TEST SUCCESS                                    P1930440
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1937  CONTINUE                                                          P1930450
C*****    END OF TEST SEGMENT 193                                       P1930460
C*****  WHEN EXECUTING ONLY SEGMENT 193, THE  STOP  AND  END  CARDS     P1930470
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1930480
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1930490
C=    STOP                                                              P1930500
C=    END                                                               P1930510
      STOP                                                              P193C1
      END                                                               P193C2
C*****************************************************************************P1940010
C*****                                                                 P1940020
C*****                          DONSX - (194)                          P1940030
C*****                                                                 P1940040
C*****************************************************************************P1940050
C*****  GENERAL PURPOSE                                          ASA REF P1940060
C*****    TESTS EXTENDED RANGE OF DO LOOP VARIABLE             7.1.2.8.2P1940070
C*****  RESTRICTIONS OBSERVED                                           P1940080
C*****  * M1, M2 AND M3 ARE GREATER THAN ZERO                 7.1.2.8/21P1940090
C*****  * TERMINAL STATEMENT OF EACH DO PHYSICALLY FOLLOWS    7.1.2.8/08P1940100
C*****    THE DO AND IS IN THE SAME PROGRAM UNIT                        P1940110
C*****  * TERMINAL STATEMENT IS EXECUTABLE BUT NOT A          7.1.2.8/07P1940120
C*****    GO TO, ARITHMETIC IF, RETURN, STOP, PAUSE OR       7.1.2.8/10P1940130
C*****    DO STATEMENT                                                  P1940140
C*****  * M1, M2 AND M3 ARE NOT REDEFINED WITHIN DO         7.1.2.8.2/54P1940150
C*****  * BRANCHES TO TERMINAL STATEMENT FOR MORE THAN      7.1.2.8.2/01P1940160
C*****    ONE DO ARE CONTAINED IN INNERMOST DO OF A NEST                P1940170
C*****  * THE EXTENDED RANGE OF A DO DOES NOT CONTAIN A     7.1.2.8.2/48P1940180
C*****    DO OF THE SAME PROGRAM UNIT THAT HAS AN                       P1940190
C*****    EXTENDED RANGE.                                               P1940200
C*****                                                                  P1940210
C*****  S P E C I F I C A T I O N S  SEGMENT 194                        P1940220
C*****                                                                  P0013900
C*****  WHEN EXECUTING ONLY SEGMENT 194, THE SPECIFICATION STATEMENTS   P0013905
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=                P0013910
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0013915
C*****                                                                  P0013920
C=    DIMENSION IAC1I(5)                                                P0013925
C=    INTEGER I3I(2,2,2)                                                P0013930
      DIMENSION IAC1I(5)                                                P194A1
      INTEGER I3I(2,2,2)                                                P194A2
C*****                                                                  P0013935
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT. NO INPUT TAPE.       P1940230
C*****                                                                  P0073040
C*****  WHEN EXECUTING ONLY SEGMENT 194, THE FOLLOWING STATEMENT        P0073045
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.          P0073050
C*****                                                                  P0073055
C=    NUVI = 6                                                          P0073060
      NUVI = 6                                                          P194B1
C*****                                                                  P0073065
      WRITE (NUVI,8944)                                                 P1940240
8944  FORMAT (1H1,1X,31HDONSX - (194) EXTENDED DO RANGE//2X,            P1940250
     120HASA REF. - 7.1.2.8.2//2X,7HRESULTS)                            P1940260
C*****    HEADER FOR SEGMENT 194 WRITTEN                                P1940270
C*****    EXTENDED RANGE FROM SINGLE LEVEL*****************************P1940280
      MRRVI=1                                                           P1940290
      WRITE (NUVI,8942)MRRVI                                            P1940300
8942  FORMAT (//2X,26HEXTENDED RANGE FROM LEVEL ,I1)                    P1940310
C*****    HEADER FOR SINGLE LEVEL WRITTEN                               P1940320
      DO  1941  JACVI = 1,4,2                                           P1940330
      IAC1I(JACVI) = JACVI                                              P1940340
      GO TO 1942                                                        P1940350
1943  IF(JACVI-1) 1945,1941,1945                                        P1940360
1941  CONTINUE                                                          P1940370
      GO TO 1949                                                        P1940380
C*****    TEST JACVI FOR VALUE OF 1                                     P1940390
1942  IF (JACVI - 1) 1946,1943,1946                                     P1940400
C*****    TEST IAC1I(1) AND IAC1I(3) FOR VALUES OF 1 AND 3              P1940410
1946  IF (IAC1I(1)-1) 1947,7946,1947                                    P1940420
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7946  IF (IAC1I(3)-3) 1947,1943,1947                                    P1940430
C*****     ERROR                                                        P1940440
1947  WRITE (NUVI,7947)                                                 P1940450
7947  FORMAT (/2X,24H**TEST INDICATES ERROR**)                          P1940460
C*****     ERROR IN SETTING OF IAC1I ARRAY, LOOP NOT WORKING            P1940470
      GO TO 8940                                                        P1940480
C*****     TEST JACVI FOR VALUE OF 3                                    P1940490
1945  IF (JACVI - 3) 1948,1941,1948                                     P1940500
C*****     ERROR                                                        P1940510
1948   WRITE (NUVI,7947)                                                P1940520
C*****     ERROR IN SETTING OF INDUCTION VARIABLE                       P1940530
      GO TO 8940                                                        P1940540
1949  WRITE (NUVI,7949)                                                 P1940550
7949  FORMAT (/2X,19H**TEST SUCCESSFUL**)                               P1940560
C*****     EXTENDED RANGE SUCCESS FOR SINGLE LEVEL                      P1940570
8940  MRRVI=2                                                           P1940580
C*****     EXTENDED RANGE FROM DOUBLE LEVEL**********************************P1940590
      WRITE (NUVI,8942)MRRVI                                            P1940600
C*****     HEADER FOR DOUBLE LEVEL WRITTEN                              P1940610
      DO 7940  KBCVI = 3,4                                              P1940620
        DO 7940 JACVI = 1,2,3                                           P1940630
        GO TO 7941                                                      P1940640
8947    IGDVI=  1                                                       P1940650
7940  CONTINUE                                                          P1940660
C*****     TEST JACVI FOR VALUE OF 1                                    P1940670
7941  IF (JACVI-1) 7942,7943,7942                                       P1940680
C*****     ERROR                                                        P1940690
7942  WRITE (NUVI,7947)                                                 P1940700
C*****     DOUBLE LEVEL NESTING IN ERROR                                P1940710
      GO TO 8946                                                        P1940720
C*****     TEST KBCVI FOR VALUE OF 3 OR 4                               P1940730
7943  IF (KBCVI-3) 7942,8947,7944                                       P1940740
7944  IF (KBCVI-4) 7942,7945,7942                                       P1940750
C*****     CORRECT                                                      P1940760
7945  WRITE (NUVI,7949)                                                 P1940770
C*****     DOUBLE LEVEL TEST CORRECT                                    P1940780
8946  CONTINUE                                                          P1940790
      I3I(1,1,1) = 2                                                    P1940800
      I3I(2,1,1) = 4                                                    P1940810
      I3I(1,2,1) = 1                                                    P1940820
      I3I(2,2,1) = 2                                                    P1940830
      I3I(1,1,2)= -2                                                    P1940840
      I3I(2,1,2) = 0                                                    P1940850
      I3I(1,2,2) = -3                                                   P1940860
      I3I(2,2,2) = -2                                                   P1940870
8952  FORMAT(//2X,40HEXTENDED RANGE CONTAINING A DO STATEMENT)          P1940880
      WRITE(NUVI, 8952)                                                 P1940890
      DO 8948 IVI = 1,2                                                 P1940900
      I3I(1,1,IVI) = I3I(1,1,IVI) + 1                                   P1940910
      DO 8948  JVI = 1,2                                                P1940920
      I3I(1,JVI,IVI) = I3I(1,JVI,IVI) + 2                               P1940930
      GO TO 8949                                                        P1940940
8951  CONTINUE                                                          P1940950
8948  CONTINUE                                                          P1940960
      WRITE (NUVI, 8950) I3I                                            P1940970
8950  FORMAT(8(/I5) /30H  THE ABOVE 8 VALUES SHOULD BE/                 P1940980
     1 33H  IN DESCENDING ORDER FROM 8 TO 1)                            P1940990
      GO TO 8953                                                        P1941000
8949  DO 8954  KVI = 1,2                                               P1941010
      I3I(KVI,JVI,IVI) = I3I(KVI,JVI,IVI) + 3                           P1941020
8954  CONTINUE                                                          P1941030
      GO TO 8951                                                        P1941040
8953  CONTINUE                                                          P1941050
C*****     END OF TEST SEGMENT 194                                      P1941060
C*****  WHEN EXECUTING ONLY SEGMENT 194, THE  STOP  AND  END  CARDS     P1941070
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1941080
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1941090
C=    STOP                                                              P1941100
```

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C=     END                                                              P1941110
       STOP                                                             P194C1
       END                                                              P194C2
C*****************************************************************************P1950010
C*****                                                                  P1950020
C*****                          DONML - (195)                           P1950030
C*****                                                                  P1950040
C*****************************************************************************P1950050
C*****  GENERAL PURPOSE                                        ASA REF P1950060
C*****    TESTS TWO INDEPENDENT LOOPS NESTED                 7.1.2.8/28P1950070
C*****    WITHIN LARGER ONE                                           P1950080
C*****  RESTRICTIONS OBSERVED                                         P1950090
C*****  * M1, M2 AND M3 ARE GREATER THAN ZERO                7.1.2.8/21P1950100
C*****  * TERMINAL STATEMENT OF EACH DO PHYSICALLY FOLLOWS   7.1.2.8/08P1950110
C*****    THE DO AND IS IN THE SAME PROGRAM UNIT                      P1950120
C*****  * TERMINAL STATEMENT IS EXECUTABLE BUT NOT A         7.1.2.8/07P1950130
C*****    GO TO, ARITHMETIC IF, RETURN, STOP, PAUSE OR       7.1.2.8/10P1950140
C*****    DO STATEMENT                                                P1950150
C*****  * M1, M2 AND M3 ARE NOT REDEFINED WITHIN DO      7.1.2.8.1/54P1950160
C*****  * BRANCHES TO TERMINAL STATEMENT FOR MORE THAN    7.1.2.8.1/01P1950170
C*****    ONE DO ARE CONTAINED IN INNERMOST DO OF A NEST              P1950180
C*****                                                                P1950190
C*****  O U T P U T   T A P E   ASSIGNMENT STATEMENT. NO INPUT TAPE.   P1950200
C*****                                                                P0073070
C*****  WHEN EXECUTING ONLY SEGMENT 195, THE FOLLOWING STATEMENT      P0073075
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.        P0073080
C*****                                                                P0073085
C=     NUVI = 6                                                       P0073090
       NUVI = 6                                                       P195B1
C*****                                                                P0073095
       WRITE (NUVI,1950)                                              P1950210
1950   FORMAT  (1H1,1X,30HDONML - (195) MULT-LEVEL LOOPS//2X,         P1950220
     - 18HASA REF. - 7.1.2.8//2X,7HRESULTS)                           P1950230
C*****    HEADER FOR SEGMENT 195 WRITTEN                              P1950240
       IHDVI = 1                                                      P1950250
       IGDVI = 2                                                      P1950260
       IFOVI = 3                                                      P1950270
       DO  1951  JACVI = 1,2                                          P1950280
       IFOVI = IFOVI + JACVI                                          P1950290
         DO 1952 KBCVI = 2,4,1                                        P1950300
           IGDVI = IGDVI + 1                                          P1950310
1952   CONTINUE                                                       P1950320
       IFOVI = IFDVI + IGDVI                                          P1950330
         DO  1953  LCCVI = 6,7,3                                      P1950340
         IHDVI = 1 + IHDVI                                            P1950350
1953     CONTINUE                                                     P1950360
       IFOVI = IFOVI + IHDVI                                          P1950370
1951   CONTINUE                                                       P1950380
C*****    TEST IFDVI FOR VALUE OF 24                                  P1950390
       IF (IFOVI - 24) 1954,1955,1954                                 P1950400
C*****    ERROR                                                       P1950410
1954   WRITE (NUVI,1956)                                              P1950420
1956   FORMAT    (/2X,24H**TEST INDICATES ERROR**)                    P1950430
C*****    MULTI-LEVEL TEST IN ERROR                                   P1950440
       GO TO 1958                                                     P1950450
C*****    CORRECT                                                     P1950460
1955   WRITE (NUVI,1957)                                              P1950470
1957   FORMAT    (/2X,19H**TEST SUCCESSFUL**)                         P1950480
C*****    MULTI-LEVEL TEST CORRECT                                    P1950490
1958   CONTINUE                                                       P1950500
C*****    END OF TEST SEGMENT 195                                     P1950510
C*****  WHEN EXECUTING ONLY SEGMENT 195, THE  STOP  AND  END  CARDS   P1950520
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=               P1950530
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P1950540
C=     STOP                                                           P1950550
C=     END                                                            P1950560
       STOP                                                           P195C1
       END                                                            P195C2
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C*****************************************************************************P1960010
C*****                                                                        P1960020
C*****                          DONIO - (196)                                 P1960030
C*****                                                                        P1960040
C*****************************************************************************P1960050
C*****  GENERAL PURPOSE                                              ASA REF P1960060
C*****    TO TEST DO LOOPS WHICH HAVE I/O TERMINAL                    7.1.2.8 P1960070
C*****    STATEMENTS (FORMATTED READ, FORMATTED WRITE               7.1.3.2.2P1960080
C*****    AND REWIND ARE USED AS TERMINAL STATEMENTS)               7.1.3.2.3P1960090
C*****                                                              7.1.3.3.1P1960100
C*****  RESTRICTIONS OBSERVED                                               P1960110
C*****  * M1, M2 AND M3 ARE GREATER THAN ZERO                     7.1.2.8/21P1960120
C*****  * TERMINAL STATEMENT OF EACH DO PHYSICALLY FOLLOWS        7.1.2.8/08P1960130
C*****    THE DO AND IS IN THE SAME PROGRAM UNIT                            P1960140
C*****  * TERMINAL STATEMENT IS EXECUTABLE BUT NOT A              7.1.2.8/07P1960150
C*****    GO TO, ARITHMETIC IF, RETURN, STOP, PAUSE OR            7.1.2.8/10P1960160
C*****    DO STATEMENT                                                      P1960170
C*****  * M1, M2 AND M3 ARE NOT REDEFINED WITHIN DO             7.1.2.8.2/54P1960180
C*****  * BRANCHES TO TERMINAL STATEMENT FOR MORE THAN          7.1.2.8.2/01P1960190
C*****    ONE DO ARE CONTAINED IN INNERMOST DO OF A NEST                    P1960200
C*****                                                                      P1960210
C*****  S P E C I F I C A T I O N S  SEGMENT 196                            P1960220
C*****                                                                      P0013940
C*****  WHEN EXECUTING ONLY SEGMENT 196, THE SPECIFICATION STATEMENTS       P0013945
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=                    P0013950
C*****  IN COLUMNS  1  AND  2  REMOVED.                                     P0013955
C*****                                                                      P0013960
C=     DIMENSION IAC1I(5),AC2S(5,6)                                        P0013965
C=     LOGICAL MCAVB,MCBVB,GH2B(1,2)                                       P0013970
C=     DOUBLE PRECISION CC3D(7,2,2),DPAVD,DPBVD                            P0013975
C=     COMPLEX NUMVC,DENVC,LL1C(32)                                        P0013980
       DIMENSION IAC1I(5),AC2S(5,6)                                        P196A1
       LOGICAL MCAVB,MCBVB,GH2B(1,2)                                       P196A2
       DOUBLE PRECISION CC3D(7,2,2),DPAVD,DPBVD                            P196A3
       COMPLEX NUMVC,DENVC,LL1C(32)                                        P196A4
C*****                                                                     P0013985
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENTS. NO INPUT TAPE.         P1960230
C*****                                                                     P0073100
C*****  WHEN EXECUTING ONLY SEGMENT 196, THE FOLLOWING STATEMENTS          P0073105
C*****  NUVI=6 AND INVI=9  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.    P0073110
C*****                                                                     P0073115
C=     NUVI = 6                                                            P0073120
C=     INVI = 9                                                            P0073125
       NUVI = 6                                                            P196B1
       INVI = 9                                                            P196B2
C*****                                                                     P0073130
       WRITE (NUVI,1960)                                                   P1960240
1960   FORMAT (1H1,1X,31HDONIO - (196) DO LOOPS WITH I/O/16X,              P1960250
     119HTERMINAL STATEMENTS/ 20H  ASA REF. - 7.1.2.8/ 9H  RESULTS)        P1960260
C*****    HEADER FOR SEGMENT 196 WRITTEN                                   P1960270
       KCAVI = 1                                                           P1960280
       CKAVS = 1.0                                                         P1960290
       DPBVD = 1.0D0                                                       P1960300
       DENVC = (1.0,1.0)                                                   P1960310
       MCBVB = .TRUE.                                                      P1960320
       IAC1I(2) = 1                                                        P1960330
       AC2S(4,3) = 1.                                                      P1960340
       CC3D(5,1,2) = 1.0D0                                                 P1960350
       LL1C(2) = (1.0,1.0)                                                 P1960360
       GH2B(1,1) = .TRUE.                                                  P1960370
       WRITE (INVI,1965) KCAVI, CKAVS, DPBVD, DENVC, MCBVB, IAC1I(2),      P1960380
      1                  AC2S(4,3), CC3D(5,1,2), LL1C(2), GH2B(1,1)       P1960390
       REWIND INVI                                                         P1960400
       DO  1964  JACVI = 1,3,1                                             P1960410
C*****                                                                     P1960420
       DO 1961 KBCVI = 1,1,1                                               P1960430
1961     READ (INVI,1965) MCAVI,CMAVS,DPAVD,NUMVC,MCAVB,IAC1I(KBCVI),      P1960440
     1         AC2S(5,4), CC3D(6,1,2), LL1C(3), GH2B(KBCVI,2)              P1960450
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C*****                                                                  P1960460
      DO 1962  LCCVI = 1,2,1                                            P1960470
1962  REWIND INVI                                                       P1960480
C*****                                                                  P1960490
      DO 1963  MDCVI = 1,1,1                                            P1960500
1963  WRITE (NUVI,1966) MCAVI, IAC1I(1), CMAVS, AC2S(5,4), DPAVD,       P1960510
     1                       CC3D(6,1,2), NUMVC, LL1C(3), MCAVB,        P1960520
     2                     GH2B(MDCVI, MDCVI+1)                         P1960530
1964  CONTINUE                                                          P1960540
      WRITE (NUVI,1967)                                                 P1960550
C*****    FORMAT STATEMENTS FOR THIS SEGMENT                            P1960560
1965  FORMAT (2(I5,F5.1,D8.1,2(F5.1),L5))                               P1960570
1966  FORMAT ( // 2(I10/),2(F11.1/),2(D15.1/),2(F5.1,F6.1/),2(L10/))    P1960580
1967  FORMAT   (//30H  THIS TEST IS SUCCESSFUL IF 3/38H  IDENTICAL GROUPP1960590
     1S OF OUTPUT HAVE BEEN/12H  GENERATED.)                            P1960600
C*****    END OF SEGMENT 196                                            P1960610
C*****  WHEN EXECUTING ONLY SEGMENT 196, THE  STOP  AND  END  CARDS     P1960620
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1960630
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1960640
C=    STOP                                                              P1960650
C=    END                                                               P1960660
      STOP                                                              P196C1
      END                                                               P196C2
C*************************************************************************P1970010
C*****                                                                  P1970020
C*****                          MORDO - (197)                           P1970030
C*****                                                                  P1970040
C*************************************************************************P1970050
C*****  GENERAL PURPOSE                                        ASA REF P1970060
C*****    A MORE COMPLICATED SEGMENT TESTING THE DO STATEMENT    7.1.2.8P1970070
C*****                                                                  P1970080
C*****  S P E C I F I C A T I O N S  SEGMENT 197                        P1970090
C*****                                                                  P0013990
C*****  WHEN EXECUTING ONLY SEGMENT 197  THE SPECIFICATION STATEMENTS   P0013995
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P0014000
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P0014005
C*****                                                                  P0014010
C=    DIMENSION  IAC1I(5), MCA1I(5)                                     P0014015
      DIMENSION  IAC1I(5), MCA1I(5)                                     P197A1
C*****                                                                  P0014020
C*****  WHEN EXECUTING ONLY SEGMENT 197, THE SEGMENT 005, WHICH         P1970100
C*****  CONTAINS THE STATEMENT FUNCTIONS BEING USED HERE, MUST BE       P1970110
C*****  INSERTED AFTER THE SPECIFICATION STATEMENTS OF SEGMENT 197.     P1970120
C*****                                                                  P1970130
C*************************************************************************P0050500
C*****                                                                  P0050510
C*****                          BSFDF - (005)                           P0050520
C*****                                                                  P0050530
C*************************************************************************P0050540
C*****  GENERAL PURPOSE                                        ASA REF P0050550
C*****    DEFINING STATEMENT FUNCTIONS THAT ARE TO BE TESTED            P0050560
C*****    IN SEGMENT 197                                        .8.1.1P0050570
C*****    HEADER FOR SEGMENT 005                                      P0050580
C*****    DEFINING EXPRESSION CONTAINS CONSTANTS AND VARIABLES        P0050590
      CMAFS(CAWVS,CBWVS) = CAWVS * 2. + CBWVS                           P0050600
      CMBFS(MAWVI,MBWVI,MCWVI) =(MAWVI + MBWVI + MCWVI)/3               P0050610
      MCAFI(MAWVI,MBWVI) = MAWVI ** MBWVI                               P0050620
      MCBFI(CAWVS,CBWVS,CCWVS) = (CAWVS + CBWVS + CCWVS) * 2.0          P0050630
C*****    DEFINING EXPRESSION CONTAINS CONSTANTS, VARIABLES AND         P0050640
C*****    INTRINSIC FUNCTIONS                                           P0050650
      CMCFS(CAWVS,CBWVS,CCWVS) = ABS(CAWVS**2 - (CBWVS+CCWVS)**2)       P0050660
      CMDFS(MAWVI,MBWVI) = ISIGN((MAWVI+MBWVI),(MAWVI-MBWVI))           P0050670
      MCCFI(MAWVI,MBWVI,CAWVS) = MAWVI**2 + MBWVI**2 + IFIX(CAWVS)**2   P0050680
      MCDFI(CAWVS,CBWVS,CCWVS,CDWVS,CEWVS) = (CAWVS + CBWVS + CCWVS +   P0050690
     1CDWVS +CEWVS) ** (ABS(CAWVS))                                     P0050700
C*****    DEFINING EXPRESSION CONTAINS PREVIOUSLY DEFINED STATEMENT     P0050710
C*****    FUNCTIONS AND/OR EXTERNAL FUNCTION REFERENCES                 P0050720
      CMEFS(CAWVS,CBWVS) = CMBFS(1,2,3) + SQRT((CAWVS + CBWVS))         P0050730
```

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      CMFFS(MAWVI,MBWVI,MCWVI) = MCCFI(MAWVI,MBWVI,3.0) + MCWVI **2      P0050740
      MCEFI(MAWVI,MBWVI) = MCAFI(MAWVI,MBWVI) ** MCAFI(MAWVI,MBWVI)     P0050750
      MCFFI(CAWVS,CBWVS,CCWVS) = SQRT(CAWVS) + SQRT(CBWVS) + EXP(CCWVS) P0050760
C*****    DEFINING EXPRESSION CONTAINS CONSTANTS, VARIABLES, INTRINSIC  P0050770
C*****    OR EXTERNAL FUNCTION REFERENCES AND PREVIOUSLY DEFINED        P0050780
C*****    STATEMENT FUNCTIONS.                                          P0050790
      CMGFS(MAWVI,MBWVI,CAWVS,CBWVS) = FLOAT(MAWVI ** 2) - CMAFS(CAWVS, P0050800
     1CBWVS) + SQRT((FLOAT(MAWVI + MBWVI)))                             P0050810
      MCGFI(MAWVI,MBWVI,MCWVI,CAWVS) = MCEFI(MAWVI,MBWVI) - MCEFI(MAWVI,P0050820
     1MCWVI) + IFIX(EXP(CAWVS))                                         P0050830
C*****    END OF TEST SEGMENT 005                                       P0050840
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENTS. NO INPUT TAPE.      P1970140
C*****                                                                  P0073140
C*****  WHEN EXECUTING ONLY SEGMENT 197, THE FOLLOWING STATEMENTS       P0073145
C*****  NUVI=6 AND INVI=9  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED. P0073150
C*****                                                                  P0073155
C=    NUVI = 6                                                          P0073160
C=    INVI = 9                                                          P0073165
      NUVI = 6                                                          P197B1
      INVI = 9                                                          P197B2
C*****                                                                  P0073170
      WRITE (NUVI,1970)                                                 P1970150
1970  FORMAT (1H1, 1X,37HMORDO - (197) A MORE COMPLICATED SEG./16X,     P1970160
     1        16HOF DO STATEMENTS//                                     P1970170
     2 35H  ASA REFS - 7.1.2.8 AND 7.1.2.8.1 // 9H  RESULTS )           P1970180
C*****    HEADER FOR SEGMENT 197 WRITTEN                                P1970190
C*****    TEST OF DO WITH STATEMENT FUNCTIONS AND INTRINSIC FUNCTIONS   P1970200
C*****    REFERENCED WITHIN ITS RANGE. TO BE RUN WITH SEG. 005 AND 412  P1970210
      ASSIGN 9190 TO MVI                                                P1970220
      MCBVI = 0                                                         P1970230
      MCHVI = 1971                                                      P1970240
      DO 1971 MCAVI = 4,8,4                                             P1970250
      CMAVS = CMAFS(1.0, FLOAT(MCAVI))                                  P1970260
1971  MCBVI = MCBVI + MCAFI(MCAVI,IFIX(CMAVS) - (MCAVI+2))              P1970270
      IF (MCBVI - 2) 9966, 9190, 9966                                   P1970280
9190  MCHVI = 1973                                                      P1970290
C*****    TEST OF DO WITH CALL STATEMENTS REFERENCED WITHIN ITS RANGE    P1970300
      IVI = 0                                                           P1970310
      ASSIGN 9968 TO MVI                                                P1970320
      DO 1973 MCAVI = 1,3                                               P1970330
1973  CALL  MOQ( MCAVI, IVI)                                            P1970340
      IF(IVI - 6) 9966, 9968, 9966                                      P1970350
C*****    TEST OF DO WITH THE FOLLOWING FEATURES COMBINED -              P1970360
C*****    1.  AN EXIT FROM THE RANGE OF A DO BY THE EXECUTION OF A      P1970370
C*****        GO-TO STATEMENT, THE CONTROL VARIABLE OF THE DO IS        P1970380
C*****        DEFINED                                  7.1.2.8.1/19-23P1970390
C*****    2.  A GO TO STATEMENT CAUSES CONTROL TO PASS FROM AN          P1970400
C*****        INNER DO TO THE OUTER DO (WITHIN THE NESTED RANGE)        P1970410
9968  MCHVI = 1976                                                      P1970420
      ASSIGN 9191 TO MVI                                                P1970430
      MCBVI = 0                                                         P1970440
      DO 1976 MCAVI = 1,1,1                                             P1970450
9192  MCBVI = MCBVI + 1                                                 P1970460
      DO 1975 MCCVI = 1,3,1                                             P1970470
      MCBVI = MCBVI + 1                                                 P1970480
      IF(MCBVI - 4) 9197, 9192, 1975                                    P1970490
9197  GO TO (1975, 1975, 9966), MCCVI                                   P1970500
1975  CONTINUE                                                          P1970510
1976  CONTINUE                                                          P1970520
      IF (MCBVI - 8) 9966, 9191, 9966                                   P1970530
C*****    TEST THAT THE STATEMENT LABEL OF THE TERMINAL STATEMENT        P1970540
C*****    OF MORE THAN ONE DO CAN BE USED IN ANY GO TO OR ARITHMETIC     P1970550
C*****    IF STATEMENT THAT OCCURS IN THE RANGE OF THE MOST DEEPLY      P1970560
C*****    CONTAINED DO WITH THAT TERMINAL STATEMENT.     7.1.2.8.2/1-6  P1970570
C*****    ALSO THE CONTROL VARIABLE IS DEFINED WHEN EXIT IS MADE BY THE P1970580
C*****    EXECUTION OF AN ARITHMETIC IF STATEMENT.                      P1970590
9191  ASSIGN 9194 TO MVI                                                P1970600
      MCHVI = 1977                                                      P1970610
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      MCEVI = -24                                                       P1970620
      DO 1977 MCAVI = 1,2                                               P1970630
      MCEVI = MCEVI + 1                                                 P1970640
         DO 1977 MCBVI = 1,2                                            P1970650
         MCEVI = MCEVI + 1                                              P1970660
            DO 1977 MCCVI = 1,5,1                                       P1970670
            MCEVI = MCEVI + 1                                           P1970680
            IF(MCEVI )     1977, 1977, 1978                             P1970690
1977  CONTINUE                                                          P1970700
C*****  ERROR IF LOOP TERMINATES THRU CONTINUE                          P1970710
      GO TO 9966                                                        P1970720
C*****  CONTROL VARIABLE DEFINED ON FIRST LEVEL ON ARITH. IF            P1970730
1978  MCEVI = MCAVI + MCBVI + MCCVI                                     P1970740
      MCHVI = 1978                                                      P1970750
      IF(MCEVI -8) 9966,9194,9966                                       P1970760
9194  MCHVI = 1974                                                      P1970770
      MCEVI = 0                                                         P1970780
      ASSIGN 9961 TO MVI                                                P1970790
      DO 1974 MCAVI = 1,2                                               P1970800
        DO 1974 MCBVI = 1,2,1                                           P1970810
          DO 1974 MCCVI = 4,5,1                                         P1970820
          DO 1974 MCDVI = 2,3                                           P1970830
          GO TO 9193                                                    P1970840
9195      GO TO 1974                                                    P1970850
9193      MCEVI = MCAVI + MCBVI + MCCVI + MCDVI + MCEVI                 P1970860
            GO TO 9195                                                  P1970870
1974           CONTINUE                                                 P1970880
      IF(MCEVI - 160) 9966, 9961, 9966                                  P1970890
C*****     TEST OF DO WITH I/O STATEMENTS REFERENCED WITHIN ITS RANGE.   P1970900
C*****     REWIND, UNFORMATTED READ AND WRITE ARE REFERENCED. THE       P1970910
C*****     FOLLOWING 3 DOS MUST BE KEPT TOGETHER FOR SELF-CHECKING      P1970920
C*****     PURPOSES                                                     P1970930
9961  MCHVI = 1972                                                      P1970940
      ASSIGN 9196 TO MVI                                                P1970950
      REWIND INVI                                                       P1970960
      DO 9963 MCAVI = 1,4                                               P1970970
      MCA1I(MCAVI) = MCAVI                                              P1970980
      WRITE ( INVI) (MCA1I(MCBVI), MCBVI = 1,MCAVI, 1)                  P1970990
9963  CONTINUE                                                          P1971000
      DO 9964 MCCVI = 1,4                                               P1971010
9964  REWIND INVI                                                       P1971020
      DO 1972 MCDVI = 1,4                                               P1971030
      READ (INVI) (IAC1I(MCEVI),MCEVI = 1,MCDVI)                        P1971040
      DO 1972 MCFVI = 1, MCDVI                                          P1971050
      MCGVI = IAC1I(MCFVI) - MCA1I(MCFVI)                               P1971060
      IF (MCGVI) 9966, 1972, 9966                                       P1971070
1972  CONTINUE                                                          P1971080
9196  WRITE(NUVI, 9969)                                                 P1971090
      GO TO 9198                                                        P1971100
C*****     ERROR MESSAGES IF DO STATEMENT IS EXECUTED IN ERROR.         P1971110
9966  WRITE (NUVI,9967) MCHVI                                           P1971120
9967  FORMAT (// 36H  DO RANGE ENDING AT STATEMENT LABEL,I5,            P1971130
     114H  IS IN ERROR.)                                                P1971140
9969  FORMAT(// 35H  THIS SEGMENT SUCCESSFULLY TESTED /                 P1971150
     222H  IF NO ERROR MESSAGES)                                        P1971160
      GO TO MVI,(9190,9968,9191,9194,9961,9196)                         P1971170
9198  REWIND INVI                                                       P1971180
C*****     END OF TEST SEGMENT 197                                      P1971190
C*****  WHEN EXECUTING ONLY SEGMENT 197, THE  STOP  AND  END  CARDS     P1971200
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P1971210
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P1971220
C=    STOP                                                              P1971230
C=    END                                                               P1971240
      STOP                                                              P197C1
      END                                                               P197C2
C*******************************************************************************P4120010
C*****                                                                 P4120020
C*****                          MDQ   - (412)                          P4120030
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C*****                                                                  P4120040
C*********************************************************************P4120050
C*****  GENERAL PURPOSE                                        ASA REF P4120060
C*****    THIS SUBROUTINE IS USEO WITH SEGMENT 197 TO                   P4120070
C*****    SHOW THAT SUBROUTINES MAY BE CALLEO FROM OO LOOPS             P4120080
      SUBROUTINE MOQ(MWVI,IWVI)                                         P4120090
      IWVI = MWVI + IWVI                                                P4120100
      RETURN                                                            P4120110
C*****    ENO OF TEST SEGMENT 412                                       P4120120
      END                                                               P4120130
C*********************************************************************P2000010
C*****                                                                  P2000020
C*****                          SUBR1 - (200)                           P2000030
C*****                                                                  P2000040
C*********************************************************************P2000050
C*****  GENERAL PURPOSE                                        ASA REF.P2000060
C*****    TO TEST SUBROUTINE SUBPROGRAM WITHOUT AN ARGUMENT LIST 8.4.1.1P2000070
C*****  GENERAL COMMENTS                                               P2000080
C*****    IT IS TO BE RUN WITH SEGMENT 410                             P2000090
C*****  RESTRICTIONS OBSERVEO                                          P2000100
C*****    SYMBOLIC NAME OF A SUBROUTINE MAY NOT APPEAR IN ANY 8.4.1.1/56P2000110
C*****    STATEMENT IN THIS SUBROUTINE EXCEPT IN THE                   P2000120
C*****    SUBROUTINE STATEMENT ITSELF                                  P2000130
C*****  * SYMBOLIC NAMES OF OUMMY ARGUMENTS MAY NOT APPEAR    8.4.1.1/39P2000140
C*****    IN EQUIVALENCE OR COMMON STATEMENTS IN THE SUBPROGRAM        P2000150
C*****  * SUBROUTINES MAY NOT CONTAIN A FUNCTION STATEMENT,   8.4.1.1/45P2000160
C*****    ANOTHER SUBROUTINE STATEMENT, OR ANY STATEMENT THAT          P2000170
C*****    OIRECTLY OR INOIRECTLY REFERENCES THE SUBROUTINE             P2000180
C*****    BEING OEFINEO                                                P2000190
C*****  * AT LEAST ONE RETURN STATEMENT MUST BE IN A SUBROUTINE        P2000200
C*****                                                    8.4.1.1/49P2000210
C*****  S P E C I F I C A T I O N S  SEGMENT 200                       P2000220
C*****                                                                 P0014030
C*****  WHEN EXECUTING ONLY SEGMENT 200, THE SPECIFICATION STATEMENTS  P0014035
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                 P0014040
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                P0014045
C=    COMMON  AXVS, CXVS, IXVI, IAX1I(4)                              P0014050
      COMMON  AXVS, CXVS, IXVI, IAX1I(4)                              P200A1
C*****                                                                 P0014055
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT. NO INPUT TAPE.     P2000230
C*****  WHEN EXECUTING ONLY SEGMENT 200, THE FOLLOWING STATEMENTS      P0073180
C*****  NUVI=6 ANO INVI=9 MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVEO. P0073185
C*****                                                                 P0073190
C=    NUVI = 6                                                        P0073195
C=    INVI = 9                                                        P0073200
      NUVI = 6                                                        P200B1
      INVI = 9                                                        P200B2
      WRITE(NUVI, 0200)                                               P2000240
200   FORMAT(39H1 SUBR1 - (200)   SUBROUTINE SUBPROGRAM /15X,         P2000250
     124HWITHOUT AN ARGUMENT LIST //18H  ASA REF. - 8.4.1//9H  RESULTS) P2000260
      IXVI = NUVI                                                     P2000270
      IAX1I(1) = INVI                                                 P2000280
      CALL SUBRQ                                                      P2000290
      CONTINUE                                                        P2000300
C*****    ENO OF SEGMENT 200                                          P2000310
C*****  WHEN EXECUTING ONLY SEGMENT 200, THE STOP ANO ENO CARDS        P2000320
C*****  WHICH APPEAR AS COMMENT CAROS MUST HAVE THE C=                 P2000330
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                P2000340
C=    STOP                                                            P2000350
C=    ENO                                                             P2000360
      STOP                                                            P200C1
      ENO                                                             P200C2
C*********************************************************************P4100010
C*****                                                                  P4100020
C*****                          SUBRQ - (410)                           P4100030
C*****                                                                  P4100040
C*********************************************************************P4100050
C*****  THIS SEGMENT TESTS THAT A VARIETY OF FORTRAN STATEMENTS         P4100060
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C*****  CAN BE USED IN A SUBROUTINE.  IT IS TO BE RUN WITH SEGMENT 200  P4100070
      SUBROUTINE SUBRQ                                                  P4100080
8867  FORMAT (//36H  DO RANGE ENDING AT STATEMENT LABEL,I5,14H  IS IN ERP4100090
     1ROR.)                                                             P4100100
      DIMENSION KCA1I(5), KAC1I(5)                                      P4100110
      COMMON  BXVS, DXVS, NXVI, IXVI                                    P4100120
C*****    DEFINE ARITHMETIC STATEMENT FUNCTION                          P4100130
      CKAFS(CEWVS,CFWVS) = CEWVS*2. + CFWVS                             P4100140
8868  FORMAT (//35H  THIS SEGMENT SUCCESSFULLY TESTED /                 P4100150
     1 23H  IF NO ERROR MESSAGES.)                                      P4100160
      KCAFI(KEWVI,KFWVI) = KEWVI**KFWVI                                 P4100170
C*****    TEST OF DO WITH STATEMENT FUNCTIONS                           P4100180
      KCHVI = 4101                                                      P4100190
      ASSIGN 4102 TO MVI                                                P4100200
      KCBVI = 0                                                         P4100210
      DO 4101 KCAVI = 4,8,4                                             P4100220
      CKAVS = CKAFS(1.0, FLOAT(KCAVI))                                  P4100230
4101  KCBVI = KCBVI + KCAFI(KCAVI,IFIX(CKAVS) - (KCAVI + 2))            P4100240
      IF(KCBVI - 2) 8866, 4102, 8866                                    P4100250
C*****    TEST OF DO WITH THE FOLLOWING FEATURES COMBINED -             P4100260
C*****    1.  AN EXIT FROM THE RANGE OF A DO BY THE EXECUTION OF A      P4100270
C*****        GO-TO STATEMENT, THE CONTROL VARIABLE OF THE DO IS        P4100280
C*****        DEFINED                                                   P4100290
C*****    2.  A GO TO STATEMENT CAUSES CONTROL TO PASS FROM AN          P4100300
C*****        INNER DO TO THE OUTER DO (WITHIN THE NESTED RANGE)        P4100310
4102  KCHVI = 4106                                                      P4100320
      ASSIGN 8870 TO MVI                                                P4100330
      KCBVI = 0                                                         P4100340
      DO 4106 KCAVI = 1,1,1                                             P4100350
8872  KCBVI = KCBVI + 1                                                 P4100360
      DO 4105 KCCVI = 1,3,1                                             P4100370
      KCBVI = KCBVI + 1                                                 P4100380
      IF (KCBVI - 4) 8873, 8872, 4105                                   P4100390
8873  GO TO (4105,4105,8866), KCCVI                                     P4100400
4105  CONTINUE                                                          P4100410
4106   CONTINUE                                                         P4100420
      IF(KCBVI - 8) 8866, 8870, 8866                                    P4100430
C*****    TEST THAT THE STATEMENT LABEL OF THE TERMINAL STATEMENT        P4100440
C*****    OF MORE THAN ONE DO CAN BE USED IN ANY GO TO OR ARITHMETIC     P4100450
C*****    IF STATEMENT THAT OCCURS IN THE RANGE OF THE MOST DEEPLY       P4100460
C*****    CONTAINED DO WITH THAT TERMINAL STATEMENT                      P4100470
8870  ASSIGN 8876 TO MVI                                                P4100480
      KCHVI = 4107                                                      P4100490
      KCEVI = -24                                                       P4100500
      DO 4107 KCAVI = 1,2                                               P4100510
      KCEVI = KCEVI + 1                                                 P4100520
         DO 4107 KCBVI = 1,2                                            P4100530
         KCEVI = KCEVI + 1                                              P4100540
            DO 4107 KCCVI = 1,5,1                                       P4100550
            KCEVI = KCEVI + 1                                           P4100560
            IF(KCEVI )     4107,4107,4104                               P4100570
4107  CONTINUE                                                          P4100580
C*****ERROR IF LOOP TERMINATES THRU CONTINUE                            P4100590
      GO TO 8866                                                        P4100600
C*****CONTROL VARIABLE DEFINED ON FIRST LEVEL ON ARITH. IF              P4100610
4104  KCEVI = KCAVI + KCBVI + KCCVI                                     P4100620
      KCHVI = 4104                                                      P4100630
      IF(KCEVI - 8) 8866,8876,8866                                      P4100640
8876  KCHVI = 4103                                                      P4100650
      KCEVI = 0                                                         P4100660
      ASSIGN 8871 TO MVI                                                P4100670
      DO 4103 KCAVI =1,2                                                P4100680
        DO 4103 KCBVI = 1,2,1                                           P4100690
          DO 4103 KCCVI = 4,5,1                                         P4100700
            DO 4103 KCDVI = 2,3                                         P4100710
              GO TO 8878                                                P4100720
8877          GO TO 4103                                                P4100730
8878          KCEVI = KCAVI + KCBVI + KCCVI + KCDVI + KCEVI             P4100740
```

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              GO TO 8877                                                        P4100750
4103          CONTINUE                                                          P4100760
      IF(KCEVI - 160)8866,8871,8866                                             P4100770
C*****    TEST OF DO WITH I/O STATEMENTS                                        P4100780
8871  ASSIGN 8860 TO MVI                                                        P4100790
      KCHVI = 4108                                                              P4100800
      REWIND IXVI                                                               P4100810
      DO 8863 KCAVI = 1,4                                                       P4100820
      KCA1I(KCAVI) = KCAVI                                                      P4100830
      WRITE(IXVI)(KCA1I(KCBVI),KCBVI = 1,KCAVI,1)                               P4100840
8863  CONTINUE                                                                  P4100850
      DO 8864 KCCVI =1,4                                                        P4100860
8864  REWIND IXVI                                                               P4100870
      DO 4108  KCDVI = 1,4                                                      P4100880
      READ(IXVI)(KAC1I(KCEVI),KCEVI = 1,KCDVI    )                              P4100890
      DO 4108 KCFVI = 1, KCDVI                                                  P4100900
      KCGVI = KAC1I(KCFVI)-KCA1I(KCFVI)                                         P4100910
      IF(KCGVI) 8866,4108,8866                                                  P4100920
4108  CONTINUE                                                                  P4100930
8860  WRITE(NXVI,8868)                                                          P4100940
      GO TO 8869                                                                P4100950
8866  WRITE(NXVI,8867) KCHVI                                                    P4100960
      GO TO MVI,(8860,4102,8870,8871,8876)                                      P4100970
8869  REWIND IXVI                                                               P4100980
      RETURN                                                                    P4100990
C*****    END OF TEST SEGMENT 410                                               P4101000
      END                                                                       P4101010
C*************************************************************************     P3000010
C*****                                                                         P3000020
C*****                          LOGIF - (300)                                  P3000030
C*****                                                                         P3000040
C*************************************************************************     P3000050
C*****  GENERAL PURPOSE                                          ASA REF      P3000060
C*****    TEST LOGICAL IF STATEMENT                               7.1.2.3     P3000070
C*****  GENERAL COMMENT                                                       P3000080
C*****    ASSIGNED GO TO,INTRINSIC FUNCTION,ARITHMETIC IF,CALL,               P3000090
C*****    COMPUTED GO TO AND I/O STATEMENTS ASSUMED WORKING.                  P3000100
C*****                                                                         P3000110
C*****  S P E C I F I C A T I O N S  SEGMENT 300                               P3000120
C*****                                                                         P0014060
C*****  WHEN EXECUTING ONLY SEGMENT 300, THE SPECIFICATION STATEMENTS          P0014065
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                         P0014070
C*****  IN COLUMNS  1  AND  2  REMOVED.                                       P0014075
C*****                                                                         P0014080
C=    LOGICAL MCAVB,MCBVB,MCA1B(7)                                            P0014085
C=    DOUBLE PRECISION DPAVD, DPBVD,DPCVD,DPDVD,DPEVD,DPFVD                   P0014090
      LOGICAL MCAVB,MCBVB,MCA1B(7)                                            P300A1
      DOUBLE PRECISION DPAVD, DPBVD,DPCVD,DPDVD,DPEVD,DPFVD                   P300A2
C*****                                                                         P0014095
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.            P3000130
C*****  WHEN EXECUTING ONLY SEGMENT 300, THE FOLLOWING STATEMENT               P0073210
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 AND 2 REMOVED.                P0073215
C*****                                                                         P0073220
C=    NUVI = 6                                                                P0073225
      NUVI = 6                                                                P300B1
      WRITE (NUVI,3000)                                                       P3000140
3000  FORMAT (1H1, 1X,34HLOGIF - (300) LOGICAL IF STATEMENT//                 P3000150
     120H  ASA REF. - 7.1.2.3//10H  RESULTS //                                P3000160
     2/37H  TEST EXPLICITLY WRITTEN SIGNED ZERO/2X)                           P3000170
C*****    HEADER FOR SEGMENT 300 WRITTEN                                      P3000180
      MACVI = 0                                                               P3000190
      MCAVB = .TRUE.                                                          P3000200
      MCBVB = .FALSE.                                                         P3000210
      MCA1B(1) = .TRUE.                                                       P3000220
      MCA1B(2) = .FALSE.                                                      P3000230
C*****    TEST THAT MINUS ZERO AND PLUS ZERO ARE TREATED          4.2/11     P3000240
C*****    AS EQUAL VALUES                                                     P3000250
      IVI = -8                                                                P3000260
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      IIVI = -8                                                         P3000270
      JVI = +0                                                          P3000280
      JJVI = -0                                                         P3000290
      KVI = 8                                                           P3000300
      KKVI = 8                                                          P3000310
      AVS = -0.5                                                        P3000320
      AAVS = -0.5                                                       P3000330
      BVS  = +0.0                                                       P3000340
      BBVS = -0.0                                                       P3000350
      CVS = 0.5                                                         P3000360
      CCVS = 0.5                                                        P3000370
      DPAVD = -0.5D0                                                    P3000380
      DPBVD = -0.5D0                                                    P3000390
      DPCVD = +0.0D0                                                    P3000400
      DPDVD = -0.0D0                                                    P3000410
      DPEVD = 0.5D0                                                     P3000420
      DPFVD = 0.5D0                                                     P3000430
C*****  TEST FOR EXPLICITLY WRITTEN -0 EQUAL TO +0                      P3000440
      IF((JVI) .EQ. (JJVI))MACVI = MACVI + 1                            P3000450
      IF((JJVI) .EQ. (JVI)) MACVI = MACVI + 1                           P3000460
      IF((+0) .EQ. (-0)) MACVI = MACVI + 1                              P3000470
      IF((-0) .EQ. (+0)) MACVI = MACVI + 1                              P3000480
      IF (MACVI - 4) 9951, 9954, 9951                                   P3000490
9951  WRITE (NUVI, 9953)                                                P3000500
      GO TO 9955                                                        P3000510
9952  FORMAT(14H  +0 EQUALS -0)                                         P3000520
9953  FORMAT(17H  +0 NOT EQUAL -0)                                      P3000530
9954  WRITE (NUVI, 9952)                                                P3000540
9955  MACVI = 0                                                         P3000550
C*****  TEST EXPLICITLY WRITTEN +0.0 EQUALS -0.0                        P3000560
      IF ((BVS) .EQ. (BBVS)) MACVI = MACVI + 1                          P3000570
      IF ((BBVS) .EQ. (BVS)) MACVI = MACVI + 1                          P3000580
      IF ((+0.0) .EQ. (-0.0)) MACVI = MACVI + 1                         P3000590
      IF ((-0.0) .EQ. ( 0.0)) MACVI = MACVI + 1                         P3000600
      IF (MACVI - 4) 9944, 9947, 9944                                   P3000610
9944  WRITE (NUVI, 9946)                                                P3000620
      GO TO 9948                                                        P3000630
9945  FORMAT (18H  +0.0 EQUALS -0.0)                                    P3000640
9946  FORMAT (21H  +0.0 NOT EQUAL -0.0)                                 P3000650
9947  WRITE (NUVI, 9945)                                                P3000660
C*****  TEST EXPLICITLY WRITTEN +0.0D0 EQUALS -0.0D0                    P3000670
9948  MACVI = 0                                                         P3000680
      IF ((DPCVD) .EQ. (DPDVD)) MACVI = MACVI +1                        P3000690
      IF ((DPDVD).EQ. (DPCVD)) MACVI = MACVI + 1                        P3000700
C*****                                                                  P3000710
      IF ((+0.0D0) .EQ. (-0.0D0)) MACVI = MACVI + 1                     P3000720
      IF ((-0.0D0) .EQ. (0.0D0)) MACVI = MACVI + 1                      P3000730
      IF (MACVI - 4) 9949, 9957, 9949                                   P3000740
9949  WRITE (NUVI, 9960)                                                P3000750
      GO TO 9958                                                        P3000760
9959  FORMAT (22H  +0.0D0 EQUALS -0.0D0)                                P3000770
9960  FORMAT (25H  +0.0D0 NOT EQUAL -0.0D0)                             P3000780
9957  WRITE (NUVI, 9959)                                                P3000790
9958  MACVI = 0                                                         P3000800
      WRITE (NUVI, 7950)                                                P3000810
7950  FORMAT (33H0 TEST COMPUTATIONAL SIGN OF ZERO/2X)                  P3000820
C*****  TEST FOR COMPUTATIONALLY CREATED +0 AND -0                      P3000830
      IF((IVI * JVI) .EQ. (JVI))MACVI = MACVI + 1                       P3000840
      IF((JVI) .EQ. (JVI * IIVI))MACVI = MACVI + 1                      P3000850
      IF((JVI / IVI) .EQ. (+0) )MACVI = MACVI + 1                       P3000860
      IF((IVI + KVI) .EQ. (JVI))MACVI = MACVI + 1                       P3000870
      IF((KKVI + IIVI) .EQ. (JVI))MACVI = MACVI + 1                     P3000880
      IF((IIVI - IVI) .EQ. (JVI))MACVI = MACVI + 1                      P3000890
      IF((KVI - KKVI) .EQ. (JVI))MACVI = MACVI + 1                      P3000900
      IF (MACVI - 7) 9956, 9940, 9956                                   P3000910
9956  WRITE (NUVI,9953)                                                 P3000920
      GO TO 7955                                                        P3000930
9940  WRITE (NUVI,9952)                                                 P3000940
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C*****  TEST FOR COMPUTATIONALLY CREATED +0.0 AND -0.0                  P3000950
7955   MACVI = 0                                                        P3000960
       IF ((AVS * BVS) .EQ. (BVS)) MACVI = MACVI + 1                    P3000970
       IF ((BVS) .EQ. (BVS * AAVS)) MACVI = MACVI + 1                   P3000980
       IF ((BVS / AVS) .EQ. ( 0.0)) MACVI = MACVI + 1                   P3000990
       IF ((AVS + CVS) .EQ. (BVS)) MACVI = MACVI + 1                    P3001000
       IF ((CCVS + AAVS) .EQ. (BVS)) MACVI = MACVI + 1                  P3001010
       IF ((AAVS - AVS) .EQ. (BVS)) MACVI = MACVI + 1                   P3001020
       IF ((CVS - CCVS) .EQ. (BVS)) MACVI = MACVI + 1                   P3001030
       IF (MACVI - 7) 7951, 7952, 7951                                  P3001040
7951   WRITE (NUVI, 9946)                                               P3001050
       GO TO 7953                                                       P3001060
7952   WRITE (NUVI, 9945)                                               P3001070
C*****  TEST FOR COMPUTATIONALLY CREATED +0.0D0 AND -0.0D0              P3001080
7953   MACVI = 0                                                        P3001090
       IF ((DPAVD * DPCVD) .EQ. (DPCVD)) MACVI = MACVI + 1              P3001100
       IF ((DPCVD) .EQ. (DPCVD * DPBVD)) MACVI = MACVI + 1              P3001110
       IF ((DPCVD / DPAVD) .EQ. (0.0D0)) MACVI = MACVI + 1              P3001120
       IF ((DPAVD + DPEVD) .EQ. (DPCVD)) MACVI = MACVI + 1              P3001130
       IF ((DPFVD + DPBVD) .EQ. (DPCVD)) MACVI = MACVI + 1              P3001140
       IF ((DPBVD - DPAVD) .EQ. (DPCVD)) MACVI = MACVI + 1              P3001150
       IF ((DPEVD - DPFVD) .EQ. (DPCVD)) MACVI = MACVI + 1              P3001160
       IF (MACVI - 7) 7954, 9939, 7954                                  P3001170
7954   WRITE (NUVI, 9960)                                               P3001180
       GO TO 9941                                                       P3001190
9939   WRITE (NUVI, 9959)                                               P3001200
 9941  MCAVI = 0                                                        P3001210
       WRITE (NUVI, 9942)                                               P3001220
9942   FORMAT(31H0 TEST -LOGICAL IF- FOLLOWED BY/                       P3001230
      131H  DIFFERENT KINDS OF STATEMENTS )                             P3001240
C*****  TEST 1                                                          P3001250
C*****     LOGICAL IF FOLLOWED BY SIMPLE ASSIGNMENT STATEMENT           P3001260
C*****     CORRECT RESULT = 0, OTHERWISE RESULT = 1                     P3001270
       IF (MCA1B(2)) MCAVI = 1                                          P3001280
       WRITE (NUVI,3009) MCAVI                                          P3001290
C*****  TEST 2                                                          P3001300
C*****     LOGICAL IF FOLLOWED BY USE OF INTRINSIC FUNCTION             P3001310
C*****     CORRECT RESULT =0, OTHERWISE RESULT =2                       P3001320
       MCAVI = 2                                                        P3001330
       IF (MCAVB) MCAVI = IFIX(5.0 - 4.0 - 1.0)                         P3001340
       WRITE (NUVI,3009) MCAVI                                          P3001350
       MCAVI = 0                                                        P3001360
C*****  TEST 3                                                          P3001370
C*****     LOGICAL IF FOLLOWED BY ARITHMETIC STATEMENT                  P3001380
C*****     CORRECT RESULT =0, OTHERWISE RESULT =3                       P3001390
       IF (MCAVB .AND. MCBVB) MCAVI = 3* 2 / 2                          P3001400
       WRITE (NUVI,3009) MCAVI                                          P3001410
C*****  TEST 4                                                          P3001420
C*****     LOGICAL IF FOLLOWED BY GO TO STATEMENT                       P3001430
C*****     CORRECT RESULT =0, OTHERWISE RESULT =4                       P3001440
       MCAVI = 0                                                        P3001450
       IF (MCAVB .AND. MCBVB .OR. MCA1B(1)) GO TO 3001                  P3001460
       MCAVI = 4                                                        P3001470
3001   WRITE (NUVI,3009) MCAVI                                          P3001480
C*****  TEST 5                                                          P3001490
C*****     LOGICAL IF FOLLOWED BY CALL STATEMENT                        P3001500
C*****     CORRECT RESULT =0, OTHERWISE RESULT =5                       P3001510
       MCAVI =0                                                         P3001520
       IF (MCBVB .OR. (1 .GE. 2) .AND..FALSE.) CALL SMCQ(MCAVI)         P3001530
       WRITE (NUVI,3009) MCAVI                                          P3001540
C*****  TEST 6                                                          P3001550
C*****     LOGICAL IF FOLLOWED BY NESTED USE OF INTRINSIC FUNCTIONS     P3001560
C*****     CORRECT RESULT =0, OTHERWISE RESULT =6                       P3001570
       MCAVI = 6                                                        P3001580
       IF (.TRUE. .OR. ((1. .LE. (0.1 + 1.5)) .AND. (MCA1B(1) .OR. .TRUE P3001590
      1.)) .AND. MCBVB)  MCAVI = IFIX(REAL((0.0,1.0)))                  P3001600
       WRITE (NUVI,3009) MCAVI                                          P3001610
C*****  TEST 7                                                          P3001620
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C*****    LOGICAL IF FOLLOWED BY ASSIGNED GO TO STATEMENT                P3001630
C*****    CORRECT RESULT =0, OTHERWISE RESULT =7                         P3001640
      ASSIGN 3002 TO MCBVI                                               P3001650
      MCAVI = 7                                                          P3001660
      IF (.NOT. (MCAVB .AND. MCBVB .AND. .FALSE. .OR. (.NOT. .TRUE.)))   P3001670
     1GO TO MCBVI,(3001,3002,3003)                                       P3001680
      GO TO 3003                                                         P3001690
3002  MCAVI = 0                                                          P3001700
3003  WRITE (NUVI,3009) MCAVI                                            P3001710
C*****  TEST 8                                                           P3001720
C*****    LOGICAL IF FOLLOWED BY ARITHMETIC IF STATEMENT                 P3001730
C*****    CORRECT RESULT =0, OTHERWISE RESULT =8                         P3001740
      MCAVI = 0                                                          P3001750
      IF (.NOT. (.NOT.(.TRUE. .OR. MCAVB .AND. (8. .NE. 7.))))          P3001760
     1IF (MCAVI) 3004,3005,3004                                          P3001770
3004  MCAVI = 8                                                          P3001780
3005  WRITE (NUVI,3009) MCAVI                                            P3001790
C*****  TEST 9                                                           P3001800
C*****    LOGICAL IF FOLLOWED BY I/O STATEMENT                           P3001810
C*****    CORRECT RESULT =0, OTHERWISE RESULT =9                         P3001820
      MCAVI = 0                                                          P3001830
      IF ((8.0D0 .EQ. (1. + 7.)) .AND. (.NOT. (3 .NE. 3)))              P3001840
     1WRITE (NUVI,3009) MCAVI                                            P3001850
C*****  TEST 10                                                          P3001860
C*****    LOGICAL IF FOLLOWED BY COMPUTED GO TO STATEMENT                P3001870
C*****    CORRECT RESULT =0, OTHERWISE RESULT =10                        P3001880
      MCAVI = 2                                                          P3001890
      IF ( .TRUE. .AND. (8 .GE. 6) .OR. (.FALSE.)) GO TO (9950,3006),    P3001900
     1MCAVI                                                              P3001910
9950  MCAVI = 10                                                         P3001920
      GO TO 3007                                                         P3001930
3006  MCAVI = 0                                                          P3001940
3007  WRITE (NUVI,3009) MCAVI                                            P3001950
      WRITE (NUVI,3008)                                                  P3001960
C*****  TEST EXPRESSIONS IN LOGICAL IF STATEMENTS                        P3001970
C*****    TEST 11  .LT. EXPRESSION, RELATION, EXPRESSION  (TRUE)         P3001980
      MCAVI = 11                                                         P3001990
      IF((SNGL(DABS(-DSIGN(DBLE(2.0),1.0D0)))).LT.AMIN1((FLOAT(IDIM      P3002000
     1 (1 + 2, 0))), (AIMAG(CMPLX(1.0,2.0)))) + 1.0) MCAVI = 0           P3002010
      WRITE (NUVI, 3009) MCAVI                                           P3002020
C*****    TEST 12  .LT. EXPRESSION, RELATION, CONSTANT  (TRUE)           P3002030
      MACVI = 12                                                         P3002040
      IF((AMIN1(FLOAT(IDIM(4 - 1,0)) , AIMAG(CMPLX(1.0,2.0)))).LT. 4.0) P3002050
     1MACVI = 0                                                          P3002060
      WRITE (NUVI, 3009) MACVI                                           P3002070
C*****    TEST 13  .LT.  CONSTANT(D.P.),RELATION, EXPRESSION (REAL)(TRUE)P3002080
      MACVI = 13                                                         P3002090
C*****IF (1.(D0).LT. (SNGL(DABS(DSIGN(DBLE(4.0),1.0D0))))) MACVI = 0     P3002100
C*****WRITE (NUVI, 3009) MACVI                                           P3002110
C*****    TEST 14  .LE. .AND. .LE.  (SHOULD BE LESS AND EQUAL)  (TRUE)   P3002120
      MACVI = 14                                                         P3002130
      IF((REAL(CONJG((1.0,-2.0))) + AIMAG((16.0,-4.0)) .LE.              P3002140
     1      AIMAG(CONJG((1.0,-2.0))) + REAL((-4.0,16.0)) + 1.0) .AND.    P3002150
     2     (AIMAG(CONJG((2.0,-4.0))) + REAL((-8.0,16.0)).LE.             P3002160
     3      REAL(CONJG((4.0,-2.0))) + AIMAG((16.0,-8.0))))MACVI = 0      P3002170
      WRITE (NUVI, 3009) MACVI                                           P3002180
C*****    TEST I5 .LE.  (FALSE)                                          P3002190
      MACVI = 0                                                          P3002200
      IF (MAX1((AMAX0(4,2,-(1 * 4))),16.0) .LE. 2 ** 3)MACVI = 15        P3002210
      WRITE (NUVI, 3009) MACVI                                           P3002220
C*****    TEST 16    .NE. .AND.  .EQ.  (TRUE)                          P3002230
      MACVI = 16                                                         P3002240
      IF(((AINT(AINT(AINT(1.4 + 2.9)+1.6)-8.1)).NE.(-8.0)).AND.(-1.0.EQ.P3002250
     1AINT(AINT(AINT(2.6 + 4.8) + 1.4)-9.2)))MACVI = 0                   P3002260
      WRITE (NUVI, 3009) MACVI                                           P3002270
C*****    TEST 17  .GT.  (TRUE)                                          P3002280
      MACVI = 17                                                         P3002290
      IF((FLOAT(IABS(IFIX(ABS(-5.0+ SIGN(-1.0,2.0)))))) .GT. 2.0D0)      P3002300
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     1MACVI = 0                                                          P3002310
      WRITE (NUVI, 3009) MACVI                                           P3002320
C*****   TEST 18  .GE.  EQUAL  (TRUE)                                   P3002330
      MACVI = 18                                                         P3002340
      IF((8.0).GE.(FLOAT(IABS(IFIX(ABS(-4.0+SIGN(4.0,-2.0)))))))MACVI=0  P3002350
      WRITE (NUVI, 3009) MACVI                                           P3002360
C*****   TEST 19  .GE.  GREATER (TRUE)                                  P3002370
      MACVI = 19                                                         P3002380
      IF((MACVI).GE.(IABS(IFIX(ABS(-4.0 + SIGN(8.0,-4.0))))))MACVI = 0   P3002390
      WRITE (NUVI, 3009) MACVI                                           P3002400
C*****   TEST 20   .GT.  (FALSE)  .OR.  .EQ. (TRUE)                     P3002410
      MACVI = 20                                                         P3002420
      IF((-MACVI) .GT. (MAX1 (AMAX0(8,-(2*4),4) ,16.0)).OR. .NOT.(IABS   P3002430
     1 (-20) .NE. MACVI))MACVI = 0                                       P3002440
      WRITE (NUVI, 3009) MACVI                                           P3002450
      WRITE (NUVI, 9943)                                                 P3002460
9943  FORMAT(28H0 ALL VALUES SHOULD BE ZERO./                            P3002470
     137H  A VALUE OTHER THAN ZERO WILL BE THE /                         P3002480
     234H  NUMBER OF THE TEST WHICH FAILED. )                            P3002490
3008  FORMAT(34H0 THERE SHOULD BE 10 VALUES ABOVE, /                     P3002500
     131H  IF ONLY 9, TEST 9 HAS FAILED.)                                P3002510
3009  FORMAT(12X, I10)                                                   P3002520
C*****    END OF TEST SEGMENT 300                                       P3002530
C*****  WHEN EXECUTING ONLY SEGMENT 300, THE  STOP  AND  END  CARDS     P3002540
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P3002550
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P3002560
C=    STOP                                                             P3002570
C=    END                                                              P3002580
      STOP                                                             P300C1
      END                                                              P300C2
C*******************************************************************************P4110010
C*****                                                                 P4110020
C*****                          SMCQ  - (411)                          P4110030
C*****                                                                 P4110040
C*******************************************************************************P4110050
C*****  GENERAL PURPOSE                                                P4110060
C*****    TO DEFINE SUBROUTINE SMCQ WHICH IS USED IN SEGMENT 300       P4110070
      SUBROUTINE SMCQ(MWVI)                                            P4110080
      MWVI = MWVI + 5                                                  P4110090
      RETURN                                                           P4110100
C*****    END OF TEST SEGMENT 411                                      P4110110
      END                                                              P4110120
C*******************************************************************************P3010010
C*****                                                                 P3010020
C*****                          BARIF - (301)                          P3010030
C*****                                                                 P3010040
C*******************************************************************************P3010050
C*****  GENERAL PURPOSE                                        ASA REF P3010060
C*****    TEST BASIC FORTRAN ARITHMETIC IF STATEMENT            7.1.2.2P3010070
C*****  GENERAL COMMENTS                                               P3010080
C*****    BASIC INTRINSIC FUNCTIONS ASSUMED WORKING                    P3010090
C*****                                                                 P3010100
C*****  S P E C I F I C A T I O N S  SEGMENT 301                       P3010110
C*****                                                                 P0014100
C*****  WHEN EXECUTING ONLY SEGMENT 301, THE SPECIFICATION STATEMENTS  P0014105
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=               P0014110
C*****  IN COLUMNS  1  AND  2  REMOVED.                                P0014115
C=    DIMENSION L1I(10)                                                P0014120
C=    DIMENSION MCA1I(5),CMA1S(5)                                      P0014125
      DIMENSION L1I(10)                                                P301A1
      DIMENSION MCA1I(5),CMA1S(5)                                      P301A2
C*****                                                                 P0014130
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P3010120
C*****                                                                 P0073230
C*****  WHEN EXECUTING ONLY SEGMENT 301, THE FOLLOWING STATEMENT       P0073235
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.         P0073240
C*****                                                                 P0073245
C=    NUVI = 6                                                         P0073250
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```
      NUVI = 6                                                          P301B1
C*****                                                                  P0073255
      WRITE (NUVI,3010)                                                 P3010130
3010  FORMAT (1H1,1X,27HBARIF - (301) BASIC FORTRAN/15X,           24HP3010140
     1 ARITHMETIC IF STATEMENT/2X,18HASA REF. - 7.1.2.2/2X,7HRESULTS)   P3010150
C*****    HEADER FOR SEGMENT 301 WRITTEN                              P3010160
      MCA1I(1) = 5                                                      P3010170
      MCAVI = 0                                                         P3010180
      MCBVI = 21                                                        P3010190
      JACVI = -0                                                        P3010200
      CMA1S(1) = 10.5                                                   P3010210
      CMAVS = -0.0                                                      P3010220
      CMBVS = -15.E0                                                    P3010230
C*****  TEST FOR SIGN OF ZERO - TYPE INTEGER                  4.2/11 P3010240
      DO 8335  IVI = 1,9                                                P3010250
8335  L1I(IVI) = 0                                                      P3010260
      MVI = 1                                                           P3010270
      KVI = 0                                                           P3010280
      JVI = -0                                                          P3010290
      BVS = -0.0                                                        P3010300
      NVI = 1                                                           P3010310
      WRITE (NUVI, 8300)                                                P3010320
      IF (-0) 8311, 8314, 8317                                          P3010330
8320  IF (0) 8312, 8315, 8318                                           P3010340
8321  IF (+0) 8313, 8316, 8319                                          P3010350
8322  NVI = 10                                                          P3010360
      IF (JVI + (-0)) 8311, 8314, 8317                                  P3010370
8323  IF (-IABS(JVI)) 8312, 8315, 8318                                  P3010380
8324  IF (-JVI + (+0)) 8313, 8316, 8319                                 P3010390
8325  WRITE (NUVI, 8303)(L1I(IVI), IVI = 1,9)                           P3010400
C*****   TEST FOR SIGN OF ZERO - TYPE REAL                            P3010410
      MVI = 2                                                           P3010420
      KVI = 0                                                           P3010430
      NVI = 1                                                           P3010440
      DO 8336  IVI = 1,9                                                P3010450
8336  L1I(IVI) = 0                                                      P3010460
      WRITE (NUVI, 8304)                                                P3010470
      IF (-0.0) 8311, 8314, 8317                                        P3010480
8326  IF (0.0) 8312, 8315, 8318                                         P3010490
8327  IF (+0.0) 8313, 8316, 8319                                        P3010500
8328  NVI = 10                                                          P3010510
      IF (BVS +(-0.0)) 8311, 8314, 8317                                 P3010520
8329  IF (-ABS(BVS))  8312, 8315, 8318                                  P3010530
8330  IF (-BVS + (+0.0)) 8313, 8316, 8319                               P3010540
8331  WRITE (NUVI, 8303) (L1I(IVI), IVI = 1,9)                          P3010550
      WRITE (NUVI, 8337)                                                P3010560
      GO TO 8305                                                        P3010570
C*****  SWITCH FOR INTEGER AND REAL TESTS                             P3010580
8332  KVI = KVI + 1                                                     P3010590
      GO TO (8333, 8334) , MVI                                          P3010600
C*****  RETURNS FOR TEST SIGN OF INTEGER ZERO                         P3010610
8333  GO TO (8320, 8321, 8322, 8323, 8324, 8325), KVI                   P3010620
C*****  RETURNS FOR TEST SIGN OF REAL ZERO                            P3010630
8334  GO TO (8326, 8327, 8328, 8329, 8330, 8331), KVI                   P3010640
C*****  TALLY RESULTS OF CONTROL TRANSFERS                            P3010650
8311  L1I(1) = L1I(1) + NVI                                             P3010660
      GO TO 8332                                                        P3010670
8312  L1I(2) = L1I(2) + NVI                                             P3010680
      GO TO 8332                                                        P3010690
8313  L1I(3) = L1I(3) + NVI                                             P3010700
      GO TO 8332                                                        P3010710
8314  L1I(4) = L1I(4) + NVI                                             P3010720
      GO TO 8332                                                        P3010730
8315  L1I(5) = L1I(5) + NVI                                             P3010740
      GO TO 8332                                                        P3010750
8316  L1I(6) = L1I(6) + NVI                                             P3010760
      GO TO 8332                                                        P3010770
8317  L1I(7) = L1I(7) + NVI                                             P3010780
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      GO TO 8332                                                        P3010790
8318  L1I(8) = L1I(8) + NVI                                             P3010800
      GO TO 8332                                                        P3010810
8319  L1I(9) = L1I(9) + NVI                                             P3010820
      GO TO 8332                                                        P3010830
8300  FORMAT(/ 38H  TEST FOR SIGN OF ZERO - TYPE INTEGER// 29H PATH  * FP3010840
     1ORM OF EXPRESSION */ 29H OF IF *  -0  *   0  *  +0  * )          P3010850
8303  FORMAT( 1H ,7(4H****)/ 1H ,4(6X,1H*)/ 8H  NEG. *,3(I4,3H  *)/1H ,4P3010860
     1(6X,1H*)/8H  ZERO *,3(I4,3H  *)/1H ,4(6X,1H*)/8H  POS. *,3(I4,    P3010870
     23H  *)/1H , 4(6X,1H*)/1H )                                        P3010880
8304  FORMAT(//35H  TEST FOR SIGN OF ZERO - TYPE REAL //  29H PATH  * FOP3010890
     1RM OF EXPRESSION */ 29H OF IF * -0.0 *  0.0 * +0.0 * )           P3010900
8337  FORMAT(/34H  ALL ENTRIES SHOULD BE  0  EXCEPT /36H  THE ZERO PATH,P3010910
     1 WHICH SHOULD BE  11 /33H  IN EACH COLUMN. OTHER TESTS MAY   / 31HP3010920
     2  FAIL IF THESE RESULTS DIFFER.///37H  TEST EXPRESSIONS IN  IF  STP3010930
     3ATEMENTS /1H )                                                   P3010940
C*****    ARITHMETIC IF WITH EXPRESSIONS OF TYPE INTEGER               P3010950
C*****    TEST 1 - SHOULD TAKE ZERO BRANCH                             P3010960
8305  IF (MCA1I(1) - 5) 9981,3011,9981                                  P3010970
C*****    TEST 2 - SHOULD TAKE ZERO BRANCH                             P3010980
3011  IF (MCA1I(1) + 5 - IFIX(CMA1S(1))) 9982,3012,9982                 P3010990
C*****    TEST 3 - SHOULD TAKE MINUS BRANCH                            P3011000
3012  IF ((MCBVI * 2 / 7) - IABS(IFIX(10.5 - 10.4)) - 7) 3013,9983,9983 P3011010
C*****    TEST 4 - SHOULD TAKE PLUS BRANCH                             P3011020
3013  IF ((MCA1I(1) - 4) ** 99 /(MCBVI - 4 * MCA1I(1))) 9984,9984,3014  P3011030
C*****    ARITHMETIC IF WITH EXPRESSION OF TYPE REAL                   P3011040
C*****    TEST 5 - SHOULD TAKE ZERO BRANCH                             P3011050
3014  IF (CMA1S(1) - 10.5) 9985,3015,9985                               P3011060
C*****    TEST 6 - SHOULD TAKE MINUS BRANCH                            P3011070
3015  IF (CMA1S(1) * 2.0 -(FLOAT(MCBVI) **1) - 1.0) 3016,9986,9986      P3011080
C*****    TEST 7 - SHOULD TAKE PLUS BRANCH                             P3011090
3016  IF (CMBVS * (-2.0) ** (MCBVI - 4 * MCA1I(1)) - 29.0)9987,9987,3017P3011100
C*****    TEST 8 - SHOULD TAKE ZERO BRANCH                             P3011110
3017  IF (MCAVI) 9988,3018,9980                                         P3011120
3018  WRITE (NUVI,3019)                                                 P3011130
      GO TO 9980                                                        P3011140
3019  FORMAT (  18H  TESTS SUCCESSFUL )                                 P3011150
9981  MCAVI = 1                                                         P3011160
      IF (IABS(MCA1I(1) - 5)) 8301,8302,8301                            P3011170
8301  WRITE (NUVI,9989) MCAVI                                           P3011180
      GO TO 3011                                                        P3011190
8302  WRITE (NUVI,8306) MCAVI                                           P3011200
8306  FORMAT (//2X,14HERROR IN TEST ,I2,23H BECAUSE MINUS ZERO WAS/     P3011210
     1  30H  TREATED AS A NEGATIVE NUMBER)                             P3011220
      GO TO 3011                                                        P3011230
9982  MCAVI = 2                                                         P3011240
      IF (IABS(MCA1I(1) + 5 - IFIX(CMA1S(1)))) 8307,8308,8307           P3011250
8307  WRITE (NUVI,9989) MCAVI                                           P3011260
      GO TO 3012                                                        P3011270
8308  WRITE (NUVI,8306) MCAVI                                           P3011280
      GO TO 3012                                                        P3011290
9983  MCAVI = 3                                                         P3011300
      WRITE (NUVI,9989) MCAVI                                           P3011310
      GO TO 3013                                                        P3011320
9984  MCAVI = 4                                                         P3011330
      WRITE (NUVI,9989) MCAVI                                           P3011340
      GO TO 3014                                                        P3011350
9985  MCAVI = 5                                                         P3011360
      IF (ABS(CMA1S(1) - 10.5)) 8309,8310,8309                          P3011370
8309  WRITE (NUVI,9989) MCAVI                                           P3011380
      GO TO 3015                                                        P3011390
8310  WRITE (NUVI,8306) MCAVI                                           P3011400
      GO TO 3015                                                        P3011410
9986  MCAVI = 6                                                         P3011420
      WRITE (NUVI,9989) MCAVI                                           P3011430
      GO TO 3016                                                        P3011440
9987  MCAVI = 7                                                         P3011450
      WRITE (NUVI,9989) MCAVI                                           P3011460
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      GO TO 3017                                                        P3011470
9988  MCAVI = 8                                                         P3011480
      WRITE (NUVI,9989) MCAVI                                           P3011490
9989  FORMAT (  6H  TEST,I2,7H FAILED)                                  P3011500
9980  CONTINUE                                                          P3011510
C*****    END OF TEST SEGMENT 301                                       P3011520
C*****  WHEN EXECUTING ONLY SEGMENT 301, THE  STOP  AND  END  CARDS     P3011530
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P3011540
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                 P3011550
C=    STOP                                                              P3011560
C=    ENO                                                               P3011570
      STOP                                                              P301C1
      END                                                               P301C2
C*******************************************************************************P3020010
C*****                                                                 P3020020
C*****                        FARIF - (302)                            P3020030
C*****                                                                 P3020040
C*******************************************************************************P3020050
C*****  GENERAL PURPOSE                                        ASA REF P3020060
C*****    TEST OF FULL FORTRAN ARITHMETIC IF STATEMENT          7.1.2.2P3020070
C*****    GENERAL COMMENTS                                             P3020080
C*****    INTRINSIC FUNCTIONS ASSUMEO WORKING                          P3020090
C*****                                                                 P3020100
C*****  S P E C I F I C A T I O N S  SEGMENT 302                       P3020110
C*****                                                                 P0014140
C*****  WHEN EXECUTING ONLY SEGMENT 302, THE SPECIFICATION STATEMENTS  P0014145
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=               P0014150
C*****  IN COLUMNS  1  AND  2  REMOVEO.                                P0014155
C*****                                                                 P0014160
C=    OIMENSION MCA1I(5),AC2S(5,6)                                     P0014165
C=    OOUBLE PRECISION MCAVD,MCBVD                                     P0014170
C=    COMPLEX CHAVC                                                    P0014175
      DIMENSION MCA1I(5),AC2S(5,6)                                     P302A1
      DOUBLE PRECISION MCAVO,MCBVD                                     P302A2
      COMPLEX CHAVC                                                    P302A3
C*****                                                                 P0014180
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P3020120
C*****                                                                 P0073260
C*****  WHEN EXECUTING ONLY SEGMENT 302, THE FOLLOWING STATEMENT       P0073265
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 ANO 2 REMOVEO.         P0073270
C*****                                                                 P0073275
C=    NUVI = 6                                                         P0073280
      NUVI = 6                                                         P302B1
C*****                                                                 P0073285
      WRITE (NUVI,3020)                                                P3020130
3020  FORMAT (1H1,1X,26HFARIF - (302) FULL FORTRAN/  16X,24HARITHMETIC IP3020140
     1F STATEMENTS/                                                    P3020150
     220H  ASA REF. - 7.1.2.2/2X,7HRESULTS)                            P3020160
C*****    HEAOER FOR SEGMENT 302 WRITTEN                               P3020170
      MCA1I(1) = 5                                                     P3020180
      MCAVI = 0                                                        P3020190
       AC2S(1,1) = 10.5                                                P3020200
      MCAVO = -15.000                                                  P3020210
      CHAVC = (1.0,2.0)                                                P3020220
      MCBVO = -0.000                                                   P3020230
C*****    ARITHMETIC IF WITH EXPRESSION OF TYPE OOUBLE PRECISION       P3020240
C*****    TEST THAT MINUS ZERO IS TREATEO AS ZERO              4.2/11P3020250
      IF (MCBVO) 9301,9303,9301                                        P3020260
9301  WRITE (NUVI,9302)                                                P3020270
9302  FORMAT (//2X,37HERROR, MINUS ZERO TREATEO AS NEGATIVE/           P3020280
     1 36H  NUMBER - OTHER TESTS MAY FAIL AS A/                        P3020290
     2 8H  RESULT)                                                     P3020300
      MCAVI = 0                                                        P3020310
C*****    TEST 1 - SHOULD TAKE ZERO BRANCH                             P3020320
9303  IF (MCAVO + 15.0D0) 3028,3021,3028                               P3020330
C*****    TEST 2 - SHOULD TAKE MINUS BRANCH                            P3020340
3021  IF (MCAVO / OBLE(FLOAT(MCA1I(1))) * 2.D0) 3022,3029,3029         P3020350
C*****    TEST 3 - SHOULO TAKE MINUS BRANCH                            P3020360
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3022  IF (MCAVD/(-15.0D0) + 6.0D0 - 2.0D0 ** 3) 3023,9971,9971          P3020370
C*****    TEST 4 - SHOULD TAKE PLUS BRANCH                            P3020380
3023  IF (DSIGN(1.0D0,DBLE(REAL(CHAVC)))) 9972,9972,3024               P3020390
C*****    TEST 5 - SHOULD TAKE ZERO BRANCH                            P3020400
3024  IF (2.0D0 ** 2 - 4.0D0/ 1.0D0) 9973, 3025, 9973                  P3020410
3025  IF (MCAVI) 9974,3026,9970                                        P3020420
3026  WRITE (NUVI,3027)                                               P3020430
      GO TO 9970                                                      P3020440
3027  FORMAT (//34H  SEGMENT 302 TESTED SUCCESSFULLY.)                P3020450
3028  MCAVI = 1                                                       P3020460
      IF (DABS(MCAVD + 15.0D0))9304,9305,9304                         P3020470
9304  WRITE (NUVI,9975) MCAVI                                         P3020480
      GO TO 3021                                                      P3020490
9305  WRITE (NUVI,9306) MCAVI                                         P3020500
9306  FORMAT (//2X,14HERROR IN TEST ,I2,23H BECAUSE MINUS ZERO WAS/   P3020510
     1  30H  TREATED AS A NEGATIVE NUMBER)                            P3020520
      GO TO 3021                                                      P3020530
3029  MCAVI = 2                                                       P3020540
      WRITE (NUVI,9975) MCAVI                                         P3020550
      GO TO 3022                                                      P3020560
9971  MCAVI = 3                                                       P3020570
      WRITE (NUVI,9975) MCAVI                                         P3020580
      GO TO 3023                                                      P3020590
9972  MCAVI = 4                                                       P3020600
      WRITE (NUVI,9975) MCAVI                                         P3020610
      GO TO 3024                                                      P3020620
9973  MCAVI = 5                                                       P3020630
      IF (DABS(2.0D0 ** 2 - 4.0D0 / 1.0D0)) 9307, 9308, 9307          P3020640
9307  WRITE (NUVI,9975) MCAVI                                         P3020650
      GO TO 3025                                                      P3020660
9308  WRITE (NUVI,9306) MCAVI                                         P3020670
      GO TO 3025                                                      P3020680
9974  MCAVI = 6                                                       P3020690
      WRITE (NUVI,9975) MCAVI                                         P3020700
9975  FORMAT (//6H  TEST,I3,8H FAILED.)                               P3020710
9970  CONTINUE                                                        P3020720
C*****    END OF TEST SEGMENT 302                                     P3020730
C*****  WHEN EXECUTING ONLY SEGMENT 302, THE  STOP  AND  END  CARDS   P3020740
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=               P3020750
C*****  IN COLUMNS  1  AND  2  REMOVED.                               P3020760
C=    STOP                                                            P3020770
C=    END                                                             P3020780
      STOP                                                            P302C1
      END                                                             P302C2
C*******************************************************************P3100010
C*****                                                               P3100020
C*****                          IOFMT - (310)                        P3100030
C*****                                                               P3100040
C*******************************************************************P3100050
C*****  GENERAL PURPOSE                                    ASA REFSP3100060
C*****    TO TEST ADDITIONAL FEATURES OF FORMATTED READ     7.1.3.2.2P3100070
C*****    AND WRITE STATEMENTS AND FORMAT STATEMENTS        7.1.3.2.3P3100080
C*****  RESTRICTIONS OBSERVED                                       P3100090
C*****  *  ALL FORMAT STATEMENTS ARE LABELED                7.2.3  /57P3100100
C*****  *  H AND X DESCRIPTORS ARE NEVER REPEATED           7.2.3.3/54P3100110
C*****  *  FOR W.D DESCRIPTORS, D IS ALWAYS SPECIFIED AND   7.2.3.1/31P3100120
C*****     W IS EQUAL TO OR GREATER THAN D                  7.2.3.1/33P3100130
C*****  *  FIELD WIDTH IS NEVER ZERO                        7.2.3  /18P3100140
C*****  *  IF THERE IS AN I/O LIST, THE FORMAT STATEMENT    7.2.3.4/22P3100150
C*****     CONTAINS AT LEAST ONE FIELD DESCRIPTOR (OTHER                P3100160
C*****     THAN H OR X)                                                 P3100170
C*****  *  ITEMS IN I/O LIST CORRESPOND TO FORMAT DESCRIPTORS 7.2.3.4/36P3100180
C*****  *  NEGATIVE OUTPUT VALUES ARE SIGNED                7.2.3.6/56P3100190
C*****  *  FIELD WIDTH NEVER EXCEEDED BY OUTPUT             7.2.3.6/01P3100200
C*****  *  FOR I CONVERSION, EXTERNAL INPUT FIELDS ARE    7.2.3.6.1/07P3100210
C*****     INTEGER CONSTANTS                                           P3100220
C  INPUT DATA TO THIS SEGMENT CONSISTS OF 38 CARD IMAGES IN COL. 1 - 80 P3100230
C    COLS.        22  25  31  34-35  40-43  55  67  69  74-76          P3100240
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CARD  1              .   .   .      0.   E+00   +   +   .    E00            P3100250
C     COLS.        16  31  33  42-45  50  59-60                             P3100260
CARD  2              +   +   .   D+00   .     D0                            P3100270
C     COLS. 1-----------14  18-----26  28-------38  42-------------58       P3100280
CARD 3     1.23456987654.  +1.234E-0  -98.7654E+0  + 2345.67891011+2       P3100290
C     COLS.  69-----78                                                      P3100300
CARD 3     -.109876-4                                                       P3100310
C     COLS         1---5                                                    P3100320
CARDS 4,5,6,7,8    12345                                                   P3100330
C     COLS.        1-3                                                      P3100340
CARDS 9,10,11,12   1.1                                                      P3100350
C     COLS. 1-----------------------------------------------------58        P3100360
CARD 13    +0.339567E+02                                                    P3100370
CARD 14      + .339567+2                                                    P3100380
CARD 15     + 3.395670E1                                                    P3100390
CARD 16     0.96295134244D+04                                               P3100400
CARD 17       .96295134244D04                                               P3100410
CARD 18       0.96295134244+4                                               P3100420
CARD 19     0.96295134244D+04                                               P3100430
CARD 20    31.23+0.14E+04+0.2D+02                                           P3100440
CARD 21    31.23  .14E+04   +.2+2                                           P3100450
CARD 22    -0.13579E+054444                                                 P3100460
CARD 23    4444                                                             P3100470
CARD 24    4444                                                             P3100480
CARD 25    4444                                                             P3100490
CARD 26    4444                                                             P3100500
CARD 27    -333 5.555+0.4545E-04                                            P3100510
CARD 28    -6.666  .9989E+12                                                P3100520
CARD 29    7.77-0.747E-02  +0.549E022                                       P3100530
CARD 30    +0.662E-00  0.468-1011                                           P3100540
CARD 31     0.59542D+04-44.6666-0.12345678900-03                            P3100550
CARD 32     54.9327-0.13956245340+00                                        P3100560
CARD 33    65432.1                                                          P3100570
CARD 34    +0.848E+03    .848E3 + .1290D7+0.129D+07  0.412D21               P3100580
CARD 35    22222222222222222222222222222222222222222222222222              P3100590
CARD 36       -.987E0-0.987E+00    +0.6D0 + 0.6D+00   .368D-5              P3100600
CARD 37       5   5   5   5                                                P3100610
CARD 38        987654   8647.86   987.654                                  P3100620
CARD COLS. NOT MENTIONED ARE BLANK                                          P3100630
C*****                                                                      P3100640
C*****    READ AND WRITE STATEMENTS FOR ENTIRE SEGMENT FOLLOW               P3100650
C*****                                                                      P3100660
C*****    TEST THAT COMPLETELY BLANK FIELDS IN THE INPUT      7.2.3.6/45P3100670
C*****    ARE TREATED AS ZEROS. (ALL VARIABLES AND ARRAY                    P3100680
C*****    ELEMENTS USED IN THIS TEST ARE FIRST SET TO                       P3100690
C*****    NON-ZERO VALUES.  I, E, F AND D DESCRIPTORS                       P3100700
C*****    APPEAR IN THE CORRESPONDING FORMAT STATEMENT                      P3100710
C*****                                                                      P3100720
C*****  S P E C I F I C A T I O N S  SEGMENT 310                            P3100730
C*****                                                                      P0014190
C*****  WHEN EXECUTING ONLY SEGMENT 310, THE SPECIFICATION STATEMENTS       P0014195
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=                    P0014200
C*****  IN COLUMNS  1  AND  2  REMOVED.                                     P0014205
C*****                                                                      P0014210
C=     DIMENSION A1S(5),A2S(2,2),A3S(3,3,3),EP1S(33)                        P0014215
C=     DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6)                     P0014220
C=     INTEGER MCA3I(2,3,3)                                                 P0014225
C=     REAL MVS                                                             P0014230
C=     DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,A1D(4),A2D(2,2),A3D(2,2,2)       P0014235
C=     DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD,DPEVD,DPFVD,DPHVD,AAAVD     P0014240
       DIMENSION A1S(5),A2S(2,2),A3S(3,3,3),EP1S(33)                        P310A1
       DIMENSION IAC1I(5),IAC2I(2,7),AC1S(25),AC2S(5,6)                     P310A2
       INTEGER MCA3I(2,3,3)                                                 P310A3
       REAL MVS                                                             P310A4
       DOUBLE PRECISION  MCAVD,MCBVD,MCCVD,A1D(4),A2D(2,2),A3D(2,2,2)       P310A5
       DOUBLE PRECISION DPAVD,DPBVD,DPCVD,DPDVD,DPEVD,DPFVD,DPHVD,AAAVD     P310A6
C*****                                                                      P0014245
C*****  I N P U T - O U T P U T  TAPE ASSIGNMENT STATEMENTS                 P3100740
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C*****                                                                  P0073290
C*****  WHEN EXECUTING ONLY SEGMENT 310, THE FOLLOWING STATEMENTS       P0073295
C*****  NUVI = 6 , IRVI = 5 MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.P0073300
C=     NUVI = 6                                                         P0073305
C=     IRVI = 5                                                         P0073310
       NUVI = 6                                                         P310B1
       IRVI = 5                                                         P310B2
C*****                                                                  P0073315
C*****     HEADER FORMAT STATEMENT                                      P3100750
3100   FORMAT (1H1,1X,38HIOFMT - (310) ADDITIONAL FORMATTED I/O         P3100760
     1  //2X,38HASA REFS - 7.1.3.2.2  7.1.3.2.3  7.2.3//2X,7HRESULTS)   P3100770
       WRITE (NUVI,3100)                                                P3100780
       JACVI = 11111                                                    P3100790
       IAC1I(1) = -2345                                                 P3100800
       IAC2I(1,1) = 9999                                                P3100810
       MCA3I(1,1,1) = 2                                                 P3100820
       ACVS = 1.2                                                       P3100830
       BCVS = -.34E-3                                                   P3100840
       A1S(1) = 34.56                                                   P3100850
       A1S(2) = 456.789E+02                                             P3100860
       A2S(1,1) = -7899.3                                               P3100870
       A2S(2,1) = +9876.543E-01                                         P3100880
       A3S(1,1,1) = .543                                                P3100890
       A3S(2,1,1) = 4.33E+1                                             P3100900
       AAAVD = +2.22D+01                                                P3100910
       A1D(1) = -.33456D-01                                             P3100920
       A2D(1,1) = 9987.76D+2                                            P3100930
       A3D(1,1,1) = 44.D-2                                              P3100940
C*****     FORMATS TO TEST THAT BLANK INPUT FIELDS ARE          7.2.3.6/45P3100950
C*****     TREATED AS ZEROS. I, E, F AND D FIELDS ARE TESTED            P3100960
C*****  CARDS 1 AND 2                                                   P3100970
3101   FORMAT (4(I5), 4(F3.1), 4(E11.4)/ 4(D15.8))                      P3100980
       READ (IRVI,3101) JACVI, IAC1I(1), IAC2I(1,1), MCA3I(1,1,1), ACVS, P3100990
     1      A1S(1), A2S(1,1), A3S(1,1,1), BCVS, A1S(2), A2S(2,1),       P3101000
     2      A3S(2,1,1), AAAVD, A1D(1), A2D(1,1), A3D(1,1,1)             P3101010
3102   FORMAT ( /2X,16HTEST BLANK INPUT/2X,26HEACH ANSWER SHOULD BE ZERO,P3101020
     1  4(/I6)  / 4(/F8.1) / 4(/E12.1) / 4(/D12.1))                     P3101030
       WRITE (NUVI,3102) JACVI, IAC1I(1), IAC2I(1,1), MCA3I(1,1,1), ACVS,P3101040
     1      A1S(1), A2S(1,1), A3S(1,1,1), BCVS, A1S(2), A2S(2,1),       P3101050
     2      A3S(2,1,1), AAAVD, A1D(1), A2D(1,1), A3D(1,1,1)             P3101060
C*****     TEST THAT DECIMAL POINTS APPEARING IN INPUT FIELDS  7.2.3.6/47P3101070
C*****     OVERRIDE THE SPECIFICATIONS SUPPLIED BY E, F AND             P3101080
C*****     D FIELD DESCRIPTORS                                          P3101090
3103   FORMAT (/34H  TEST DEC. PT. SPECIFIED BY INPUT/ 36H  3 LINES IN EAP3101100
     1CH GROUP SHOULD MATCH / 26H  * LINE IS HOLLERITH DATA )           P3101110
       WRITE (NUVI,3103)                                                P3101120
       CMAVS = 1.23456                                                  P3101130
       CMBVS = 987654.                                                  P3101140
       CMEVS = 0.1234E+01                                               P3101150
       CMFVS = -0.987654E+02                                            P3101160
       DPAVD = 0.234567891011D+06                                       P3101170
       DPBVD = -0.109876D-04                                            P3101180
C*****  CARD 3                                                          P3101190
3104   FORMAT (2(F7.3), 2(E12.5), 2(D20.11))                            P3101200
       READ (IRVI,3104) ACVS, BCVS, FFCVS, GGCVS, MCAVD, MCBVD          P3101210
3105   FORMAT (/12H  *  1.23456,2(/F12.5)//13H  *  987654.0,2(/F13.1) / P3101220
     1 /15H  *  0.1234E+01,2(/E15.4)//17H  * -0.987654E+02,2(/E17.6) /  P3101230
     2 /23H  *  0.234567891011D+06, 2(/D23.12)//17H  * -0.109876D-04,   P3101240
     3  2(/D17.6) )                                                    P3101250
       WRITE (NUVI,3105) CMAVS, ACVS, CMBVS, BCVS, CMEVS, FFCVS, CMFVS, P3101260
     1      GGCVS, DPAVD, MCAVD, DPBVD, MCBVD                           P3101270
C*****     TEST SIMPLE REPETITION OF FORMAT DESCRIPTORS        7.2.3.4/ P3101280
C*****     WHEN ADDITIONAL ITEMS REMAIN IN AN I/O LIST       7.1.3.2.1/ P3101290
C*****     AND THE LAST RIGHT PARENTHESIS HAS BEEN REACHED              P3101300
C*****     IN THE CORRESPONDING FORMAT STATEMENT                        P3101310
3106   FORMAT (   35H1 TEST FORMAT DESCRIPTOR REPETITION/ 32H  ALL LINES P3101320
     1IN EACH GROUP SHOULD/ 14H  BE IDENTICAL)                          P3101330
       WRITE (NUVI,3106)                                                P3101340
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      JACVI = +12345                                                    P3101350
      KBCVI = 3                                                         P3101360
      CMAVS = 1.1                                                       P3101370
      CMBVS = 1.23                                                      P3101380
      CMEVS = 33.9567                                                   P3101390
      CMGVS = 1.4E+03                                                   P3101400
      DPAVD = 962951342.44D-5                                           P3101410
      DPBVD = 2.0D1                                                     P3101420
C*****  CARDS 4, 5, 6, 7, 8                                             P3101430
3107  FORMAT (I5)                                                       P3101440
      READ (IRVI,3107) IAC1I                                            P3101450
C*****  CARDS 9, 10, 11, 12                                             P3101460
3108  FORMAT (F3.1)                                                     P3101470
      READ (IRVI,3108) A2S                                              P3101480
C*****  CARDS 13, 14, 15                                                P3101490
9320  FORMAT (E13.6)                                                    P3101500
      READ (IRVI,9320) A1S(1), HHCVS, A1S(2)                            P3101510
C*****  CARDS 16, 17, 18, 19                                            P3101520
9321  FORMAT (D18.11)                                                   P3101530
      READ (IRVI,9321) A2D                                              P3101540
C*****  CARDS 20, 21                                                    P3101550
9322  FORMAT (I1,F4.2,E9.2,D8.1)                                        P3101560
      READ (IRVI,9322) LCCVI, DCVS, AC2S(5,6), A3D(1,2,2), MDCVI, FFCVS,P3101570
     1     GGCVS, AAAVD                                                 P3101580
9323  FORMAT ( /10H  *  12345)                                          P3101590
      WRITE (NUVI,9323)                                                 P3101600
9324  FORMAT (I10)                                                      P3101610
      WRITE (NUVI,9324) JACVI, IAC1I                                    P3101620
9325  FORMAT (/ 8H  *  1.1)                                             P3101630
      WRITE (NUVI,9325)                                                 P3101640
9326  FORMAT (F8.1)                                                     P3101650
      WRITE (NUVI,9326) CMAVS, A2S                                      P3101660
9329  FORMAT (/17H  *  0.339567E+02)                                    P3101670
      WRITE (NUVI,9329)                                                 P3101680
9330  FORMAT (E17.6)                                                    P3101690
      WRITE (NUVI,9330) CMEVS, A1S(1), HHCVS, A1S(2)                    P3101700
9331  FORMAT (/22H  *  0.96295134244D+04)                               P3101710
      WRITE (NUVI,9331)                                                 P3101720
9332  FORMAT (D22.11)                                                   P3101730
      WRITE (NUVI,9332) DPAVD, A2D                                      P3101740
9333  FORMAT (/31H  *  3  1.23  0.14E+04  0.2D+02)                      P3101750
      WRITE (NUVI,9333)                                                 P3101760
9334  FORMAT (I6,F6.2,E10.2,D9.1)                                       P3101770
      WRITE (NUVI,9334) KBCVI, CMBVS, CMGVS, DPBVD, LCCVI, DCVS,        P3101780
     1     AC2S(5,6), A3D(1,2,2), MDCVI, FFCVS, GGCVS, AAAVD            P3101790
C*****    TEST THAT FORMAT CONTROL PASSES TO THE GROUP        7.2.3.4/03P3101800
C*****    ENCLOSED BY THE LAST PRECEDING RIGHT PAREN.       7.1.3.2.1/39P3101810
C*****    WHEN THE I/O LIST CONTAINS MORE ELEMENTS THAN                 P3101820
C*****    THE NUMBER OF DESCRIPTORS IN THE FORMAT STMNT.                P3101830
      JACVI = +4444                                                     P3101840
      KBCVI = -333                                                      P3101850
      LCCVI = 22                                                        P3101860
      MDCVI = 11                                                        P3101870
      ACVS = 5.555                                                      P3101880
      BCVS = -6.666                                                     P3101890
      CCVS = +7.77                                                      P3101900
      DCVS = 65432.1                                                    P3101910
      CMAVS = -0.13579E+5                                               P3101920
      CMBVS = 0.4545E-04                                                P3101930
      CMCVS = 0.9989E12                                                 P3101940
      CMDVS = -0.747E-2                                                 P3101950
      CMEVS = +0.549E+00                                                P3101960
      CMFVS = 0.662E-0                                                  P3101970
      CMGVS = 0.468E-10                                                 P3101980
      DPAVD = +59.542D02                                                P3101990
      DPBVD = -0.0123456789D-2                                          P3102000
      DPCVD = -1395624534.D-10                                          P3102010
      DPDVD = +129.D4                                                   P3102020
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      DPEVD = 4.12D+20                                                  P3102030
      DPFVD = 36.8D-7                                                   P3102040
      DPHVD = 0.6D00                                                    P3102050
      FFCVS = -44.6666                                                  P3102060
      GGCVS = +.549327E+2                                               P3102070
      HHCVS = 848.                                                      P3102080
      MVS = -.987                                                       P3102090
      CMHVS = 1.23E-1                                                   P3102100
      CMIVS = 646.E-2                                                   P3102110
C*****  CARDS 22, 23, 24, 25, 26                                        P3102120
9335  FORMAT ( E12.5, (I4))                                             P3102130
      READ (IRVI,9335) A1S(2), IAC1I                                    P3102140
C*****  CARDS 27, 28                                                    P3102150
9336  FORMAT (I4, (F6.3), E11.4)                                        P3102160
      READ (IRVI,9336) MRRVI, AC1S(1), EP1S(1), A3S(1,1,1), AC2S(2,2)   P3102170
C*****  CARDS 29, 30                                                    P3102180
9337  FORMAT (F4.2, (2(E10.3)), I2)                                     P3102190
      READ (IRVI,9337) A2S(2,2), A3S(2,1,1), EP1S(2), MCA3I(1,1,1),     P3102200
     1     BVS, AC2S(2,1), NECVI                                        P3102210
C*****  CARDS 31, 32                                                    P3102220
9338  FORMAT (D12.5, (F8.4,  D17.10))                                   P3102230
      READ (IRVI,9338) MCAVD, EP1S(3), A1D(1), A2S(1,2), A2D(2,1)       P3102240
C*****  CARDS 33, 34, 35, 36                                            P3102250
C*****  THIS READ CAUSES AN INPUT DATA CARD TO BE SKIPPED               P3102260
9339  FORMAT( F7.1, (/2(E10.3), 2(D10.3)), D10.3)                       P3102270
      READ (IRVI,9339)  CVS, A2S(2,1), A3S(1,2,2), A3D(1,1,1),          P3102280
     1                  A3D(1,2,1), A2D(2,2), A3S(1,2,1), EP1S(4),      P3102290
     2                  A1D(2), MCBVD, MCCVD                            P3102300
9340  FORMAT (/16H  * -0.13579E+05,2(/E16.5)//9H  *  4444,6(/I9))       P3102310
      WRITE (NUVI,9340) CMAVS, A1S(2), JACVI, IAC1I                     P3102320
9341  FORMAT (/ 8H  * -333, 2(/I8)/ 10H1 *  5.555,  2(/F10.3) //        P3102330
     115H  *  0.4545E-04, 2(/E15.4)// 10H  * -6.666, 2(/F10.3) //       P3102340
     215H  *  0.9989E+12, 2(/E15.4))                                    P3102350
      WRITE (NUVI,9341) KBCVI, MRRVI, ACVS, AC1S(1), CMBVS, EP1S(1),    P3102360
     1     BCVS, A3S(1,1,1), CMCVS, AC2S(2,2)                           P3102370
9342  FORMAT (/9H  *  7.77 ,2(/F9.2)//14H  * -0.747E-02, 2(/E14.3) //   P3102380
     1  14H  *  0.549E+00, 2(/E14.3) //7H  *  22, 2(/I7) //             P3102390
     2  14H  *  0.662E+00, 2(/E14.3) //14H  *  0.468E-10, 2(/E14.3) //  P3102400
     3   7H  *  11, 2(/I7) )                                           P3102410
      WRITE (NUVI,9342) CCVS, A2S(2,2), CMDVS, A3S(2,1,1), CMEVS,       P3102420
     1     EP1S(2), LCCVI, MCA3I(1,1,1), CMFVS, BVS, CMGVS, AC2S(2,1),  P3102430
     2     MDCVI, NECVI                                                 P3102440
9343  FORMAT (/16H  *  0.59542D+04,2(/D16.5)//12H  * -44.6666,2(/F12.4)/P3102450
     1/21H  * -0.1234567890D-03,2(/D21.10)/12H1 *  54.9327,2(/F12.4)//  P3102460
     2 21H  * -0.1395624534D+00,2(/D21.10) )                            P3102470
      WRITE (NUVI,9343) DPAVD, MCAVD, FFCVS, EP1S(3), DPBVD, A1D(1),    P3102480
     1     GGCVS, A2S(1,2), DPCVD, A2D(2,1)                             P3102490
9344  FORMAT (/12H  *  65432.1/ 2(F12.1/) / 14H  *  0.848E+03/          P3102500
     1  3(E14.3/) / 14H  *  0.129D+07/ 3(D14.3/) / 14H  *  0.412D+21/  P3102510
     2  2(D14.3/) / 14H  * -0.987E+00/ 3(E14.3/) / 12H  *  0.6D+00/    P3102520
     3  3(D12.1/) / 14H  *  0.368D-05, 2(/D14.3) )                     P3102530
      WRITE (NUVI,9344) DCVS, CVS, HHCVS, A2S(2,1), A3S(1,2,2), DPDVD,  P3102540
     1                  A3D(1,1,1), A3D(1,2,1), DPEVD, A2D(2,2),        P3102550
     2                  MVS, A3S(1,2,1), EP1S(4), DPHVD, A1D(2), MCBVD, P3102560
     3                  DPFVD, MCCVD                                    P3102570
9345  FORMAT (/14H  *  0.777E+01/ (E14.3))                              P3102580
      WRITE (NUVI,9345) CCVS, A2S(2,2)                                  P3102590
9346  FORMAT (/ 22H  * -333   0.59542D+04/I8, D14.5 )                   P3102600
      WRITE (NUVI,9346) KBCVI, DPAVD, MRRVI, MCAVD                      P3102610
9347  IF (MRRVI - 5) 9348, 9349, 9348                                   P3102620
C*****  CARD 37                                                         P3102630
9348  READ (IRVI, 9336) MRRVI                                           P3102640
      GO TO 9347                                                        P3102650
C*****  *  ADDITIONAL  SCALE FACTOR ON INPUT-OUTPUT                     P3102660
C*****  CARD 38                                                         P3102670
9349  READ(IRVI, 9327) A1S(3), A1S(4), A1D(4)                           P3102680
9327  FORMAT (  1PE10.3, -1PE10.2, D10.3)                               P3102690
      WRITE(NUVI, 9328) A1S(3), A1S(4), A1D(4)                          P3102700
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9328  FORMAT(//22H1 SCALE FACTOR ON READ/ 31H  IN ORDER OF FORMAT OCCURRP3102710
     2ENCE/28H  NO EXPONENT ON INPUT DATA //                         P3102720
     3  40H  CARD      987654      8647.86      987.654/             P3102730
     4  40H  DESC    1PE10.3     -1PE10.2       D10.3/               P3102740
     5  40H  TO BE .988E+02   .8648E+05    .9877D+04/                P3102750
     6  4H  IS,       E12.3,       E12.4,      D12.4)                P3102760
C*****     END OF TEST SEGMENT 310                                    P3102770
C*****   WHEN EXECUTING ONLY SEGMENT 310, THE  STOP  AND  END  CARDS  P3102780
C*****   WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=              P3102790
C*****   IN COLUMNS  1  AND  2  REMOVED.                              P3102800
C=      STOP                                                          P3102810
C=      END                                                           P3102820
        STOP                                                          P310C1
        END                                                           P310C2
                       .   .       .  0.     E+00        +          + .   E00
               +                  + .          D+00      .          D0
1.23456987654.    +1.234E-0 -98.7654E+0    + 2345.67891011+2        -.109876-4
12345
12345
12345
12345
12345
1.1
1.1
1.1
1.1
+0.339567E+02
  + .339567+2
 + 3.395670E1
 0.96295134244D+04
   .96295134244D04
   0.96295134244+4
 0.96295134244D+04
31.23+0.14E+04+0.2D+02
31.23  .14E+04   +.2+2
-0.13579E+054444
4444
4444
4444
4444
-333 5.555+0.4545E-04
-6.666  .9989E+12
7.77-0.747E-02  +0.549E022
+0.662E-00  0.468-1011
 0.59542D+04-44.6666-0.1234567890D-03
 54.9327-0.1395624534D+00
65432.1
+0.848E+03    .848E3 +  .1290D7+0.129D+07  0.412D21
22222222222222222222222222222222222222222222222
   -.987E0-0.987E+00     +0.6D0 + 0.6D+00   .368D-5
   5   5   5   5
    987654   8647.86   987.654
C***********************************************************************P3120010
C*****                                                                P3120020
C*****                      RDFMT - (312)                             P3120030
C*****                                                                P3120040
C***********************************************************************P3120050
C*****  GENERAL PURPOSE                                       ASA REFSP3120060
C*****    TO TEST FORMATTED READ AND WRITE STATEMENTS          7.2.3.10P3120070
C*****    IN WHICH THE FORMAT STATEMENT IS CONTAINED IN               P3120080
C*****    AN ARRAY                                                    P3120090
C*****  RESTRICTIONS OBSERVED                                         P3120100
C*****  * AN H DESCRIPTOR MAY NOT BE PART OF A FORMAT       7.2.3.10/48P3120110
C*****    STATEMENT IN AN ARRAY                                       P3120120
C*****  *  ALL FORMAT STATEMENTS ARE LABELED                7.2.3   /57P3120130
C*****  *  H AND X DESCRIPTORS ARE NEVER REPEATED           7.2.3.3/54P3120140
C*****  *  FOR W.D DESCRIPTORS, D IS ALWAYS SPECIFIED AND   7.2.3.1/31P3120150
C*****     W IS EQUAL TO OR GREATER THAN D                  7.2.3.1/33P3120160
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C*****  *  FIELD WIDTH IS NEVER ZERO                                7.2.3  /18P3120170
C*****  *  IF THERE IS AN I/O LIST, THE FORMAT STATEMENT            7.2.3.4/22P3120180
C*****     CONTAINS AT LEAST ONE FIELD DESCRIPTOR (OTHER                      P3120190
C*****     THAN H OR X)                                                       P3120200
C*****  *  ITEMS IN I/O LIST CORRESPOND TO FORMAT DESCRIPTORS       7.2.3.4/36P3120210
C*****  *  NEGATIVE OUTPUT VALUES ARE SIGNED                        7.2.3.6/56P3120220
C*****  *  FIELD WIDTH NEVER EXCEEOED BY OUTPUT                     7.2.3.6/01P3120230
C*****  *  FOR I CONVERSION, EXTERNAL INPUT FIELDS ARE          7.2.3.6.1/07P3120240
C*****     INTEGER CONSTANTS                                                  P3120250
C*****  TEST HOLLERITH IN ARGUMENT OF A CALL                                  P3120260
C*****      ARRAY NAME IN ARGUMENT LIST USEO AS FORMAT SPECIFIER              P3120270
C*****      SUBROUTINE FMTQ ALSO TESTS THE EMPTY FORMAT STATEMENT             P3120280
C*****    THE FOLLOWING DATA STATEMENTS INITIALIZE SOME          7.2.3.10/50P3120290
C*****    ARRAYS WITH FORMAT STATEMENTS TO BE USED FOR                       P3120300
C*****    READING WITH A, F ANO O CONVERSION AND FOR                         P3120310
C*****    WRITING WITH I, E ANO L CONVERSION                                 P3120320
C*****                                                                       P3120330
C INPUT DATA TO THIS SEG. CONSISTS OF 13 CARD IMAGES IN COLS. 1 - 80          P3120340
C     COLS. 1----------------------------------------------50                 P3120350
CARD 1      (I5,6X,  I4, 2(I3),  I2)                                         P3120360
CARO 2      (E   9.2,3(E13.6))                                               P3120370
CARD 3      ( L1 ,2(L2),L3)                                                  P3120380
CARD 4      (2X,A2,5(A2))                                                    P3120390
CARD 5      (2X,F5.3,   F4.0, 2(F7.2))                                       P3120400
CARD 6      (2X , D 16.9,D9.2)                                               P3120410
CARD 7       4756       -867224+39-6                                        P3120420
CARD 8      23498.-77.27547.18                                               P3120430
CARD 9      -.0076+11+08.93421E-13  893.421E-15+08.93421E-13                 P3120440
CARO 10     -0.357901246D+00 +0.520-2                                        P3120450
CARD 11     TTA FF9$                                                         P3120460
CARD 12     AB                                                               P3120470
CARD 13       COE+*=123                                                      P3120480
CARO COLS. NOT MENTIONED ARE BLANK                                           P3120490
C*****                                                                       P3120500
C*****  S P E C I F I C A T I O N S  SEGMENT 312                              P3120510
C*****                                                                       P0014250
C*****  WHEN EXECUTING ONLY SEGMENT 312, THE SPECIFICATION STATEMENTS        P0014255
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=                     P0014260
C*****  IN COLUMNS  1  AND  2  REMOVED.                                      P0014265
C*****                                                                       P0014270
C=     DIMENSION  L1I(10),A3S(3,3,3),YER1S(7),IAC1I(5),AC1S(25)              P0014275
C=     DIMENSION ZU3S(3,2,2),ZT1S(4),2U1S(12),2U2S(4,2),IAC2I(2,7)           P0014280
C=     INTEGER AVI,IU2I(4,2),IT3I(4,2,2),IU3I(2,3,3),MCA3I(2,3,3)            P0014285
C=     LOGICAL AVB,BVB,CVB,GG1B(2),A1B(2)                                    P0014290
C=     OOUBLE PRECISION OPAVO,OPBVD,DPCVD,A10(4)                             P0014295
C=     COMPLEX CHAVC,CHBVC                                                   P0014300
       DIMENSION  L1I(10),A3S(3,3,3),YER1S(7),IAC1I(5),AC1S(25)              P312A1
       OIMENSION IAC2I(2,7),2U1S(13),2U3S(3,2,2),2U2S(4,2),2T1S(4)           P312A2
       INTEGER AVI,IU2I(4,2),IT3I(4,2,2),IU3I(2,3,3), MCA3I(2,3,3)           P312A3
       LOGICAL AVB,BVB,CVB,GG1B(2),A1B(2)                                    P312A4
       DOUBLE PRECISION DPAVO,OPBVD,OPCVO,A1D(4)                             P312A5
       COMPLEX CHAVC,CHBVC                                                   P312A6
C*****                                                                       P0014305
C*****  I N P U T - O U T P U T  TAPE ASSIGNMENT STATEMENTS                  P3120520
C*****                                                                       P0073320
C*****  WHEN EXECUTING ONLY SEGMENT 312, THE FOLLOWING STATEMENTS            P0073325
C*****  NUVI=6 AND IRVI=5 MUST HAVE THE C= IN COLUMNS 1 ANO 2 REMOVEO.       P0073330
C*****                                                                       P0073335
C=     NUVI = 6                                                              P0073340
C=     IRVI = 5                                                              P0073345
       NUVI = 6                                                              P312B1
       IRVI = 5                                                              P312B2
C*****                                                                       P0073350
       OATA IU2I(1,1),IU2I(2,1),IU2I(3,1),IU2I(4,1),IU2I(1,2),IU2I(2,2),     P3120530
      1     IU2I(3,2)/2H(A,2H2/,2H2X,2H,5,2H(A,2H2),1H) /                    P3120540
       DATA 2U1S(1),2U1S(2),ZU1S(3),2U1S(4),2U1S(5),2U1S(6),2U1S(7),         P3120550
      1     ZU1S(8),ZU1S(9),2U1S(10),ZU1S(11),ZU1S(12)  /                    P3120560
      2     2H( ,2H  ,2HF3,2H.3,1H,,2HF3,2H.0,2H, ,2H2(,2HF6,2H.2,2H)) /     P3120570
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```
      DATA IU3I(1,1,1),IU3I(2,1,1),IU3I(1,2,1),IU3I(2,2,1),IU3I(1,3,1), P3120580
     1     IU3I(2,3,1),IU3I(1,1,2),IU3I(2,1,2) /                        P3120590
     2     2H( ,2H D,2H16,2H.9,2H, ,1HD,2H9.,2H2) /                     P3120600
      DATA IT3I(1,1,1),IT3I(2,1,1),IT3I(3,1,1),IT3I(4,1,1),IT3I(1,2,1), P3120610
     1     IT3I(2,2,1),IT3I(3,2,1),IT3I(4,2,1),IT3I(1,1,2),IT3I(2,1,2), P3120620
     2     IT3I(3,1,2),IT3I(4,1,2),IT3I(1,2,2)  /2H(2,2HX,,2HI5,2H,1,   P3120630
     3     2HX,,2HI4,2H,I,2H4,,2H1X,2H,I,2H2,,2HI3,1H)  /               P3120640
      DATA ZT1S(1),ZT1S(2),ZT1S(3),ZT1S(4)/2H(E,2H11,2H.2,1H) /         P3120650
      DATA ZU3S(1,1,1),ZU3S(2,1,1),ZU3S(3,1,1),ZU3S(1,2,1),ZU3S(2,2,1), P3120660
     1     ZU3S(3,2,1) / 2H(4,2H(E,2H14,2H.6,2H/),1H)  /                P3120670
      DATA ZU2S(1,1),ZU2S(2,1),ZU2S(3,1),ZU2S(4,1),ZU2S(1,2),ZU2S(2,2), P3120680
     2     ZU2S(3,2) / 2H(L,2H3,,2H2(,2HL2,2H),,2HL3,1H)  /             P3120690
C*****    THE FOLLOWING READ STATEMENTS INITIALIZE SOME      7.2.3.10/51P3120700
C*****    ARRAYS WITH FORMAT STATEMENTS TO BE USED FOR                  P3120710
C*****    READING WITH I, E AND L CONVERSIONS AND FOR                   P3120720
C*****    WRITING WITH A, F AND D CONVERSIONS                           P3120730
C*****                                                                  P3120740
      WRITE (NUVI,3120)                                                 P3120750
C*****  CARD 1                                                          P3120760
      READ (IRVI,3121) AC1S(1), AC1S(2), AC1S(3), AC1S(4), AC1S(5),     P3120770
     1     AC1S(6),AC1S(7),AC1S(8),AC1S(9),AC1S(10),AC1S(11),AC1S(12)   P3120780
C*****  CARD 2                                                          P3120790
      READ (IRVI,3122) L1I                                              P3120800
C*****  CARD 3                                                          P3120810
      READ (IRVI,3121) A3S                                              P3120820
C*****  CARD 4                                                          P3120830
      READ (IRVI,3123) YER1S                                            P3120840
C*****  CARD 5                                                          P3120850
      READ (IRVI,3124) MCA3I                                            P3120860
C*****  CARD 6                                                          P3120870
      READ (IRVI,3124) IAC2I                                            P3120880
C*****                                                                  P3120890
C*****                                                                  P3120900
C*****    THE FOLLOWING STATEMENTS MAKE USE OF THE FORMATS              P3120910
C*****    CONTAINED IN THE ARRAYS                                       P3120920
C*****                                                                  P3120930
C*****    READ AND WRITE WITH I CONVERSION USING FORMATS IN ARRAYS      P3120940
      JACVI =  4756                                                     P3120950
      KBCVI = -867                                                      P3120960
      LCCVI = 224                                                       P3120970
      MDCVI = +39                                                       P3120980
      NECVI = -6                                                        P3120990
C*****  CARD 7 WITH CARD 1 AS FORMAT                                    P3121000
      READ (IRVI,AC1S) AVI, MRRVI, IAC1I(1), IAC1I(2), IAC1I(3)         P3121010
      WRITE (NUVI,3125)                                                 P3121020
      WRITE(NUVI,IT3I)JACVI, KBCVI, LCCVI, MDCVI, NECVI, AVI, MRRVI,    P3121030
     1                IAC1I(1), IAC1I(2), IAC1I(3)                      P3121040
C*****    READ AND WRITE WITH F CONVERSION USING FORMATS IN ARRAYS      P3121050
      AVS   = .234                                                      P3121060
      BVS   = 98.                                                       P3121070
      CHAVC = (-77.27,+547.18E0)                                        P3121080
C*****  CARD 8 FORMAT IS (F3.3,F3.0,2(F6.2))                            P3121090
      READ (IRVI,ZU1S) CVS, DVS, CHBVC                                  P3121100
      WRITE (NUVI,3127)                                                 P3121110
      WRITE (NUVI,MCA3I) AVS, BVS, CHAVC                                P3121120
      WRITE (NUVI,MCA3I) CVS, DVS, CHBVC                                P3121130
C*****    READ AND WRITE WITH E CONVERSION USING FORMATS IN ARRAYS      P3121140
      AVS   = -0.76E+9                                                  P3121150
      BVS   = +08.93421E-13                                             P3121160
C*****  CARD 9 WITH CARD 2 AS FORMAT                                    P3121170
      READ  (IRVI,L1I) ZU3S(2,2,2),CVS,DVS,ZU3S(1,2,2)                  P3121180
      WRITE (NUVI,3128)                                                 P3121190
      WRITE(NUVI,ZT1S) AVS, ZU3S(2,2,2)                                 P3121200
      WRITE (NUVI,3129)                                                 P3121210
      WRITE (NUVI, ZU3S) BVS,ZU3S(1,2,2),CVS, DVS                       P3121220
C*****    READ AND WRITE WITH D CONVERSION USING FORMATS IN ARRAYS      P3121230
      DPAVD = -0.357901246D+00                                          P3121240
      DPBVD = +.00052D+1                                                P3121250
```

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C*****  CARD 10 FORMAT IS  (D16.9,D9.2)                                  P3121260
      READ  (IRVI,IU3I) A1D(1), DPCVD                                    P3121270
      WRITE (NUVI,9930)                                                  P3121280
      WRITE (NUVI,IAC2I) DPAVD,DPBVD,A1D(1),DPCVD                        P3121290
C*****    READ AND WRITE WITH L CONVERSION USING FORMATS IN ARRAYS       P3121300
      AVB = .TRUE.                                                       P3121310
      BVB = .FALSE.                                                      P3121320
C*****  CARD 11 WITH CARD 3 AS FORMAT                                    P3121330
      READ  (IRVI,A3S) A1B(1), A1B(2), CVB, GG1B(2)                      P3121340
      WRITE (NUVI,9931)                                                  P3121350
      WRITE (NUVI, ZU2S) AVB, AVB, BVB, BVB                              P3121360
      WRITE (NUVI,ZU2S) A1B(1), A1B(2), CVB, GG1B(2)                     P3121370
C*****    READ AND WRITE WITH A CONVERSION USING FORMATS IN ARRAYS       P3121380
C*****  CARDS 12 AND 13 FORMAT IS (A2/2X,5(A2))                          P3121390
      READ  (IRVI,IU2I) JACVI, AVS, IAC1I(1), GG1B, BVB                  P3121400
      WRITE (NUVI,3126)                                                  P3121410
      WRITE (NUVI,YER1S) JACVI, AVS, IAC1I(1), GG1B, BVB                 P3121420
C*****                                                                   P3121430
      CALL FMTQ (NUVI,ZT1S,0.9999,2HH0,2HLL,2HER,2HIT,2HH ,2HCD,2HNS,    P3121440
     1     2HTA,2HNT,2HS ,2HAS,2H C,2HAL,2HL ,2HAR,2HGU,2HME,2HNT,1HS)   P3121450
C*****                                                                   P3121460
C*****    ADDITIONAL FORMAT STATEMENTS REQUIRED BY THIS SEGMENT          P3121470
C*****                                                                   P3121480
C*****    THE FOLLOWING FORMAT STATEMENTS ARE USED TO        7.2.3.10/51P3121490
C*****    READ FORMATS INTO ARRAYS                                       P3121500
3121  FORMAT (27(A2))                                                    P3121510
3122  FORMAT (10(A2))                                                    P3121520
3123  FORMAT ( 7(A2))                                                    P3121530
3124  FORMAT (18(A2))                                                    P3121540
C*****    THE FOLLOWING ARRAYS ARE USED TO WRITE OUT ALL     7.2.3.10/48P3121550
C*****    HOLLERITH INFORMATION, SINCE H FIELD DESCRIPTORS               P3121560
C*****    MAY NOT BE PART OF A FORMAT WITHIN AN ARRAY                    P3121570
3120  FORMAT (1H1,1X,31HRDFMT - (312) FORMATS IN ARRAYS//                P3121580
     1 22H  ASA REFS. - 7.2.3.10//34H  EACH GROUP OF LINES SHOULD MATCH)P3121590
3125  FORMAT (/ 22H    4756 -867 224 39 -6)                              P3121600
3126  FORMAT (/ 13H  ABCDE+*=123)                                        P3121610
3127  FORMAT (/ 25H  0.234 98. -77.27 547.18)                            P3121620
3128  FORMAT (/11H  -0.76E+09)                                           P3121630
3129  FORMAT (/14H  0.893421E-12)                                        P3121640
9930  FORMAT (/ 27H  -0.3579012460+00 0.520-02)                          P3121650
9931  FORMAT (/ 10H  T T F  F)                                           P3121660
C*****    END OF TEST SEGMENT 312                                        P3121670
C*****  WHEN EXECUTING ONLY SEGMENT 312, THE  STOP  AND  END  CARDS      P3121680
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                  P3121690
C*****  IN COLUMNS  1  AND  2  REMOVED.                                  P3121700
C=    STOP                                                               P3121710
C=    END                                                                P3121720
      STOP                                                               P312C1
      END                                                                P312C2
C*******************************************************************************P4620010
C*****                                                                   P4620020
C*****                          FMTQ - (462)                             P4620030
C*****                                                                   P4620040
C*******************************************************************************P4620050
C*****  GENERAL PURPOSE                                                  P4620060
C*****    TO DEFINE SUBROUTINE FMTQ WHICH IS USED IN SEGMENT 312         P4620070
C*****    TO TEST FORMAT IN AN ARRAY PASSED AS AN ARGUMENT, AN           P4620080
C*****            EMPTY FORMAT STATEMENT, AND                            P4620090
C*****            HOLLERITH IN A CALL ARGUMENT                           P4620100
      SUBROUTINE FMTQ(NWVI,ZTW1S,AWVS,IWVH,JWVH,KWVH,LWVH,MWVH,NWVH,     P4620110
     1                IIWVH,JJWVH,KKWVH,LLWVH,MMWVH,NNWVH,IJWVH,IKWVH,   P4620120
     2                ILWVH,IMWVH,INWVH,JIWVH,JKWVH)                     P4620130
      DIMENSION ZTW1S(4)                                                 P4620140
      WRITE (NWVI, 4620)                                                 P4620150
4620  FORMAT(/11H    +.10E+01 )                                          P4620160
C*****FORMAT LABELED ZTW1S PASSED AS ARGUMENT IS  (E11.2)                P4620170
      WRITE (NWVI, ZTW1S) AWVS                                           P4620180
      WRITE (NWVI, 4621)                                                 P4620190
```

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4621  FORMAT(/39H  HOLLERITH CONSTANTS AS CALL ARGUMENTS )                P4620200
      WRITE (NWVI,4622)  IWVH, JWVH,KWVH,LWVH,MWVH,NWVH,IIWVH,JJWVH,      P4620210
     1                   KKWVH, LLWVH,MMWVH,NNWVH,IJWVH,IKWVH,ILWVH,      P4620220
     2                   IMWVH,INWVH,JIWVH,JKWVH                          P4620230
4622  FORMAT(2X, 19A2)                                                    P4620240
      WRITE (NWVI,4623)                                                   P4620250
4623  FORMAT(//29H  TEST EMPTY FORMAT STATEMENT /                         P4620260
     136H  THE FOLLOWING LINE SHOULO BE BLANK )                           P4620270
      WRITE(NWVI,4624)                                                    P4620280
4624  FORMAT( )                                                           P4620290
      WRITE(NWVI,4625)                                                    P4620300
4625  FORMAT(23H  ENO EMPTY FORMAT TEST //22H  ENO SEGMENT 312 TEST )     P4620310
      RETURN                                                              P4620320
      ENO                                                                 P4620330
(I5,6X, I4, 2(I3),  I2)
(E   9.2,3(E13.6))
( L1 , 2(L2),L3)
(2X,A2,5(A2))
(2X,F5.3,   F4.0, 2(F7.2))
(2X , 0 16.9,09.2)
 4756       -867224+39-6
23498.-77.27547.18
-.0076+11+08.93421E-13  893.421E-15+08.93421E-13
-0.3579012460+00 +0.520-2
TTA FF9$
AB
  COE+*=123
C*************************************************************************P3500010
C*****                                                                    P3500020
C*****                          MISC5 - (350)                             P3500030
C*****                                                                    P3500040
C*************************************************************************P3500050
C*****  GENERAL PURPOSE                                        ASA REFP3500060
C*****    TO TEST SPECIFICATIONS FOR PROGRAM FORM              3.2     P3500070
C*****                                                         3.2.1   P3500080
C*****                                                         3.4     P3500090
C*****                                                         3.5     P3500100
C*****  GENERAL COMMENTS                                               P3500110
C*****  * AMONG OTHER THINGS, THIS SEGMENT TESTS THAT COMMENTS ARE      P3500120
C*****    NOT EXECUTEO ANO, AS A RESULT OF THIS TEST, THE COMPILER      P3500130
C*****    MAY GENERATE SOME WARNING MESSAGES.                           P3500140
C*****  * BECAUSE OF THE NATURE OF THE TESTS BEING PERFORMEO, SOME      P3500150
C*****    LABELS ANO NAMES OO NOT FOLLOW THE CONVENTIONS                P3500160
C*****    SPECIFIED IN THE USERS MANUAL.                                P3500170
C*****                                                                  P3500180
C*****  S P E C I F I C A T I O N S  SEGMENT 350                        P3500190
C*****                                                                  P0014310
C*****  WHEN EXECUTING ONLY SEGMENT 350, THE SPECIFICATION STATEMENTS   P0014315
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE C=                  P0014320
C*****  IN COLUMNS  1  ANO  2  REMOVEO.                                 P0014325
C*****                                                                  P0014330
C=    OIMENSION J(2), JJ(1,1), JJJ(1,1,1), JJJJ(1,1),JJJJJ(1), JJJJJJ(1)P0014335
      OIMENSION J(2), JJ(1,1), JJJ(1,1,1), JJJJ(1,1),JJJJJ(1), JJJJJJ(1)P350A1
C*****                                                                  P0014340
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.     P3500200
C*****  WHEN EXECUTING ONLY SEGMENT 350, THE FOLLOWING STATEMENT        P0073360
C*****  NUVI = 6  MUST HAVE THE C=  IN COLUMNS 1 ANO 2 REMOVED.         P0073365
C*****                                                                  P0073370
C=    NUVI = 6                                                          P0073375
      NUVI = 6                                                          P350B1
      WRITE (NUVI,3500)                                                 P3500210
3500  FORMAT (1H1,1X,32HMISC5 - (350) SPECIFICATIONS FOR/ 16X,    12HPROP3500220
     1GRAM FORM//2X,32HASA REFS. - 3.2  3.2.1  3.4  3.5//               P3500230
     2 2X,35HTEST THAT COMMENTS ARE NOT EXECUTEO)                       P3500240
C*****    HEAOER FOR SEGMENT 350 WRITTEN                              P3500250
C*****    TEST THAT COMMENTS ARE NOT EXECUTEO                 3.2.1/36P3500260
C*****WRITE (NUVI,3501)                                               P3500270
3501  FORMAT  (2X,34HERROR - COMMENT STATEMENT EXECUTEO)                P3500280
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C*****GO TO 3504                                                        P3500290
3502  MRRVI = 0                                                         P3500300
C*****IF (MRRVI) 3504, 3504, 3504                                       P3500310
3503  MRRVI = 1                                                         P3500320
C*****MRRVI = -1                                                        P3500330
      IF (MRRVI) 3504,3504,3505                                         P3500340
3504  WRITE (NUVI,3501)                                                 P3500350
3505  WRITE (NUVI,3506)                                                 P3500360
3506  FORMAT  (2X,35HTEST SUCCESSFUL IF NO ERROR MESSAGE)               P3500370
      GO TO 3509                                                        P3500380
C*****    TEST THAT ALL 72 CHARACTERS IN A LINE MAY BE USED      3.2/24P3500390
3509  WRITE (NUVI,8100)                                                 P3500400
8100  FORMAT(///2X,22HTEST 72 CHARACTER LINE)                           P3500410
      WRITE (NUVI,8101)                                                 P3500420
8101 0FORMAT( /2X,29H123456789101112131415161718192X,29H123456789101112P3500430
     1131415161718192)                                                  P3500440
      WRITE (NUVI,8102)                                                 P3500450
8102  FORMAT ( /2X,36HTEST SUCCESSFUL IF 2 LINES ABOVE ARE/2X,19HDIGITS P3500460
     1 11 THROUGH 19)                                                   P3500470
C*****    TEST THAT STATEMENT LABELS MAY BE 1, 2, 3, 4 OR 5      3.4/12P3500480
C*****    DIGITS LONG                                                 P3500490
      WRITE (NUVI,8112)                                                 P3500500
8112  FORMAT (//2X,37HTEST 1,2,3,4,5 CHARACTER STMNT. LABEL/)           P3500510
      GO TO 1                                                           P3500520
8113  GO TO 22                                                          P3500530
8114  GO TO 333                                                         P3500540
8115  GO TO 8099                                                        P3500550
8097  GO TO 22255                                                       P3500560
1     MRRVI = 1                                                         P3500570
      WRITE (NUVI,8118) MRRVI                                           P3500580
      GO TO 8113                                                        P3500590
22    MRRVI = 2                                                         P3500600
      WRITE (NUVI,8118) MRRVI                                           P3500610
      GO TO 8114                                                        P3500620
333   MRRVI = 3                                                         P3500630
      WRITE (NUVI,8118) MRRVI                                           P3500640
      GO TO 8115                                                        P3500650
8099  MRRVI = 4                                                         P3500660
      WRITE(NUVI, 8118) MRRVI                                           P3500670
      GO TO 8097                                                        P3500680
22255 MRRVI = 5                                                         P3500690
      WRITE (NUVI,8118) MRRVI                                           P3500700
8118  FORMAT (  2X,I1,1X,24HCHARACTER LABEL ACCEPTED)                   P3500710
C*****    TEST THAT VARIABLE AND ARRAY NAMES MAY BE              3.5/21P3500720
C*****    1, 2, 3, 4 OR 5 CHARACTERS LONG                             P3500730
      WRITE (NUVI,8098)                                                 P3500740
8098  FORMAT (//2X,36HTEST 1,2,3,4,5,6 CHARACTER VARIABLES/2X,          P3500750
     115HAND ARRAY NAMES)                                               P3500760
      M = 1                                                             P3500770
      MM = 1                                                            P3500780
      MMM = 1                                                           P3500790
      MMMM = 1                                                          P3500800
      MMMMM = 1                                                         P3500810
      MMMMMM = 1                                                        P3500820
      J(1) = 1                                                          P3500830
      JJ(1,1) = 1                                                       P3500840
      JJJ(1,1,1) = 1                                                    P3500850
      JJJJ(1,1) = 1                                                     P3500860
      JJJJJ(1) = 1                                                      P3500870
      JJJJJJ(1) = 1                                                     P3500880
      IF (M-1) 8119, 8103, 8119                                         P3500890
8103  IF (MM-1) 8119,8104,8119                                          P3500900
8104  IF (MMM-1) 8119,8105,8119                                         P3500910
8105  IF (MMMM-1) 8119, 8106,8119                                       P3500920
8106  IF (MMMMM-1) 8119,8096,8119                                       P3500930
8096  IF (MMMMMM-1) 8119, 8107, 8119                                    P3500940
8107  IF (J(1)-1) 8119,8108,8119                                        P3500950
8108  IF (JJ(1,1)-1) 8119,8109,8119                                     P3500960
```

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8109   IF (JJJ(1,1,1)-1) 8119,8110,8119                                    P3500970
8110   IF (JJJJ(1,1)-1) 8119,8111,8119                                     P3500980
8111   IF (JJJJJ(1)-1) 8119,8095,8119                                      P3500990
8095   IF (JJJJJJ(1)-1) 8119,8121,8119                                     P3501000
8119   WRITE (NUVI,8120)                                                   P3501010
8120   FORMAT (/ 2X,21H**TEST UNSUCCESSFUL**)                              P3501020
       GO TO 8123                                                          P3501030
8121   WRITE (NUVI,8122)                                                   P3501040
8122   FORMAT (/ 2X,38H**TEST SUCCESSFUL-ALL NAMES ACCEPTED**)             P3501050
C*****     TEST THAT STATEMENT LABELS MAY BE PLACED              3.4/13P3501060
C*****     ANYWHERE IN COLUMNS 1 TO 5 AND THAT LEADING           3.4/17P3501070
C*****     ZEROS ON STATEMENT LABELS ARE NOT SIGNIFICANT                P3501080
8123   WRITE (NUVI,8116)                                                   P3501090
8116   FORMAT (//2X,34HTEST PLACEMENT OF STATEMENT LABELS/2X,              P3501100
     1 29HAND LABELS WITH LEADING ZEROS/)                                  P3501110
       MRRVI = 1                                                           P3501120
       GO TO 10                                                            P3501130
 2     MRRVI = 2                                                           P3501140
       GO TO 010                                                           P3501150
  3    MRRVI = 3                                                           P3501160
       GO TO 0010                                                          P3501170
   4   MRRVI = 4                                                           P3501180
       GO TO 0010                                                          P3501190
    5  MRRVI = 5                                                           P3501200
       GO TO 0010                                                          P3501210
06     MRRVI = 6                                                           P3501220
       GO TO 0010                                                          P3501230
007    MRRVI = 7                                                           P3501240
       GO TO 0010                                                          P3501250
0008   MRRVI = 8                                                           P3501260
       GO TO 0010                                                          P3501270
 0009  MRRVI = 9                                                           P3501280
 0010  WRITE (NUVI,11) MRRVI                                               P3501290
011    FORMAT ( I10)                                                       P3501300
       GO TO (02,3,004,0005,6,7,8,009,8117), MRRVI                         P3501310
8117   WRITE (NUVI,012)                                                    P3501320
 12    FORMAT (//2X,28HTEST SUCCESSFUL IF 9 NUMBERS/2X,                    P3501330
     1 31HIN SEQUENTIAL ORDER FROM 1 TO 9/2X,                              P3501340
     2 17HARE WRITTEN ABOVE///2X,18HEND OF SEGMENT 350)                    P3501350
C*****     END OF TEST SEGMENT 350                                         P3501360
C*****   WHEN EXECUTING ONLY SEGMENT 350, THE  STOP  AND  END  CARDS       P3501370
C*****   WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                   P3501380
C*****   IN COLUMNS  1  AND  2  REMOVED.                                   P3501390
C=     STOP                                                                P3501400
C=     END                                                                 P3501410
       STOP                                                                P350C1
       END                                                                 P350C2
C*******************************************************************************P3510010
C*****                                                                     P3510020
C*****                          FUNMX - (351)                              P3510030
C*****                                                                     P3510040
C*******************************************************************************P3510050
C*****  GENERAL PURPOSE                                        ASA REF P3510060
C*****     THIS SEGMENT FURTHER TESTS SOME                     8.3.3   P3510070
C*****     BASIC EXTERNAL FUNCTIONS BY USING TRIGONOMETRIC               P3510080
C*****     FORMULAE                                                      P3510090
C*****                                                                   P3510100
C*****  O U T P U T  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.      P3510110
C*****                                                                   P0073380
C*****  WHEN EXECUTING ONLY SEGMENT 351, THE FOLLOWING STATEMENT         P0073385
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.           P0073390
C*****                                                                   P0073395
C=     NUVI = 6                                                          P0073400
       NUVI = 6                                                          P35181
C*****                                                                   P0073405
       WRITE (NUVI,3510)                                                 P3510120
3510   FORMAT (1H1,2X,13HFUNMX - (351)//1X,22H THIS SEGMENT FURTHER      P3510130
     1  5HTESTS                    /21H  SOME BASIC EXTERNAL,            P3510140
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     2 10H FUNCTIONS /33H  BY USING TRIGONOMETRIC FORMULAE//          P3510150
     319H  ASA REFS. - 8.3.3//2X,7HRESULTS)                          P3510160
C*****    HEADER FOR SEGMENT 351 WRITTEN                            P3510170
C*****    TEST STATEMENTS USING ORDINARY TRIGONOMETRIC FUNCTIONS    P3510180
      CMAVS = 1.75                                                  P3510190
      CMCVS = ALOG(EXP(CMAVS)) - 1.75                               P3510200
      CMDVS = EXP(ALOG(CMAVS)) - 1.75                               P3510210
      CMEVS = (SIN(2.0)) ** 2 + (COS(2.0)) ** 2 - 1.0               P3510220
      CMFVS = (1.0/COS(1.2)) ** 2 -((SIN(1.2) / COS(1.2)) ** 2) - 1.0 P3510230
      WRITE (NUVI,3511) CMCVS, CMDVS, CMEVS, CMFVS                  P3510240
      CMCVS = SIN(.78) - SQRT(1. - COS(0.78) ** 2)                  P3510250
      CMDVS = COS(1.57) - SQRT(1.0 - SIN(1.57) ** 2)                P3510260
      CMEVS = SQRT((1.0/COS(0.5236))**2-1.0)-SIN(0.5236)/COS(0.5236) P3510270
      CMFVS = ATAN2(SIN(0.5),COS(0.5)) - 0.5                        P3510280
      WRITE (NUVI,3511) CMCVS, CMDVS, CMEVS, CMFVS                  P3510290
C*****    TEST STATEMENTS USING HYPERBOLIC FUNCTIONS                P3510300
      CMAVS = EXP(1.85)                                             P3510310
      CMBVS = EXP(-1.85)                                            P3510320
      CMCVS = TANH(1.85) - ((CMAVS - CMBVS) / (CMAVS + CMBVS))      P3510330
      CMEVS = 2./(EXP(1.05) + EXP(-1.05)) - SQRT(1.0-TANH(1.05)**2) P3510340
      CMFVS = TANH(2.01)/ (SQRT(1.0 - TANH(2.01)**2))-.5*(EXP(2.01) - P3510350
     1 EXP(-2.01))                                                  P3510360
      WRITE (NUVI,3512) CMCVS, CMEVS, CMFVS                         P3510370
      WRITE (NUVI,3513)                                             P3510380
3511  FORMAT (//4(F15.5/))                                          P3510390
3512  FORMAT (//3(F15.5/))                                          P3510400
3513  FORMAT (//39H  ALL ABOVE ANSWERS SHOULD BE 0 PLUS OR /        P3510410
     1  40H  MINUS AN ERROR FACTOR OF NOT MORE THAN /               P3510420
     2 12H  10 ** (-4))                                           P3510430
C*****    END OF TEST SEGMENT 351                                   P3510440
C*****  WHEN EXECUTING ONLY SEGMENT 351, THE  STOP  AND  END  CARDS P3510450
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=            P3510460
C*****  IN COLUMNS  1  AND  2  REMOVED.                           P3510470
C=    STOP                                                        P3510480
C=    END                                                         P3510490
      STOP                                                        P351C1
      END                                                         P351C2
C*******************************************************************************P3520010
C*****                                                            P3520020
C*****                          NAMES - (352)                     P3520030
C*****                                                            P3520040
C*******************************************************************************P3520050
C*****  GENERAL PURPOSE                                    ASA REF P3520060
C*****    TO TEST THE CAPABILITY OF COMPILERS TO IDENTIFY DATA 10.1.7/54P3520070
C*****    NAMES THAT RESEMBLE FORTRAN VERBS AND/OR PREDEFINED     P3520080
C*****    FUNCTION NAMES.                                         P3520090
C*****  GENERAL COMMENTS                                          P3520100
C*****    BECAUSE OF THE NATURE OF THIS TEST SEGMENT, NAMING      P3520110
C*****    CONVENTIONS THAT EXISTED IN OTHER SEGMENTS WILL NOT     P3520120
C*****    BE OBSERVED.                                            P3520130
C*****                                                            P3520140
C*****  S P E C I F I C A T I O N S  SEGMENT 352                  P3520150
C*****                                                            P0014350
C*****  WHEN EXECUTING ONLY SEGMENT 352, THE SPECIFICATION STATEMENTS P0014355
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=          P0014360
C*****  IN COLUMNS  1  AND  2  REMOVED.                           P0014365
C*****                                                            P0014370
C=    DIMENSION GOTO(2,2), IF(5)                                  P0014375
      DIMENSION GOTO(2,2), IF(5)                                  P352A1
C*****                                                            P0014380
C*****  O U T P UT  T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE. P3520160
C*****                                                            P0073410
C*****  WHEN EXECUTING ONLY SEGMENT 352, THE FOLLOWING STATEMENT  P0073415
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 AND 2 REMOVED.    P0073420
C*****                                                            P0073425
C=    NUVI = 6                                                    P0073430
      NUVI = 6                                                    P352B1
C*****                                                            P0073435
```

```
      WRITE (NUVI,3520)                                                 P3520170
3520  FORMAT (1H1 ,1X,13HNAMES - (352)//2X,36HTEST OF THE COMPILERS CAPAP3520180
     1BILITY OF /2X,37HIDENTIFYING DATA NAMES THAT RESEMBLE /2X,        P3520190
     2 32HFORTRAN VERBS AND/OR PREDEFINED /2X,15HFUNCTION NAMES //      P3520200
     3 22H  ASA REFS. - 10.1.7/4 //2X,7HRESULTS)                        P3520210
C*****    HEADER FOR SEGMENT 352 WRITTEN                                P3520220
      INTEG = 0                                                         P3520230
      REAL = 2.0                                                        P3520240
      GDTD5 = REAL - 2.0                                                P3520250
      GDTD(1,2) = 10.0 - 5.0 * 2.0                                      P3520260
      DD13I = INTEG                                                     P3520270
   13 DD14J = INTEG +0                                                  P3520280
   14 IF(2) = 5-5                                                       P3520290
      CALL = 0                                                          P3520300
      STOP7 = REAL - 2.0                                                P3520310
      PAUSE = REAL / 2.0 - 1.0                                          P3520320
      READ6 = 0.0 ** 5                                                  P3520330
      WRITE = 7.0 - 7.0                                                 P3520340
      WRITE (NUVI,3521) GDTD5, GOTO(1,2), DD13I, DD14J, IF(2), CALL,    P3520350
     1 STOP7, PAUSE, READ6, WRITE                                       P3520360
3521  FORMAT (//10(F10.5/))                                             P3520370
C*****    TEST THAT THE SAME INTRINSIC FUNCTION NAMES OF                P3520380
C*****    A PROGRAM UNIT OF AN EXECUTABLE PROGRAM CAN BE                P3520390
C*****    USED TO IDENTIFY SOME OTHER ENTITY IN A DIFFERENT             P3520400
C*****    PROGRAM UNIT OF THAT EXECUTABLE PROGRAM                       P3520410
      MCAVI = IABS(-5)                                                  P3520420
      CALL MAQQ(MCAVI,IVI)                                              P3520430
      MCCVI = IVI                                                       P3520440
      MCBVI = ISIGN(1,-2)                                               P3520450
      CALL MBQQ(MCBVI,IVI)                                              P3520460
      MCOVI = IVI                                                       P3520470
      CMAVS = FLOAT(5 + 7)                                              P3520480
      CALL AMQQ(CMAVS,AVS)                                              P3520490
      CMCVS = AVS                                                       P3520500
      CMBVS = ABS(-10.0 - 8.00)                                         P3520510
      CALL BMQQ(CMBVS,AVS)                                              P3520520
      CMDVS = AVS                                                       P3520530
      WRITE (NUVI,3522) MCCVI, MCDVI, CMCVS, CMDVS                      P3520540
3522  FORMAT (/2(I10/)//2(F10.5/)//35H  ALL ABOVE ANSWERS SHOULD BE 0 FDP3520550
     1R/36H  THIS TEST SEGMENT TO BE SUCCESSFUL)                        P3520560
C*****    END OF TEST SEGMENT 352                                       P3520570
C*****  WHEN EXECUTING ONLY SEGMENT 352, THE  STOP  AND  END  CARDS     P3520580
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P3520590
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P3520600
C=    STOP                                                              P3520610
C=    END                                                               P3520620
      STOP                                                              P352C1
      END                                                               P352C2
C*******************************************************************************P4130010
C*****                                                                 P4130020
C*****                          MAQQ - (413)                           P4130030
C*****                                                                 P4130040
C*******************************************************************************P4130050
C*****  GENERAL PURPOSE                                                P4130060
C*****    THIS SEGMENT CONTAINS A SUBROUTINE WHICH IS CALLED           P4130070
C*****    BY SEGMENT 352.                                              P4130080
C*****  GENERAL COMMENTS                                               P4130090
C*****    SUBROUTINE MAQQ BEING DEFINED                                P4130100
      SUBROUTINE MAQQ(MWVI,IWVI)                                        P4130110
      IABS = MWVI                                                       P4130120
      IWVI = IABS + ISIGN(MWVI, -MWVI)                                  P4130130
      RETURN                                                            P4130140
      END                                                               P4130150
C*******************************************************************************P4630010
C*****                                                                 P4630020
C*****                          MBQQ - (463)                           P4630030
C*****                                                                 P4630040
C*******************************************************************************P4630050
```

```
C*****  GENERAL PURPOSE                                                 P4630060
C*****     THIS SEGMENT CONTAINS A SUBROUTINE WHICH IS CALLED           P4630070
C*****     BY SEGMENT 352                                               P4630080
C*****  GENERAL COMMENTS                                                P4630090
C*****     SUBROUTINE  MBQQ BEING DEFINED                               P4630100
      SUBROUTINE MBQQ(MWVI, IWVI)                                       P4630110
      ISIGN = -MWVI                                                     P4630120
      IWVI = ISIGN + MWVI                                               P4630130
      RETURN                                                            P4630140
      END                                                               P4630150
C*******************************************************************************P4730010
C*****                                                                 P4730020
C*****                          AMQQ - (473)                           P4730030
C*****                                                                 P4730040
C*******************************************************************************P4730050
C*****  GENERAL PURPOSE                                                 P4730060
C*****     THIS SEGMENT CONTAINS A SUBROUTINE WHICH IS CALLED           P4730070
C*****     BY SEGMENT 352                                               P4730080
C*****  GENERAL COMMENTS                                                P4730090
C*****     SUBROUTINE AMQQ BEING DEFINED                                P4730100
C*****STATEMENT FUNCTION NAME IS THE SAME AS SUBROUTINE NAME CALLED BY  P4730110
C*****SEGMENT 352, STAT. FUNCTION DUMMY ARGUMENT NAME SAME AS SUBROUTINEP4730120
C*****DUMMY ARGUMENT NAME, VARIABLE IS REFERENCED IN STAT. FUNCTION     P4730130
      SUBROUTINE AMQQ(CWVS, AWVS)                                       P4730140
      BMQQ(CWVS) = CWVS + BVS                                           P4730150
      FLOAT = AVS                                                       P4730160
      BVS = CWVS                                                        P4730170
      AWVS = BMQQ(FLOAT) - (BVS + 1.0)                                  P4730180
      DATA AVS /1.0/                                                    P4730190
      RETURN                                                            P4730200
      END                                                               P4730210
C*******************************************************************************P4830010
C*****                                                                 P4830020
C*****                          BMQQ - (483)                           P4830030
C*****                                                                 P4830040
C*******************************************************************************P4830050
C*****  GENERAL PURPOSE                                                 P4830060
C*****     THIS SEGMENT CONTAINS A SUBROUTINE WHICH IS CALLED           P4830070
C*****     BY SEGMENT 352                                               P4830080
C*****  GENERAL COMMENTS                                                P4830090
C*****     SUBROUTINE BMQQ BEING DEFINED                                P4830100
      SUBROUTINE BMQQ(CWVS, AWVS)                                       P4830110
      ABS = CWVS                                                        P4830120
      AWVS = FLOAT(ISIGN(IFIX(ABS), - 2)) + 18.0                        P4830130
      RETURN                                                            P4830140
C*****  END OF TEST SEGMENT 483                                         P4830150
      END                                                               P4830160
C*******************************************************************************P3600010
C*****                                                                 P3600020
C*****                          SPEC2 - (360)                          P3600030
C*****                                                                 P3600040
C*******************************************************************************P3600050
C*****  GENERAL PURPOSE                                        ASA REFS P3600060
C*****  * TO TEST COMMON, DIMENSION AND EQUIVALENCE             7.2.1.2P3600070
C*****     STATEMENTS                                           7.2.1.3P3600080
C*****  *  TO TEST THAT VARIABLES AND ARRAYS WHICH ARE          7.2.1.4P3600090
C*****     EQUATED AND/OR IN COMMON MAY BE USED IN A                  P3600100
C*****     VARIETY OF FORTRAN STATEMENTS                              P3600110
C*****  RESTRICTIONS OBSERVED                                         P3600120
C*****  * NO DUMMY ARGUMENTS APPEAR IN COMMON OR EQUIVALENCE 7.2.1.4/40P3600130
C*****     STATEMENTS                                        8.4.1.1/23P3600140
C*****  * NUMBER OF SUBSCRIPTS IN EQUIVALENCE STATEMENTS           P3600150
C*****     CORRESPONDS TO ARRAY DIMENSIONALITY OR IS ONE      7.2.1.4/09P3600160
C*****  * COMMON NEVER LENGTHENED BY EQUIVALENCE IN A         7.2.1.4/31P3600170
C*****     BACKWARD DIRECTION                                         P3600180
C*****  * ONLY ONE OF AN EQUATED PAIR OF ITEMS APPEARS        7.2.1.4/36P3600190
C*****     IN COMMON                                                  P3600200
C*****  * VARIABLES ARE NEVER EQUATED TO MORE THAN ONE        7.2.1.4/42P3600210
```

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C*****    ELEMENT OF THE SAME ARRAY                                          P3600220
C*****  GENERAL COMMENTS                                                     P3600230
C*****    THIS SEGMENT FOLLOWS THE ORDER OF SPECIFICATION STATEMENTS         P3600240
C*****    REQUIRED IN BASIC FORTRAN  (SEE 9.1.2/56 IN BASIC ASA BOOK)        P3600250
C*****                                                                       P3600260
C*****  S P E C I F I C A T I O N S  SEGMENT 360                             P3600270
C*****                                                                       P0014390
C*****  WHEN EXECUTING ONLY SEGMENT 360, THE SPECIFICATION STATEMENTS        P0014395
C*****  WHICH APPEAR AS COMMENT CARDS, MUST HAVE THE  C=                     P0014400
C*****  IN COLUMNS  1  AND  2  REMOVED.                                      P0014405
C*****                                                                       P0014410
C=     OIMENSION MX1I(3), TX1S(3)                                           P0014415
C=     OIMENSION MX2I(2,3), TX2S(2,2), WAZ2S(3,2), RVY1S(2), RVY2S(1,2)     P0014420
C=     OIMENSION JY2I(2,2), JY1I(5), NZ1I(4), NZ2I(4,2), WAZ1S(2)           P0014425
C=     OIMENSION MMY1I(400),NNY3I(20,10,2)                                  P0014430
C=     EQUIVALENCE (MMY1I(1),NNY3I(1,1,1)),(NZ1I(1),NNY3I(1))               P0014435
C=     COMMON MX1I, MX2I, N21I, N2VI, N22I                                  P0014440
C=     COMMON MXVI                                                          P0014445
C=     COMMON IAXVI                                                         P0014450
C=     COMMON WAZ1S                                                         P0014455
C=     COMMON TX1S, TX2S, JBZVI, WAZ2S                                      P0014460
C=     EQUIVALENCE (MYVI,NZVI), (IYVI,NZ1I(1)), (NZ2I(4,1), JYVI)          P0014465
C=     EQUIVALENCE (NZ2I(3), KYVI), (AAYVS,JBZVI,JY2I(1), RVY1S(2))        P0014470
C=     EQUIVALENCE (RVY2S(1,1),WA21S(2))                                    P0014475
C=     EQUIVALENCE (JY1I(3),RVY1S(2))                                       P0014480
C=     EQUIVALENCE (WAZ2S(1),BBYVS,CCYVS), (WAZ2S(2,1),DDYVS)               P0014485
       OIMENSION MX1I(3), TX1S(3)                                           P360A1
       OIMENSION MX2I(2,3), TX2S(2,2), WAZ2S(3,2), RVY1S(2), RVY2S(1,2)     P360A2
       OIMENSION JY2I(2,2), JY1I(5), NZ1I(4), NZ2I(4,2), WAZ1S(2)           P360A3
       OIMENSION MMY1I(400),NNY3I(20,10,2)                                  P360A4
       EQUIVALENCE (MMY1I(1),NNY3I(1,1,1)),(NZ1I(1),NNY3I(1))               P360A5
       COMMON MX1I, MX2I, N21I, N2VI, N22I                                  P360A6
       COMMON MXVI                                                          P360A7
       COMMON IAXVI                                                         P360A8
       COMMON WAZ1S                                                         P360A9
       COMMON TX1S, TX2S, JBZVI, WAZ2S                                      P360AA
       EQUIVALENCE (MYVI,NZVI), (IYVI,NZ1I(1)), (NZ2I(4,1), JYVI)          P360AB
       EQUIVALENCE (NZ2I(3), KYVI), (AAYVS,JBZVI,JY2I(1), RVY1S(2))        P360AC
       EQUIVALENCE (RVY2S(1,1),WAZ1S(2))                                    P360A0
       EQUIVALENCE (JY1I(3),RVY1S(2))                                       P360AE
       EQUIVALENCE (WAZ2S(1),BBYVS,CCYVS), (WAZ2S(2,1),ODYVS)               P360AF
C*****                                                                      P3600280
C*****    SOME OF THE ITEMS OEFINED ABOVE ARE USED IN A VARIETY             P3600290
C*****                                                                      P3600300
C*****    OF FORTRAN STATEMENTS                                             P3600310
C*****    SEGMENT                                                           P3600320
C*****    DEFINE THE SYMBOLIC OUTPUT UNIT FOR USE IN THIS       7.1.3/22P3600330
C*****  O U T P U T - T A P E  ASSIGNMENT STATEMENT.  NO INPUT TAPE.        P3600340
C*****                                                                      P3600350
C*****  WHEN EXECUTING ONLY SEGMENT 360, THE FOLLOWING STATEMENT            P0073440
C*****  NUVI = 6  MUST HAVE THE C= IN COLUMNS 1 ANO 2 REMOVEO.              P0073445
C*****                                                                      P0073450
C=     NUVI = 6                                                             P0073455
       NUVI = 6                                                             P360B1
C*****                                                                      P0073460
       JY2I(1,1) = NUVI                                                     P3600360
C*****    WRITE HEAOER FOR THIS SEGMENT                                     P3600370
       WRITE (JBZVI,3600)                                                   P3600380
3600   FORMAT (1H1, 1X,36HSPEC2 - (360) COMMON AND EQUIVALENCE//            P3600390
     1        2X,36HASA REFS - 7.2.1.2  7.2.1.3  7.2.1.4// 2X,7HRESULTS)   P3600400
C*****                                                                      P3600410
C*****    TEST THAT EQUIVALENCE WORKS - ASSOCIATED ITEM OF     10.2.2/51P3600420
C*****    SAME TYPE BECOMES DEFINEO WHEN EQUATED ITEM IS                    P3600430
C*****    DEFINEO                                                           P3600440
       MYVI = 2                                                             P3600450
       WAZ1S(2) = 2.0                                                       P3600460
       WRITE (JBZVI,3601) NZVI, RVY2S(1,1)                                  P3600470
3601   FORMAT(//27H  LINE 1 BELOW IS HOLLERITH                              P3600480
```

```
     1        // 11H     2  2.0/I6,F5.1)                                    P3600490
C*****    USE OEFINED ITEMS IN ARITHMETIC STATEMENTS              7.1.1.1P3600500
      JYVI = 4                                                             P3600510
      MXVI = 5                                                             P3600520
      NZVI = 3                                                             P3600530
      JY1I(1) = 1                                                          P3600540
      MX1I(2) = 0                                                          P3600550
      N21I(4) = 2                                                          P3600560
      JY2I(2,1) = -8                                                       P3600570
      MX2I(1,3) = 9                                                        P3600580
      N22I(3,2) = 7                                                        P3600590
      MX1I(3) = MX2I(1,3) * (NZVI - JY1I(1)) - 18                          P3600600
      MX2I(1,1) = MX2I(1,3) * (MYVI - JY1I(1))- 18                         P3600610
      MX1I(1) = JYVI + JY2I(2,1) + NZVI - MX1I(2) + JY1I(1)                P3600620
      IAXVI = N22I(4,1) + JY1I(4) + MYVI - MX1I(2) + JY1I(1)               P3600630
      N22I(1,1) = MXVI ** N21I(4) - MXVI ** NZ1I(4)                        P3600640
      BBYVS = 2.0                                                          P3600650
      TX1S(3) = 1.0E1                                                      P3600660
      WA22S(1,2) = -3.0E00                                                 P3600670
      RVY1S(1)   = .04E+2                                                  P3600680
      OOYVS = RVY1S(1) ** (WA22S(1,2)-5.0+TX1S(3)) -13.0 + WAZ2S(1,2)      P3600690
      WAZ2S(2,1) = TX2S(2,2)**(WA22S(1,2)-5.0+TX1S(3))-13.0+WA22S(1,2)     P3600700
      WRITE (JB2VI,3602) MX1I(3), MX1I(1), NZ2I(1,1), OOYVS                P3600710
      WRITE(JB2VI,7367) MX2I(1,1), IAXVI     , N22I(1,1), WAZ2S(2,1)       P3600720
3602  FORMAT (//34H  ANSWERS BELOW SHOULO BE 0 OR 0.0//                    P3600730
     1       3(I6/) , F8.1)                                                P3600740
C*****    USE ITEMS IN ARITHMETIC IF STATEMENTS                   7.1.2.2P3600750
      IF (WA22S(1,2)) 3603,3604,3604                                       P3600760
3603  IF (MX1I(2)) 3604,3605,3604                                          P3600770
3605  IF (TX2S(2,2) + CCYVS ** N21I(4) + TX1S(3)) 3604, 3604, 3606         P3600780
3604  WRITE (JB2VI,3607)                                                   P3600790
3607  FORMAT (//22H  ARITHMETIC IF FAILEO)                                 P3600800
      GO TO 3609                                                           P3600810
3606  WRITE (JB2VI,3608)                                                   P3600820
3608  FORMAT (//26H  ARITHMETIC IF SUCCESSFUL)                             P3600830
C*****    USE ITEMS IN OO LOOP                                    7.1.2.8P3600840
3609  OO 7360 JYVI = 1,N2VI,1                                              P3600850
      TX1S(3) = TX1S(3) + 1.0                                              P3600860
7360  CONTINUE                                                             P3600870
      WRITE (JB2VI,7361) TX1S(3)                                           P3600880
7361  FORMAT (//29H  ANSWER BELOW SHOULO BE 13.0// F8.1)                   P3600890
C*****    USE ITEM IN COMPUTEO GO TO                          7.1.2.1.3P3600900
      GO TO (7362,7362,7364), N2VI                                         P3600910
7362  WRITE (JB2VI,7363)                                                   P3600920
7363  FORMAT (//23H  COMPUTEO GO TO FAILEO)                                P3600930
      GO TO 7366                                                           P3600940
7364  WRITE (JB2VI,7365)                                                   P3600950
7365  FORMAT (//27H  COMPUTED GO TO SUCCESSFUL)                            P3600960
7367  FORMAT (3(I6/), F8.1)                                                P3600970
7366  CONTINUE                                                             P3600980
C*****  TEST EQUIVALENCE EXTENOS COMMON                                    P3600990
C*****  ARRAYS- NNY3I(20,10,2) EQUIVALENCEO TO ARRAY MMY1I(400) WHICH ISP3601000
C*****  EQUIVALENCEO TO THE 10TH STORAGE LOCATION IN BLANK    7.2.1.4/29P3601010
C*****  COMMON (N21I(1))                                                   P3601020
      WRITE (NUVI, 8366)                                                   P3601030
8366  FORMAT (34H0  TEST EQUIVALENCE EXTENOS COMMON )                      P3601040
      OO 7368  IVI = 1, 400                                                P3601050
7368  MMY1I(IVI) = IVI                                                     P3601060
      IVI = 0                                                              P3601070
      DO 7369 LVI = 1, 2                                                   P3601080
      OO 7369 KVI = 1, 10                                                  P3601090
      OO 7369 JVI = 1, 20                                                  P3601100
      IF(NNY3I(JVI,KVI,LVI)-(JVI+20*(KVI+10*LVI) - 220))7369,8360,7369     P3601110
8360  IVI = IVI + 1                                                        P3601120
7369  CONTINUE                                                             P3601130
      IF (IVI - 400) 8363, 8361, 8363                                      P3601140
8363  WRITE (NUVI, 8364)                                                   P3601150
8364  FORMAT(13H0 TEST FAILED )                                            P3601160
```

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      GO TO 8365                                                        P3601170
8361  WRITE (NUVI, 8362)                                                P3601180
8362  FORMAT(17H0 TEST SUCCESSFUL )                                     P3601190
8365  CONTINUE                                                          P3601200
C*****    END OF TEST SEGMENT 360                                       P3601210
C*****  WHEN EXECUTING ONLY SEGMENT 360, THE  STOP  AND  END  CARDS     P3601220
C*****  WHICH APPEAR AS COMMENT CARDS MUST HAVE THE  C=                 P3601230
C*****  IN COLUMNS  1  AND  2  REMOVED.                                 P3601240
C=    STOP 77777                                                        P3601250
C=    END                                                               P3601260
      STOP 77777                                                        P360C1
      END                                                               P360C2
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15. SUPPLEMENTARY NOTES
Volumes 1, 2, and 3 contain the documentation, Version 1 program listing, Version 3 program listing, respectively. The magnetic tape containing the NBS FORTRAN Test Programs is available in 7-track BCD, 9-track ASCII or EBCDIC recording.

16. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)*

The NBS FORTRAN test programs, written in Standard FORTRAN, are designed to test whether a FORTRAN compiler accepts the forms and interpretations of the FORTRAN language as described in the American National Standard FORTRAN document X3.9-1966. The test programs, comprised of 116 test units, are structured into two versions, each containing approximately 14,500 punch card images. The test units may be used as separate executable FORTRAN programs, or may be linked end to end with other test units, with a minimum of user effort, to improve operating efficiency. Version 1 is structured into 116 executable FORTRAN programs, and Version 3, containing the same 116 test units, is structured into 14 executable FORTRAN programs for use on large FORTRAN processors.

The test program design criteria was to:

- Constrain all test programs to the FORTRAN Standard X3.9-1966.
- Reduce the effect of those areas in which the FORTRAN Standard does not prescribe a method or solution, e.g., range, precision, size of computer, etc.
- Simplify the use of the FORTRAN test programs.
- Test FORTRAN language elements before they are used in support of other tests.
- Maintain an open ended system so that tests may be changed or added.

The test programs require the use of a card reader, printer and one intermediate tape unit.

17. KEY WORDS *(six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons)*

Computer Programming language; FORTRAN; FORTRAN validation; language validation; standard FORTRAN; test program design.

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