AUTHORIZATION FOR MILITARY PROCUREMENT, RESEARCH AND DEVELOPMENT, FISCAL YEAR 1971, AND RESERVE STRENGTH

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

NINETY-FIRST CONGRESS

SECOND SESSION

ON

S. 3367 and H.R. 17123

TO AUTHORIZE APPROPRIATIONS DURING THE FISCAL YEAR 1971 FOR PROCUREMENT OF AIRCRAFT, MISSILES, NAVAL VESSELS, AND TRACKED COMBAT VEHICLES, RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR THE ARMED FORCES, AND TO PRESCRIBE THE AUTHORIZED PERSONNEL STRENGTH OF THE SELECTED RESERVE OF EACH RESERVE COMPONENT OF THE ARMED FORCES, AND FOR OTHER PURPOSES

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Printed for the use of the Committee on Armed Services

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This appendix relates to Independent Research and Development Hearings found in part 3, pages 1635 to 2064.

APPENDIX I

REPORT TO THE CONGRESS

Allowances For Independent Research And Development Costs In Negotiated Contracts--Issues And Alternatives

B-164972

Department of Defense

National Aeronautics and Space Administration

Atomic Energy Commission

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-164912

To the President of the Senate and the
Speaker of the House of Representatives

This is our report on the allowances for independent research and development costs in negotiated contracts--issues and alternatives. The report has Government-wide application but is based principally on a study we made in the Department of Defense, the National Aeronautics and Space Administration, and the Atomic Energy Commission.

Our study was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53); the Accounting and Auditing Act of 1950 (31 U.S.C. 67); and the authority of the Comptroller General to examine contractors' records, as set forth in contract clauses prescribed by the United States Code (10 U.S.C. 2313(b)).

Copies of this report are being sent to the Director, Bureau of the Budget; the Director, Office of Science and Technology; the Director, National Science Foundation; the Chairman, Federal Council for Science and Technology; the Secretary of Defense; the Administrator, National Aeronautics and Space Administration; and the Chairman, Atomic Energy Commission.

Comptroller General
of the United States

COMPTROLLER GENERAL'S REPORT TO THE CONGRESS

ALLOWANCES FOR INDEPENDENT RESEARCH AND DEVELOPMENT COSTS IN NEGOTIATED CONTRACTS--ISSUES AND ALTERNATIVES--Department of Defense, National Aeronautics and Space Administration, and Atomic Energy Commission B-164912

D I G E S T

WHY THE STUDY WAS MADE

The General Accounting Office (GAO) reported to the Congress in March 1967 on the need for improved control by the Department of Defense (DOD) and the National Aeronautics and Space Administration (NASA) over the costs of bidding and related technical efforts charged to Government contracts. Because of the continuing existence of this problem and the increasing cost to the Government for its participation in independent research and development (IR&D) programs, GAO conducted a study of IR&D and related technical efforts. Committees of the Congress have also raised questions as to the value of such programs to the Government.

BACKGROUND

IR&D is defined as that part of a contractor's total research and development (R&D) program which is not conducted under a direct contract but which is undertaken in areas at the discretion of the contractor. In certain cases a general agreement is negotiated with the Government establishing a dollar ceiling on the amount of IR&D which will be accepted. These negotiations normally are preceded by technical reviews by Government personnel of the planned IR&D. Under DOD and NASA policies, IR&D need not be directly related to current or prospective Government procurement. Under Atomic Energy Commission (AEC) policy, IR&D cost is allowed only to the extent that it benefits the contract work.

In establishing prices and profit margins for commercial products, a company includes a factor for its planned IR&D costs to the extent competitively feasible. However, Government contracting officers negotiating contract prices do not include as a profit factor the contractor's planned costs for IR&D. Instead, the Government shares the cost of IR&D, generally in proportion to the contractor's sales to the Government as compared to the contractor's total sales. Frequently special cost-sharing arrangements have been made. The agreed allowances represent the amount of IR&D which will be recognized as includable in overhead costs.

During 1968, major Government contractors spent about $1.39 billion for IR&D, bid and proposal, and other technical effort. The Government paid for more than half of this amount, almost entirely under DOD and NASA contracts.

In making its study at nine plant locations of seven different contractors and at several Government agencies, GAO identified a number of significant problem areas in the Government's participation in IR&D programs, many of which have been recognized for years but have not been resolved. GAO submitted a draft of its findings to the various agencies and contractors for review and comment and suggested that

--an interagency study be undertaken with a view toward establishment of a Government-wide policy on participation in contractors' IR&D costs (see p. 75),

--consideration be given to establishing a more systematic method of disseminating to Government personnel information on proposed projects contained in contractors' IR&D programs to avoid unnecessary duplication of effort (see p. 76),

--a study be undertaken to determine whether the Government should receive royalty-free license rights to inventions arising from IR&D (see p. 77), and

--uniform procedures be devised by DOD for administering IR&D costs (see p. 76).

In general the agencies concurred, but opposition was expressed by the Council of Defense and Space Industry Associations.

Subsequent to our study, legislation was enacted placing a limitation in the fiscal year 1970 Defense Procurement Authorization Act on the amount of IR&D, bid and proposal, and other technical effort costs to be allowed under negotiated Government contracts. Both the Senate and House Committees on Armed Services have planned hearings on the subject of IR&D and related costs.

MATTERS FOR CONSIDERATION BY THE CONGRESS

In conjunction with the planned hearings, GAO is making the following suggestions for consideration by the Congress.

1. No clear distinction can be made between IR&D and other independent technical efforts, such as bid and proposal efforts; and consequently, any agreed ceilings on IR&D negotiated by DOD or NASA can be avoided through description of an IR&D project under different terminology (see p. 61). Consequently, GAO suggests that all contractors' independent technical efforts, including IR&D, bid and proposal, and other technical efforts be considered as a single entity.

2. Unlike AEC and NASA, DOD has separate appropriations for procurement and for R&D activities, and DOD's share of contractors' IR&D costs generally is absorbed by the procurement appropriation without identification as IR&D (see p. 7). GAO suggests therefore that, if the Congress authorizes continuation of the present practice of allowing the inclusion of IR&D as an acceptable cost element in negotiated contracts, DOD be directed to break out and identify separately in its appropriation requests the amount estimated as required for this purpose.

3. The policies followed by DOD and NASA on acceptability of IR&D cost differ from those of AEC which allows IR&D costs as an element of overhead only to the extent that they provide a direct or indirect benefit to the contract work (see p. 17). GAO suggests that a policy be established by the Congress stating the extent to which, and under what circumstances, Government agencies should participate in the cost of contractors' independent technical efforts.

GAO has also identified several issues and alternatives which warrant consideration in determining the Government-wide policy on IR&D, as follows:

--whether or not the present practice of allowing IR&D as an acceptable overhead cost in negotiated contracts should be replaced by a system of:

(a) extending the use of direct R&D contracts to include those IR&D projects which the agency wishes to support fully or on a cost-sharing basis and thereby providing greater assurance that the desired work will be performed and that the Government will be entitled to information and royalty-free rights to any inventions arising therefrom, and

(b) authorizing an allowance for a stipulated percentage of the remainder of the contractor's total IR&D effort, irrespective of the source of funding, either as a profit factor or through acceptance as a recognized overhead cost as an incentive to contractors to continue technical efforts beyond those directly contracted with the Government.

--whether or not allowances to contractors for IR&D should be confined to projects that have a direct and apparent relationship to a specific function of the agency, and

--whether or not, if IR&D allowances by DOD and NASA are continued on the present basis and are not related directly to current or prospective Government procurement, financial support should be provided to companies with similar capabilities which do not hold Government contracts as a means of supporting and strengthening industrial technology.

CHAPTER 1

INTRODUCTION

The General Accounting Office (GAO) has made a study of the participation by major Government agencies in contractors' independent research and development (IR&D) programs. We initiated this study to obtain a better understanding of IR&D and related technical efforts and to identify the Government's management and review policies, procedures, and practices in this area. Our study did not include a detailed examination into the management or performance of IR&D.

Our attention had been drawn to IR&D in an earlier review of the costs of bidding and related technical efforts charged to Government contracts. In that review[1] we noted the size and other aspects of contractors' IR&D programs and became concerned as to the Government's participation in the costs and benefits. We were also aware of questions raised by various committees of the Congress on these matters.

On September 16, 1969, during discussions of an amendment offered by Senator William Proxmire to the bill (S. #2546) to authorize certain appropriations for the Department of Defense (DOD), the Chairman of the Senate Armed Services Committee stated that hearings on IR&D would be held in 1970 by his Committee. The amendment was subsequently revised, and, as included in section 403 of Public Law 91-121, provided in general that funds authorized by the act would not be available for payment of IR&D and related costs for any amount in excess of 93 percent of the amount contemplated for such purposes. We have also been informed

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[1] Report entitled "Review of Costs of Bidding and Related Technical Efforts Charged to Government Contracts--Department of Defense and National Aeronautics and Space Administration," B-133386, March 17, 1967.

that the House Armed Services Committee will probably hold hearings on IR&D and related costs. The background information contained in this report should provide assistance in preparation for such hearings. The scope of our study is described on page 79.

DEFINITION OF IR&D

IR&D is generally defined as that part of a contractor's total research and development program which is not performed pursuant to a direct contract, grant, or similar agreement and which is undertaken in areas at the discretion of the contractor. IR&D does not have to pertain to current or prospective Government procurement, and, generally, it is more relevant to the future business of the company than to current production.

IR&D is essentially a contractor initiated and managed program. The contractor is not obligated, therefore, to conduct the program as planned. The contractor is free to apply its resources to IR&D and related activities to the extent wished and to determine the mix of his work on Government and commercial-type items.

A portion of the costs of the IR&D effort is generally borne by Government agencies through the allowance of such costs as an indirect charge to contracts, grants, or similar agreements. Other independent technical and engineering activities of an organization, which are also allowable indirect costs such as those involved in developing contract bids and proposals, are often so similar to IR&D efforts that they are indistinguishable.

Although the costs of IR&D, bid and proposal (B&P), and related technical efforts are considered to be overhead items, Government agencies generally recognize IR&D costs, and to some extent B&P costs, as items requiring specific attention. Consequently, special methods--such as requiring the contractor to submit brochures describing planned programs, conducting technical evaluations of such planned programs, negotiating the extent of Government cost participation in advance of cost incurrence, and requiring cost sharing by the contractor--have been developed to determine the amount of IR&D which will be accepted for inclusion in the overhead.

EXTENT AND FUNDING
OF IR&D COSTS

During recent years the annual appropriations for research and development (R&D) for the Federal Government have approximated $16 billion. About $13 billion of this involves funds for DOD, the National Aeronautics and Space Administration (NASA), and the Atomic Energy Commission (AEC), for activities controlled directly by the agencies and performed either by their own forces or by external organizations under contractual arrangements.

Information recently reported by the National Science Foundation (NSF)[1] shows that funds expended for industrial R&D have been increasing. During the period from 1963 to 1967, total expenditures increased from $12.6 billion to $16.4 billion. Federal-financed R&D accounted for more than half of these expenditures, increasing from $7.3 billion in 1963 to $8.4 billion in 1967. However, the Federal share of such expenditures has been declining, from 58 percent in 1963 to 51 percent in 1967.

The NSF report shows that 57 percent of all 1967 industrial R&D was performed by two industries--aircraft and missiles, and electrical equipment and communication. These two industries together accounted for 80 percent of all Federal R&D funds used by industry during the year. The aircraft and missiles industry performed 81 percent of its R&D work with Federal funds, while the electrical equipment and communication industry performed 59 percent of its R&D work with Federal funds.

The Federal share of industry R&D is probably higher than reported. As pointed out in the NSF report:

> "*** data on company funds may be somewhat overstated because some firms reported as company funds, rather than Federal financing, overhead payments that were allowed on Federal contracts and used to finance a portion of company-initiated

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[1] Research and Development in Industry, 1967, NSF 69-12, No. 17, February 1969.

R&D projects (sometimes referred to as independent research and development)."

Our study was concerned principally with these overhead-financed R&D efforts performed by contractor organizations. For the year ending December 31, 1968, major Government contractors incurred costs of $1.39 billion for such effort--about $750 million for effort generally referred to as IR&D and about $640 million on B&P expense and other independent technical effort. More than half these costs were absorbed by the Government through overhead costs allocated to contracts. (See app. I.)

The bulk of the funds utilized by either AEC or NASA for contract operations comes from a single annual appropriation for the agency. Thus, in these agencies the same source of funds is used to pay either for R&D work performed under direct contract or for the agencies' share of the cost of contractors' IR&D work.

DOD, however, finances its contract operations from several appropriations. During fiscal year 1969 DOD was authorized to obligate about $27 billion from procurement appropriations and $23 billion from Operation and Maintenance appropriations compared to $8 billion from Research, Development, Test, and Evaluation appropriations.

Contracts, involving weapon systems that have been approved for production, generally are financed by the procurement appropriations whereas contracts or in-house projects involving R&D are financed by Research, Development, Test, and Evaluation appropriations. In addition, some procurement contracts are financed by Operation and Maintenance appropriations. Thus, the DOD share of IR&D and related costs, about $685 million in 1968, may be allocated to any of these appropriations, depending on the contracts under which the costs are absorbed.

EFFECT OF IR&D ON GOVERNMENT CONTRACT PRICES

In a free enterprise economy, the only method by which a company can recover IR&D cost is through the selling price of the company's products. Such recovery is never ensured, however, and generally can occur only when product prices are sufficiently low to be attractive to purchasers and sufficiently high to cover the seller's full costs of producing the item, including R&D expense.

Most customers are more concerned with the seller's price than they are with the seller's IR&D cost recovery problems. As a customer, the Government's interest in the seller's recovery of IR&D depends upon the nature of the purchases being made. Government purchases generally fall within three broad categories, as follows:

1. Purchases made in the open market for standard items available from any one of a number of qualified sources. The bulk of the Government's purchases, as measured by number of items but not dollar value, are made on this basis. The amount of IR&D, if any, included in the price of such purchases is not relevant to the transaction.

2. Purchases involving strictly governmental items which, although not available in the open market, are obtainable from a number of suppliers who can reasonably be expected to compete effectively on the basis of firm price quotations. In such cases the amount of IR&D included in the price is not relevant because of the competitive circumstances in which the price is established.

3. Procurement of strictly governmental items for which it is impractical to secure effective price competition. Items in this category involve a significant part of the Government's expenditures with its major contractors. Because the restraints of the competitive market are not present, the Government obtains and evaluates contractors' cost and pricing data in order to ascertain that the prices charged are fair and reasonable. The extent to which IR&D is

involved in this category of Government purchases is therefore significant to the Government.

CONTRACTORS' MOTIVATION TO PERFORM IR&D

Under an IR&D program, the contractor is free to decide whether to perform R&D in the area of military products or commercial items, which projects should be pursued within the selected area, and which and how much of his available resources will be made available for this effort as compared with all competing requirements.

Although IR&D programs increase the cost of operating a business, industry has a strong motive for undertaking this work. IR&D provides the advanced technical capabilities, concepts, and information needed to meet anticipated customer needs for new and improved products, and thereby helps to maintain the profitability of the business enterprise. Thus, IR&D may be useful in achieving full growth potential, creating new products, obtaining contracts for the development of new products, and identifying the needs for the conduct of R&D in technical areas where such effort will augment the firm's capability for acquiring new business.

BENEFITS TO GOVERNMENT FROM CONTRACTORS' IR&D

If a contractor's IR&D program costs are relatively large in amount and a substantial share of the costs is borne by the Government, it is likely that the Government will have obtained some knowledge of the content of the program. In many cases IR&D represents work undertaken by a contractor before award of a Government R&D contract. The contractor's performance of IR&D may, therefore, result in reduced costs to the Government because of exploratory work completed before the Government becomes committed to the execution of a formal contract.

The performance of IR&D by a company can also provide other benefits to the Government. The Defense Science

Board Task Group on Independent Research and Development,[1] in its report of February 1, 1967, to the Director of Defense Research and Engineering, summarized the benefits to the Government arising from IR&D as follows:

1. It provides a way to develop and demonstrate complete prototypes of technologically advanced hardware before a formally recognized military requirement exists.

2. It permits Defense contractors to develop the requisite technology for a known forthcoming military requirement.

3. It permits firms to upgrade the capabilities of important weapon systems.

4. It permits firms to convert technology into militarily useful capability. As a result of broad advances in technology stemming from IR&D, new capabilities become possible and often give birth to military requirements.

The task group report pointed out that these benefits were illustrated by case histories of selected IR&D projects submitted by 16 major contractors. These companies had been requested to submit 4 or 5 outstanding examples from the previous 3 years' IR&D effort that had resulted in significant benefits or payoff to DOD.

Other Government and industry organizations have expressed to us their views that the Government has benefited from contractors' IR&D programs. (See app. IV through X.) Our study, however, was not of sufficient depth to allow us to evaluate these statements or otherwise independently reach a conclusion as to the extent of Government benefits and their relationship to the costs of Government participation in contractors' IR&D programs.

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[1]Consisting of corporate officials of six major Defense contractors, one research firm, and one university.

CONTRACTORS' MANAGEMENT OF IR&D

We noted that all of the firms included in our study had developed detailed management controls concerning the budgeting and programming of IR&D work. The IR&D programs are reviewed and approved by top officials. Other significant management actions noted by us included the use of long-range plans which were supplemented by operating plans covering shorter periods, including detailed budgets and programs.

We did not test the various controls used by companies to ensure that program expenditures are made effectively, efficiently, and economically. On the basis of our observations, however, we believe that particular effort is made by the contractors to obtain successful results from their IR&D programs in order to enable their respective companies to be in a position to compete effectively for future business. (See app. II.)

During the course of our study we noted many areas of concern to both contractors and Government officials. Many of these problem areas had been recognized years ago but methods of overcoming them had not been developed.

Several of the contractors included in our study contend that IR&D is merely a normal cost of doing business and consequently should not be singled out for special consideration. Agency officials feel, however, that, where there is a lack of normal competitive restraints, IR&D must be subject to cost control (but not technical control) to preclude excessive charges to the Government.

In the following sections of this report, we are summarizing certain problem areas noted in our study.

CHAPTER 2

LACK OF OVERALL GOVERNMENT IR&D POLICY

In the absence of specific policy guidance from the Congress, the President, or the high-level policymaking organizations in the executive branch of the type discussed on page 29, each of the operating agencies, such as DOD, NASA, and AEC, has developed its own policy toward participation in contractors' IR&D costs on the basis of meeting its own needs. Consequently, differing policies, procedures, and practices have evolved.

EARLY IR&D POLICIES

Prior to World War II, most Government purchases were made on the basis of full and free competition and the Government was not concerned with the amount of IR&D or any other element of cost in the purchase price.

When the war began the Government started to procure items under contracts which provided that the Government reimburse the contractors for the costs of producing the items needed. As a result the Government became involved with the problem of determining contractors' costs. This led to the publication of principles applicable to the determination of costs under Government cost-reimbursement contracts. These principles provided that contractors' R&D costs be accepted in determining the costs of performing Government contract work.

On March 1, 1949, the first edition of the Armed Services Procurement Regulation (ASPR) was issued. ASPR restated the desirability of awarding Government contracts on the basis of formal advertising and provided for the use of negotiated contracts if certain prescribed conditions were present. ASPR also included the negotiated fixed-price contract as a Government procurement method and stated that this type of contract should be used by the military departments in negotiated procurements unless conditions necessitated the use of the less desirable cost-reimbursement

type of contract. By the late 1950's the negotiated fixed-price contract had become the predominant form of contracting for manufactured items purchased by DOD.

The cost principles contained in the new ASPR were applicable only to cost-reimbursement-type contracts. Under these principles, the costs of industrial R&D activities were allowable contract costs provided that these activities were related to the supplies or services covered by the contract. On the other hand, so-called general research was allowable only if the contract specifically stated that it was allowable. Under a negotiated fixed-price contract, the cost of any R&D effort required for contract performance could be included in the price proposed by the contractor.

The difference in the approach followed by the Government under fixed-price and cost-reimbursement contracts with respect to contractors' R&D activities created considerable confusion among contractors and DOD procurement personnel. This problem was further aggravated in the Sputnik era when there was a resurgence in cost-type contracting for building missile hardware and when there was a natural desire to further scientific activities. In this environment the current ASPR cost principle for IR&D was developed.

NASA was established about this time. Because of its involvement with the same industries as DOD, NASA decided, in the interest of uniformity, to base its procurement regulations on ASPR, including the ASPR cost principles for IR&D.

AEC, which was created by the Congress in 1946, generally followed the World War II cost principles for Government-owned, contractor-operated plants until December 1952. AEC then issued its own cost principles, and these provided that general research was unallowable unless it was specifically provided for in the contract. We were advised that, under AEC's definition, general research included IR&D activities. In 1960 AEC revised its cost principles to make it clear that, although it does not accept a general allocation of IR&D cost, reimbursement of IR&D cost may be provided for under the terms of the contract to the extent that such independently sponsored R&D benefits the the contract work. This policy continues in effect.

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PRESENT GOVERNMENT IR&D POLICIES

DOD published a general revision of the ASPR cost principles in November 1959, and military agencies were required to follow these after July 1, 1960. The general revision included a completely new section on IR&D costs. NASA adopted the new IR&D cost principle, and the General Services Administration included it in the Federal Procurement Regulations. Ordinarily all civilian agencies are required to follow the Federal Procurement Regulations, but, in an attempt to minimize disagreement, the General Services Administration made the use of the IR&D principle optional on the part of civilian agencies.

DOD-NASA policy

The DOD-developed cost principle (ASPR 15-205.35), which is applicable to all DOD and NASA contractors, is quoted below.[1]

> "(a) Basic research, for the purpose of this Part 2, is that type of research which is directed toward increase of knowledge in science. In such research, the primary aim of the investigator is a fuller knowledge or understanding of the subject under study, rather than any practical application thereof. Applied research, for the purpose of this Part 2, consists of that type of effort which (i) normally follows basic research, but may not be severable from the related basic research, (ii) attempts to determine and expand the potentialities of new scientific discoveries or improvements in technology, materials, processes, methods, devices, and techniques, and (iii) attempts to "advance the state of the art." Applied research does not include any such efforts when their principal aim is the design, development, or test of specific articles or

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[1] As discussed on page 27, DOD is considering revising the IR&D policy.

services to be offered for sale, which are within the definition of the term development as hereinafter provided.

"(b) Development is the systematic use of scientific knowledge which is directed toward the production of, or improvements in, useful products to meet specific performance requirements, but exclusive of manufacturing and production engineering.

"(c) A contractor's independent research and development is that research and development which is not sponsored by a contract, grant, or other arrangement.

"(d) A contractor's costs of independent research as defined in (a) and (c) above shall be allowable as indirect costs (subject to paragraph (h) below), provided they are allocated to all work of the contractor.

"(e) Costs of contractor's independent development, as defined in (b) and (c) above (subject to (h) below), are allowable to the extent that such development is related to the product lines for which the Government has contracts, provided the costs are reasonable in amount and are allocated as indirect costs to all work of the contractor on such product lines. In cases where a contractor's normal course of business does not involve production work, the cost of independent development is allowable to the extent that such development is related and allocated as an indirect cost to the field of effort of Government research and development contracts.

"(f) Independent research and development costs shall include an amount for the absorption of their appropriate share of indirect and administrative costs, unless the contractor, in accordance with his accounting practices

consistently applied, treats such costs otherwise.

"(g) Research and development costs (including amounts capitalized), regardless of their nature, which were incurred in accounting periods prior to the award of a particular contract, are unallowable except where allowable as precontract costs. (See 15-205.30.)

"(h) Reasonableness of expenditures is determined in light of all pertinent considerations such as previous contractor research and development activity, cost of past programs and changes in science and technology. Such expenditures should be pursuant to a broad planned program, which is reasonable in scope and well managed. Such expenditures (especially for development) should be scrutinized with great care in connection with contractors whose work is predominantly or substantially with the Government. Advance agreements as described in 15-107 are particularly important in this situation. In recognition that cost sharing of the contractor's independent research and development program may provide motivation for more efficient accomplishment of such program, it is desirable in some cases that the Government bear less than an allowable share of the total cost of the program. Under these circumstances, the following are among the approaches which may be used as the basis for agreement: (i) review of the contractor's proposed IR&D program and agreement to accept the allocable costs of specific projects; (ii) agreement on a maximum dollar limitation of costs, an allocable portion of which will be accepted by the Government; and (iii) an agreement to accept the allocable share of a percentage of the contractor's planned research and development program."

AEC policy

AEC's policy toward acceptance of IR&D costs differs from the DOD-NASA policy.

As stated in section 9-15.5010-12 of the AEC Contract Cost Principles and Procedures:

> "(a) AEC does not accept a general allocation of independent research and development costs. Such costs are considered unallowable except to the extent specifically set forth in the contract. Research and development costs may be made allowable only to the extent to which they provide a direct or indirect benefit to the contract work."

AEC estimates that about 80 percent of its contract work is with contractors which operate AEC-owned plants and laboratories on a cost-plus-a-fixed-fee basis. AEC not only owns the facilities but also provides the materials and advances of funds. The generation of new ideas through R&D is an integral part of the program which is completely financed by AEC. There is therefore no independent research and development performed by the contractor under an AEC operating contract, but the equivalent thereto is performed and fully funded as a part of the AEC program.

The remaining 20 percent of AEC business generally is with contractors which perform the contract work in their own facilities and without advances of Government funds. In addition, the contractors which operate the AEC-owned plants and laboratories subcontract some work to industrial firms. These subcontractors, as well as the prime contractors which perform work in their own facilities, frequently are engaged in contract work also with DOD or NASA. AEC accepts a limited amount of IR&D costs incurred by these firms.

Differences between AEC and DOD-NASA policies

The AEC policy toward the IR&D costs incurred by independent firms and subcontractors differs from the policy

that has been followed by DOD and NASA in these major respects:

1. The contractor's entire IR&D program is not submitted to, or evaluated by, AEC for reasonableness. Rather, the contractor submits individual projects for evaluation. The costs of these projects are accepted for allocation only when AEC establishes that the projects individually benefit, either directly or indirectly, existing AEC contract work.

   DOD and NASA, on the other hand, generally have negotiated agreements with companies conducting large IR&D programs, specifying the maximum amount of costs which will be considered to be reasonable. To facilitate such negotiations, DOD and NASA may (a) request a contractor to submit a brochure describing its entire planned IR&D program and (b) perform technical evaluations of the contractor's IR&D program. The negotiated amount of the program that DOD and NASA consider reasonable for allocation is based on the entire program rather than on a project-by-project determination of acceptability.

2. The AEC regulation specifically describes the nature of unallowable projects. For example, individual IR&D projects are not accepted when (a) they are primarily of a promotional nature, such as projects directed toward the development of new business or projects connected with proposals for new business, (b) they are studies or projects which are, in fact, undertaken, in whole or in part, for other customers, and (c) they duplicate R&D work that AEC has sponsored.

   ASPR stipulates that acceptable independent development projects must be related to product lines for which the Government has contracts. Because of the broad involvement of DOD in practically all aspects of the economy, however, very few independent development projects have been determined to be unallowable under this provision.

N.B.:

3. When the cost of the work involved in segregating the IR&D which benefits the contract work is disproportionate to the amount involved, a flat amount not exceeding either 5 percent of the contractor's total estimated IR&D costs or 5 percent of the total estimated direct labor and material under the contract may be negotiated by AEC. The current ASPR does not provide for any fixed limitations on IR&D cost.

4. AEC requires that the costs of IR&D, whether or not accepted as allowable, must include an amount for the related indirect and administrative costs, regardless of the contractor's accounting practices.

   The current ASPR provides that an appropriate amount of indirect and administrative costs be allocated to IR&D costs, unless the contractor's policy is to treat such costs otherwise.

5. When AEC is the predominant customer, special consideration is given to whether IR&D should be performed as part of the contract work. This is done to avoid the apportionment to AEC of most, if not all, of IR&D costs over which AEC would have no direct control. This approach is not followed by DOD and NASA.

The additional amount that would be paid by the Government for IR&D under the DOD-NASA policy over that which would be paid under the AEC policy in the same circumstances is not known. AEC advised us in June 1968, however, that a recently completed study indicated that, for 77 contracts with contract costs aggregating about $150 million, AEC had allowed about $2.1 million for IR&D, or 1.4 percent of the contract costs. AEC estimates that, had DOD principles been applied, 2.15 percent of the contract costs would have been reimbursed for IR&D.

We were informed that AEC had developed its own cost principle for IR&D because its activities, which are primarily oriented to research in the broad field of nuclear energy, dictated adoption of a principle that recognized

that AEC would be paying directly for most research which benefited its work.

Although DOD and NASA conduct a large amount of research in their own laboratories and contract for specific R&D projects, they utilize the IR&D activities of private industry to assist them in planning for future development programs. AEC, on the other hand, feels that it can acquire sufficient expertise in its limited field through its contracts with laboratories, universities, and industrial firms to determine the nature of its future programs and consequently is willing to pay for only an allocable share of IR&D that it considers beneficial to its contract work.

OTHER SUGGESTED IR&D POLICIES

Other approaches for determining the extent and method of participation by the Government in IR&D costs have been suggested or considered in the past, which are summarized below.

Using industrywide averages

In the early 1960's DOD developed a plan involving the use of average annual expenditures of contractors in a specific segment of industry as a basis for determining the reasonableness of proposed IR&D expenditures of contractors in that segment.

Development of such industrywide averages would have required that contractors submit actual cost information on prior IR&D programs. After verification of the cost information by audit, a range of reasonableness would have had to be established for each specific industry. When this plan was submitted to industry for comment, various objections were stated, the main one being that an industrywide average for IR&D would reduce all contractors in that segment of industry to commonality. Also it was contended that this plan would create changes in contractors' accounting classifications for IR&D and that the initial cost of developing the necessary data would be prohibitive.

The plan was acceptable to NASA, but was objected to by AEC because the plan did not require a clear showing of benefits to the contract work as a basis for determining acceptable costs. DOD finally decided that it would not be realistic to adopt this plan because of the peculiarities associated with each contractor and the substantial amount of effort needed to accumulate and verify the cost data for each contractor.

Requiring advance agreement covering all independent technical effort

The contractor's independent technical effort (CITE) approach was given a substantial amount of attention by DOD from 1964 to 1966. This approach would have combined IR&D

cost with B&P and other technical effort costs, using the same cost-limiting techniques that are now applied to IR&D costs. It was believed that, by treating all technical effort in this manner, DOD would eliminate the definitional problem which existed among IR&D and other forms of independent technical effort, as discussed on page 61.

Other aspects of the CITE proposal involved procedures for determining the reasonableness of CITE costs. The proposal provided that, if a contractor had a contractor weighted-average share (CWAS)[1] rating of at least 65, all of its CITE cost would be considered reasonable. If a contractor did not have a CWAS rating of at least 65, its CITE costs would be considered reasonable if the total was not in excess of its average annual incurred CITE costs for the preceding 3 years. Such averages were to be determined by using direct cost plus appropriate overhead exclusive of G&A expenses.

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[1] The CWAS concept relates the Government's administrative effort in determining cost reasonableness to the degree of cost risk assumed by the contractor. Analysis is made of the contractor's sales, and a risk factor is assigned to each of its current contracts. For example, commercial work and firm fixed-price competitively awarded contracts have an assigned risk factor of 100, whereas a cost-plus-a-fixed fee production contract has an assigned risk factor of zero. In determining a contractor's CWAS rating, the factors assigned to each contract are tabulated and averaged. This average is the CWAS rating.

If the contractor elects the CWAS method and if its CWAS rating is 65 or higher, the Government will not question the reasonableness of its costs provided that 35 percent of its business is composed of competitively awarded firm fixed-price Government contracts or commercial sales. If the CWAS rating is between 50 and 65, the Government has the option of applying CWAS or applying standard cost evaluation techniques. The CWAS concept has been applied to most overhead items, including B&P expenses, but has not previously been applied to IR&D.

The CITE proposal was rejected in 1966 when the Secretary of Defense decided that, although there was similarity in IR&D, B&P, and other independent technical effort, the costs therefor were incurred for different reasons and thus should not be combined. It was felt that the portion of B&P effort made in direct response to DOD requests was not completely controllable by the contractor and that therefore the B&P costs should not be combined with costs entirely subject to the contractor's decisions.

Providing direct contract support

In lieu of participating in the cost of a contractor's IR&D program, consideration has been given to the Government's providing direct support on a contract basis for specific R&D projects. A study group formed in 1962 by the Deputy Assistant Secretary of Defense (Procurement) objected to this approach, and commenting primarily, as follows:

> "Those who favor this method as a substitute for an independent research and development program claim that it would eliminate what is believed to be excessive duplication of effort and a consequent waste of resources throughout the Country. It is true that there exists much apparent duplication; the case has not been made, however, that this is undesirable. The resulting competition for technical achievement, the preparation for competitive bidding, and the speed and diversity of the exploitation of technical opportunities have contributed enormously to the strength of American industry. Probably the most powerful safeguard against unwarranted duplication of effort lies in the encouragement of communications within the technical community, either informally or through publication.
>
> "The primary objection to this method is probably that the Government is not capable through central planning of achieving results comparable with those obtained through the operating of the free enterprise system. Hence the method would either be administratively unworkable or would be replaced in practice by a more limited

> independent research and development program the cost of which would not be allowed by the Government."

While these comments merit consideration, we believe there also would be benefits arising from providing direct contract support for specific R&D projects, such as greater assurance that projects of significant interest to the Government would actually be performed and that the Government would receive data and a royalty-free license to any invention arising from the work.

Treating IR&D as a profit factor.

Another approach that has been suggested for determining the appropriate amount of IR&D for Government participation is to eliminate allowance of IR&D cost as an acceptable contract cost and, instead, to include it as an element of the contractor's profit. The study group formed by DOD in September 1962 to examine into the problem of reimbursement of IR&D costs commented on this approach, among others. More recently--in February 1967--the Assistant Secretaries of the Air Force for Research and Development and for Installations and Logistics also referred to this approach as an ideal long-term solution.

Arguments made by these Air Force officials in favor of this approach emphasized that its adoption would help ensure that contractors manage IR&D programs:

> "*** with the same concern for economy as they would have if they were in a business characterized by price competition. ***. This would go far toward assuring that unsponsored R&D was in fact of a nature which the company considered promising, and toward preventing the build-up or retention of unproductive engineering personnel and effort."

The DOD study group contended that inclusion of IR&D as an element of profit would minimize the amount of administrative effort required by the Government. However, the DOD study group expressed objections with respect to the suggestion that IR&D be treated as a profit factor rather than as an allowable cost, as follows:

1. There might be a tendency to apply the same profit factor for IR&D to all contractors. This would be inappropriate because of the varying degrees of participation in R&D work in different industries and firms. If, on the other hand, a study were made to determine the proper fee, the situation would be similar to the current cost determination.

2. It would be necessary to increase the rate of profit to cover the agreed amount of IR&D. However, there is no guarantee that Government negotiators will apply a fee allowance equitably. Furthermore the increase in profit rates on cost-plus-a-fixed-fee contracts might raise the profit rate beyond the statutory limits. This, in turn, would necessitate obtaining congressional authorization which might be difficult.

3. The increase in "profits" due to inclusion of a factor for IR&D might be subject to adjustment by the Renegotiation Board even though this factor, in effect, represents costs reclassified as a profit element.

4. Allowance of IR&D costs as a profit element would deprive the Government of assurance that the contractor actually would continue to perform IR&D. Under the current system, if the contractor did not incur IR&D costs, the Government reimbursements would be reduced. However, profit rates, once established, might not be subject to adjustment due to reduction or discontinuance of the IR&D efforts.

5. Because of the complexity of accounting systems and accounting codes used in industry, it might be possible for a contractor to obtain reimbursement for IR&D-type costs even though the profit rate had been increased to cover such costs.

6. Industry was reported to be opposed to this proposed change in policy.

In our opinion these objections are not insurmountable and many, in fact, would be equally applicable to other controversial items which are considered in negotiating contract prices.

For example, ASPR 3-808.4 sets out numerous profit factors with varying weight ranges, which are to be considered in negotiating profit rates. Many of these factors are highly judgmental, and it seems that the reported possibility that the same profit factor might be applied to all contractors or that a fee allowance might not be equitable, could be advanced for a number of these factors such as "difficulty of contract task" or "inventive and developmental contribution."

Although it is possible that the inclusion of IR&D as a profit factor might result in increasing the rate of profit or fee beyond statutory limits, or might lead to adjustment of the contractor's profit by the Renegotiation Board, these do not appear to be valid reasons for continuing to classify IR&D as a cost item rather than a profit factor. The extent to which a contractor decides to devote funds to building up capability for future business for the company is entirely within the control of the contractor and logically could be argued as representing an allocation of profits rather than an item of current expense.

Similarly, the contention that profit rates, once established, might not be subject to adjustment due to reduction or discontinuance of the IR&D efforts does not appear convincing. It seems that a contractual provision covering this matter could be required as part of the contract negotiations.

The possibility does exist, as contended, that, because of the complexity of accounting systems and accounting codes used in industry, a contractor might obtain reimbursement for IR&D-type costs even though the profit rate had been increased to cover such costs. However, the possibility of incorrect classification also exists for other types of costs as pointed out on page 61. Appropriate monitoring by the agency contract auditors and the development of uniform cost accounting standards, as recommended in our report to the Congress, B-39995(1), January 1970, would help to resolve this possibility.

Finally, the fact that industry is opposed to the inclusion of IR&D as a profit factor does not seem to warrant rejection of this change in approach. Although the objectives of industry and the Government may be mutual in many respects, they obviously could differ in profit determinations.

PROPOSED ASPR REVISION
OF IR&D POLICY

In January 1968 DOD released two proposed revisions of ASPR to Government agencies and industry associations for comment. These proposed revisions were the culmination of extensive efforts over a period of years to overcome the problems[1] of negotiating and administering IR&D and B&P.

Our evaluation of the proposed revisions indicated that some of those problems would be alleviated by adoption of the revisions. A summary of the revisions proposed in January 1968 and our evaluation thereof are contained in appendix III.

In February 1969 DOD officials informed us that the comments received from Government agencies and industry had been considered and that a number of significant changes have been made. Two new proposed ASPR revisions were circulated for comments. DOD had not taken action to implement the proposed revisions by the end of November 1969, and we understand that no action to implement them is planned, at least not during fiscal year 1970.

The major changes in IR&D and B&P policy involved in the latest proposed ASPR revisions are as follows:

1. The definition of IR&D would be broadened to include additional technical effort, such as systems and feasibility studies.

2. The IR&D and B&P of all contractors, regardless of their size, would be subject to a formula for determining reasonableness of expenditures, except when CWAS applies. The formula would be applied separately to IR&D and B&P and would result in a cost ceiling for each. However, either IR&D or B&P expenditures could be increased, at the contractor's option, provided that the other was decreased so that the sum of the two ceilings would not be exceeded. Where it was considered that the formula determination of

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[1]These problems are discussed in chapter 5, pp. 50 to 70.

reasonableness would not provide acceptable results, the contractor or Government contracting officer would be allowed to appeal. DOD officials expect that the contractors' appeals would be favorably considered in only the most extenuating circumstances.

3. IR&D and B&P would be burdened with applicable overhead cost in the same manner as would projects under contract, except that G&A expenses would not be included.

4. In unusual cases when application of the ASPR provision would be inequitable, IR&D costs could be deferred until later periods for possible recovery in the prices of products sold to the Government, if approved on a case-by-case basis by the head of a procuring activity.

5. There would not be a requirement, although stipulated in the current ASPR, that reasonableness of a contractor's independent development costs be contingent upon their being incurred on effort related to the contractor's product lines for which the Government has contracts.

6. As the reasonableness of a contractor's IR&D costs would generally be determined by application of a formula, the provision in the current ASPR that reasonableness may be determined through the negotiation of advance agreements would be eliminated.

Evaluation of proposed revisions

Although the proposed revisions to the ASPR covering IR&D and B&P, if adopted, probably would alleviate some of the problems that have existed for several years, it appeared to us that the proposed revisions would result in increased Government costs and decreased Government awareness of the value of programs it was substantially funding. We therefore suggested that the proposed revisions not be implemented.

AGENCIES HAVING OVERALL RESPONSIBILITY

High-level organizations within the executive branch of the Government, other than DOD, NASA and AEC, that appear to have some degree of responsibility for establishing Government-wide policy in this area have attempted to develop uniform cost principles for IR&D but have not recommended policies as to the Government's role with respect to participation in IR&D activities.

The Office of Science and Technology (OST), for example, is responsible for recommending coordinated Federal policies in the R&D area and for evaluating R&D programs undertaken by agencies of the Federal Government. Although the policymaking responsibilities of this organization toward IR&D are not specifically prescribed, we were told that IR&D was within OST's jurisdiction. We were also advised that OST had not made studies nor recommended policies relating to the Government's role with respect to IR&D but had worked closely with the Bureau of the Budget (BOB) and other Government agencies in 1962 and 1963 in an effort to develop uniform cost principles, including cost principles for IR&D.

BOB is responsible not only for preparing the Government's annual budget and controlling its administration but also for helping to bring about more efficient and economical conduct of Government service. As mentioned above, BOB has, in the past, attempted to develop uniform principles for contractors costs, including costs for IR&D.

NSF has as one of its responsibilities the development and encouragement of the pursuit of a national policy for the promotion of basic research and education in science. We were told by an official of NSF that IR&D was a matter of concern within NSF's overall responsibility for policy formulation but that it had not reviewed this area. The Director of NSF subsequently informed us that, as NSF had no direct experience in examining into commercial IR&D and related problems, it seemed that its role ought to be one of commenting on policy proposals rather than developing them.

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CONCLUSIONS

Although individual Government agencies have developed their own principles for accepting some portion of contractors' IR&D program costs, there has been no attempt to develop a Government-wide policy based upon total national interests and needs. We believe that an overall Government policy should be developed providing guidance as to the extent to which and under what circumstances Government agencies should participate in contractors' IR&D costs.

On September 16, 1969, the Chairman of the Senate Committee on Armed Services announced on the floor of the Senate that his Committee intended to hold hearings on a bill (S. 3003, referred to the Committee on October 8, 1969) to revise DOD's policy on IR&D and related costs. In addition, the House Committee on Armed Services also intends to hold hearings on the subject of IR&D and related costs. These hearings are expected to take place in February 1970.

In conjunction with these hearings, we are making the following suggestions for consideration by the Congress.

1. That all of a contractor's independent technical efforts, including IR&D, bid and proposal, and other technical efforts, be considered as a single entity in determining the amount to be accepted.

   As shown on p. 61, these several categories of independent technical effort are so similar that they are indistinguishable from each other. Consequently, a ceiling on IR&D, for example, can be avoided through description of an IR&D project under different terminology.

2. That, if the Congress authorizes continuation of the present practice of allowing the inclusion of IR&D as an acceptable cost element in negotiated contracts, DOD be directed to identify separately in its appropriation requests the amount estimated to be required for this purpose.

   As shown on p. 7, both AEC and NASA have single annual appropriations for their contract operations and, therefore, these appropriations provide the source of funds for R&D work performed under direct contract or for the agencies' share of the costs of contractors' IR&D work. However, DOD finances its contracts from several appropriations. Generally, production contracts, which absorb the bulk of IR&D charges, are financed by procurement appropriations, whereas R&D contracts are financed by R&D appropriations. A more complete disclosure of total R&D work would be provided if the amount estimated for IR&D was also identified for the Congress.

3. That a policy be established by the Congress showing the extent to which, and under what circumstances, Government agencies should participate in the cost of IR&D.

As stated previously, differing policies, procedures, and practices are being followed by the operating agencies. (See p. 12.)

We believe that the following issues and alternatives warrant consideration in determining the Government-wide policy on IR&D.

1. Whether the present practice of allowing IR&D as an acceptable overhead cost in negotiated contracts should be continued or whether it should be changed to provide for--

   (a) extending the use of direct R&D contracts to include those IR&D projects which the agency wishes to support fully or on a cost-sharing basis.

   A contractor is not obligated to carry out a planned IR&D project. Consequently, there would be greater assurance that projects of significant interest to the agency would be performed if contracted for. Furthermore, the Government would be entitled to receive data as well as a royalty-free license to any invention arising under the work if performed under a direct R&D contract.

   (b) authorizing an allowance for a specified percentage of the remainder of the contractor's total IR&D effort, irrespective of the source of funding, as an incentive to contractors to continue technical efforts beyond those directly contracted with the Government. Such allowance could be provided either as an additional profit factor or through acceptance as a recognized overhead cost.

2. Whether or not the allowances to contractors for IR&D should be restricted to projects that have a direct and apparent relationship to a specific function of the agency.

   Under the present practice followed by DOD and NASA, costs of a contractor's independent development effort for diversifying into fields not directly related to the agency's mission may be acceptable. (See p. 67.)

3. Whether or not, if IR&D allowances by DOD and NASA are continued on the present basis and are not related directly to current or prospective Government procurement, financial support should be provided to companies with similar capabilities, which do not hold Government contracts.

   One of the arguments for continuation of Government participation in IR&D is the strengthening of industrial technology. Extending such support to other technically capable companies which do not hold Government contracts may lead to an increase in the quality of such technology and enable greater competition for future Government procurement.

CHAPTER 3

NEED FOR CLOSER RELATIONSHIP OF GOVERNMENT R&D EFFORTS AND IR&D

The House Appropriations Committee in its report on DOD Appropriation Hearings for 1967 expressed concern as to whether the R&D activities of DOD were appropriately integrated with the work being performed under contractors' IR&D. In other words, were steps being taken to avoid unnecessary duplication of effort?[1]

In response to the Committee's concern, the Director, Defense Research and Engineering (DDR&E), requested that the Defense Science Board undertake a study into the adequacy of communication of IR&D efforts and obtain examples of benefits of IR&D. In reply, the Defense Science Board reported in February 1967 "that the interchange of information between DOD and industry is very good at the working level but could be improved at the management level." The Board recommended that a policy be established for voluntary submission of examples of beneficial results of IR&D from industry to DOD. The recommendation was adopted by DOD and arrangements were made for an annual report of such beneficial results.

Although information concerning the beneficial results of IR&D may be helpful at the management level in justification of the need to support IR&D, it does not appear that such information would be useful in precluding unnecessary duplication of effort. In view of the lengthy period that may be involved from the inception of an IR&D project to the evidencing of benefits from the project, it appears unlikely that the disclosure of such benefits would serve to preclude duplication. Furthermore, such reporting would be limited to cases submitted voluntarily and probably would not include unsuccessful IR&D projects.

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[1] As distinguished from duplication of effort undertaken deliberately and knowingly to provide parallel approaches to a solution.

We note that contractors are generally informed of DOD's needs through such media as agency-sponsored advanced-planning briefings and the publication of various documents which describe DOD's needs in specific technical areas. For example, the Air Force prepares technical objective documents which describe for each Air Force laboratory the projects the Air Force is presently interested in, the state of the art in the area, and the areas in which the Air Force believes further work is warranted.

Contractors' representatives also advised us that they make frequent visits to DOD laboratories to inform the laboratories of contractor capabilities. Evidence of a contractor's competence is also obtained by the Government from various proposals the contractor submits.

We noted also that the military services use other means to keep informed of contractors' abilities. For example, the Air Force has scientific and technical liaison officers whose primary function is to maintain liaison between Government laboratories and contractors. The Air Force also performed technology reviews at the plants of 16 major defense contractors within the 4-year period from 1964 to 1967. These reviews were initiated at the contractors' requests to provide Air Force scientific and technical personnel the opportunity to directly observe the contractors' laboratories, facilities, programs, and capabilities. Air Force regulations state that during these reviews emphasis is placed on the informal exchange of scientific and technical information.

Although the informal communication between agency and contractor personnel should be helpful in avoiding unnecessary duplication of effort, it appears that a more systematic method of disseminating information on the content of contractors' IR&D programs may be warranted.

CONTRACTORS' BROCHURES

At the time of our study, contractors' IR&D programs were generally being presented in brochures for evaluation by technical representatives of the designated military service.

If the contractor submits a brochure covering its IR&D program, DOD requires that the brochure be prepared in accordance with instructions prepared by DOD and approved by BOB. NASA follows this procedure also. AEC on the other hand does not require a brochure. Instead, AEC requires the contractor to submit for evaluation information on those individual projects which the contractor considers to be of benefit to AEC contract work and which, consequently, may warrant cost acceptance by AEC.

DOD brochure instructions require the contractor to classify each of its projects as to independent research or independent development and to furnish considerable data. For example, the contractor is required to furnish a statement comparing past, present, and future IR&D program costs; to state whether the costs include overhead; to furnish a statement relating the independent development efforts to the product lines for which the firm has contracts; to provide the position classifications of personnel, who are responsible for each project, along with their educational and experience background; and to provide the cognizant military service any additional requested information about specific projects.

The number of projects contained in the brochures of the contractors included in our study varied from about 40 to about 400.

We were informed by DOD officials that, when the requirement to submit brochures was first put into effect, there was some objection from industry because this type of information was not available. According to these officials, however, the brochure requirement forced industry to improve its planning for IR&D, and the brochure now is used as a management tool by industry as well as for providing available information to DOD.

TECHNICAL EVALUATIONS

In June 1960 DOD established the Armed Services Research Specialists Committee (ASRSC) for the purpose of performing technical evaluations of contractors IR&D projects. ASRSC originally included a scientific and technical representative from each of the military services and from DDR&E; the DDR&E representative acted as the chairman. At the time of our study, DDR&E no longer had a member assigned to ASRSC and the chairmanship was on a rotating basis. NASA has recently been granted membership in ASRSC and provides technical evaluations supported by plant discussions and reviews of contractors' programs when needed.

According to DOD instructions, the objectives of a technical evaluation are to determine whether the contractor has maintained a proper segregation of independent research projects from independent development projects and has furnished to the cognizant agency reports and recommendations as to the scientific and technical factors affecting the basis for supporting such programs and the extent of this support.

The technical evaluation process starts with the receipt by ASRSC of the negotiator's request for an evaluation and the contractor's brochure. The latter is disseminated to the DOD laboratories and NASA centers selected to participate in the evaluation. We have been informed that the laboratories or centers selected ordinarily will be those with competence in technological areas which are prominent in the contractor's IR&D program. Representatives of each laboratory or center prepare a report on their evaluation efforts, and an ASRSC member prepares a consolidated report therefrom. The consolidated report is then forwarded to the negotiator by ASRSC for consideration in negotiating for an advance agreement with the contractor.

During our study we inquired into whether technical evaluations could be expected to result in any future ancillary benefits to either DOD or the contractor. DOD technical personnel claimed various ancillary benefits arising from the evaluations. We were told that technical evaluations give contractors an opportunity to illustrate their

technical competence in specific fields and give DOD representatives an opportunity to learn about the contractors' abilities.

DOD technical personnel claimed also that, as a result of a technical evaluation, the contractor may become informed of the Government's needs in certain technical areas. We were told that the contractor is thereby enabled to redirect its efforts to meet these needs and to curtail or deemphasize projects not warranting continued support. We were told also that technical evaluations are of value in integrating Government R&D efforts with IR&D programs.

The procedures being followed in making the technical evaluations varied. They might involve field visits to the contractor's location by selected representatives of interested Government laboratories. Such visits generally were brief and did not cover all of the projects included in the contractor's brochure; instead they were limited to selected projects. In some cases, the evaluations might be limited to reviews of the brochures without a field visit.

We were informed that one of the benefits derived from the technical evaluations is the avoidance of unnecessary duplication of effort. An Army representative told us that, if he found that the contractor's IR&D program duplicated work being done by the Army laboratories, he might redirect the Government work.[1] He pointed out, however, that he would not be in a position to know of, or redirect, work being done by the Navy or Air Force.

Army laboratory personnel that we contacted stated that they were aware of only one case in which laboratory work had been specifically redirected because of a contractor's IR&D studies. We noted that Army laboratory personnel who perform technical evaluations were required to report all such cases to the Army ASRSC member. Similar requirements

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[1] It should be noted that the contractor cannot be directed to continue work on an IR&D project after the Government laboratory efforts are cancelled, deferred, or redirected.

did not exist in the Air Force or the Navy at the time of our study.

Air Force laboratory personnel told us that they do not normally use information gained during a technical evaluation to redirect the R&D effort of a Government laboratory because the laboratory has a more accurate knowledge of its relevant scientific problems than the contractor does. A Navy technical evaluator told us that he did not consider duplication of effort between the contractor and the Government because he believed that, as long as a creative atmosphere was maintained, the IR&D project was justified. He said that he was not in a position to say who should or should not be working on similar projects.

NASA is now represented on ASRSC and, during the technical evaluation of the contractor's IR&D programs, reviews those projects that relate to NASA's fields of interest. We were advised by NASA personnel that, in most instances, contractor personnel discuss planned IR&D projects with NASA laboratory personnel before the contractor's brochure is prepared.

AEC PROCEDURES

AEC cost principles on IR&D preclude payment for IR&D projects which duplicate work being done under any AEC contracts. Although detailed procedures have not been established to implement this policy, AEC has relied on its organizational structure, which divides the technical responsibility among its various programs, with the result that technical personnel in a given program are usually knowledgeable on projects being undertaken throughout AEC in that program area. For example, in the case of reactor development and technology where much of AEC's IR&D is paid, the Division Director at AEC's headquarters is responsible for providing technical support to the field office managers during negotiation and administration of contracts, including IR&D.

DATA BANK

In connection with certain categories of research and development projects performed by Government laboratories or under direct Government contracts, a procedure has been established to provide a data bank for use in disseminating information and avoiding duplication of effort. This data bank is maintained by the Defense Documentation Center of the Defense Supply Agency. Each project is to be reported to the Center on a Form 1498 showing a brief description of the project, a "key word" index, name and telephone number of principal investigator, etc., and is to be updated when significant changes occur. This information is then coded into the data bank by the Center and is available for printout on request.

NEED FOR EXPANSION OF DATA BANK TO INCLUDE IR&D

We believe that inclusion in the data bank of information on contractors' IR&D programs might be useful in providing additional data to Government scientists and engineers for consideration in selecting research projects. In view of the proprietary nature of the contractors' IR&D programs, it would be necessary to ensure that such information was confined to Government personnel. Also, in view of the fact that the contractor's IR&D program is subject to change, provisions to revise the data bank would be needed.

Under such a system information as to projects planned, under way, or completed by contractors would be available to all Government project managers; whereas, under the system in effect during our study, such information would be available primarily to only those Government personnel directly involved in the evaluation of the IR&D program.

We discussed this matter with DDR&E officials during the course of our study. As a result, they requested the National Security Industrial Association, an association of Defense contractors, to propose a system for IR&D reporting. The Association's report, issued in January 1968, suggests summary reporting by scientific area of the amount spent, the number of professional man-years, whether the effort was research or development, and whether the effort was directed toward DOD or NASA programs or both.

A DDR&E official informed us that such information could help keep management informed on the extent of research and development being performed by industry so that determinations could be made as to those fields that require greater funding.

The official, however, agreed with us that reports such as those proposed by the Association would not be in sufficient detail to aid at the project level in determining whether a proposed project would duplicate work in progress. He said that a systematic method of disseminating information on IR&D projects in process would be useful in avoiding unnecessary duplication in Government-sponsored research. He informed us that a study was in process to determine the most feasible method of providing this information and that, in the interim, arrangements were being made to provide copies of all IR&D brochures to each military laboratory.

In our draft report we recognized the consideration being given this matter by DOD and suggested that the study be continued to determine a more systematic method of disseminating to Government personnel the information contained in the IR&D brochures. We suggested also that arrangements be made for inclusion of non-Defense agencies in the scope of the study to obtain maximum potential benefit.

In September 1968, DDR&E informed us that that office was well along in establishing a procedure that would ensure that knowledge of the content of the various industrial programs supported by DOD and NASA would be made available to appropriate Government personnel on a regular basis. The Director of OST commented favorably on the actions being taken by DOD in this respect, and the Deputy Director of BOB advised us in November 1968 that the Bureau was monitoring DOD's progress.

In late December 1968, however, DDR&E officials informed us that the DOD/NASA policy toward IR&D was being revised (see p. 27) and that this revision generally would eliminate the need for advance agreements and the need to acquire contractors' brochures for the purpose of negotiating advance agreements. Because the brochures were also an integral part of the procedure being developed by DOD to disseminate information on IR&D projects, it became obvious that a new approach would be required if brochures were to be eliminated.

In August 1969, DOD informed us that it planned, under the proposed new ASPR, to require data from contractors, similar to that in the current brochures, for the purpose of aiding technical reviewers in evaluating IR&D programs. DOD stated that it planned also to establish a data bank at the Defense Documentation Center to be used primarily to keep the DOD technical community informed of what was actually being done by industry in the IR&D area. The information for the data bank would not be extracted from the brochures but would be submitted separately in standard format at the time a project was started and effort committed, not just planned. DOD feels that information in the brochures would be proprietary in nature, and would not otherwise be suitable for use in the data bank.

The responsibility for maintaining the data bank will rest in an Independent Research and Development Technical Review Committee which will be established by a revised DOD Instruction 4105.52 after the proposed ASPR revisions have been adopted. It appears, therefore, that the establishment of a data bank depends upon the implementation of the proposed ASPR revisions.

CONCLUSIONS

It seems evident from responses made concerning our draft report (see p. 76) that the principal Government agencies involved recognize that a systematic method of disseminating information on IR&D projects that are in process is needed in order to help prevent unnecessary duplication on Government-sponsored research.

DOD has indicated that it intends to establish a data bank to provide this needed service when and if the proposed ASPR revisions for IR&D and B&P are finally approved. However, there is no indication of intent to establish a data bank if the proposed ASPR revisions are not implemented. We see no reason why the proposed data bank would not be equally appropriate under the current ASPR.

As stated on p. 30, we are suggesting to the Congress that a Government-wide policy be established on IR&D. One of the issues that we have suggested for consideration in determining such policy involves the awarding of direct R&D contracts for those IR&D projects which the agency wishes to support. If such arrangement is decided upon, the supported projects would automatically be subject to reporting under the current data bank procedure. Therefore, we are making no further recommendations on this matter at this time.

CHAPTER 4

RIGHTS TO ROYALTY-FREE USE OF INVENTIONS UNDER IR&D

The Government patent policy stated by the President in his memorandum of October 10, 1963, provides that, subject to statutory restrictions, in any case where an invention or discovery is made in the course of or under any Government contract for research and development, the Government should, as a minimum, receive at least a nonexclusive royalty-free license throughout the world for governmental purposes. This patent policy statement does not make specific reference to inventions developed by contractors under IR&D; and, according to information provided by the official who drafted the policy statement, the policy was not intended to cover such inventions.

AEC's stated policy with respect to patent rights arising under IR&D differs from the policies of DOD and NASA. In practice, however, the Government does not normally obtain rights to inventions arising from IR&D under the policies of any of these agencies. We have been informed that AEC has recently negotiated an arrangement under which it will receive patent rights. The positions taken by these agencies are described in the following sections of this report.

AEC PATENT POLICY AND PRACTICE

Procurement regulations issued by AEC provide that, under certain circumstances, AEC obtain rights to inventions conceived by contractors in the course of or under IR&D projects. The regulations provide that:

1. Whenever the agency's cost participation in an IR&D project is less than 20 percent, the contractor be required to submit a summary report on the results of such an IR&D project if requested to do so however, the agency does not seek patent rights;

2. When the agency's cost participation is between 20 and 75 percent, the agency require a nonexclusive irrevocable paid-up license to AEC for AEC purposes to any invention or discovery arising from the IR&D project and, if requested by the agency, a complete and detailed technical report on any such invention or discovery; and the agency require that a summary report be furnished on the results of all such projects; and

3. If the agency's cost participation exceeds 75 percent, AEC require the contractor to furnish useful scientific and technical information and data, and a nonexclusive, irrevocable, paid-up license to the Government for all purposes with the right to grant sublicenses for all purposes.

It should be noted that AEC seeks to avoid substantial participation in contractors' IR&D efforts. We were told that in one case it appeared that participation in a contractor's IR&D project would exceed 20 percent; but, because the contractor was reluctant to accept the AEC rights requirement, AEC waived these requirements. We were advised by agency officials that AEC rarely participated in the cost of a contractor's IR&D project by more than 20 percent and that, in fact, no instance had arisen under which either data or patent rights were acquired.

We also noted that at one time AEC had considered 10 percent as being a substantial share of the cost of an IR&D project. We were informed, however, that, when this 10-percent rule was employed during IR&D negotiations, at least one contractor acceded to a reduction in cost participation to below 10 percent so as to avoid the granting of any rights to AEC.

As explained previously, AEC will accept an allocable share of the cost of IR&D projects which benefit AEC contract work. We were informed by an AEC contractor that, in preparing a list of such projects for presentation to AEC, any projects involving company rights to inventions are excluded. This procedure is followed to avoid conflict over patent rights.

DOD AND NASA PATENT POLICIES AND PRACTICES

It is the policy of DOD and NASA not to require contractors to furnish to the Government scientific and technical information, data, and/or patent rights arising from IR&D effort, regardless of the extent to which the Government participates in such effort. This policy is based on the belief that IR&D is a normal cost of operating an independent business and that IR&D costs are, therefore, properly allocable to all customers. DOD and NASA believe that the Government does not stand in any special relationship as a customer and, like other customers, should not seek or expect patent rights when the price it pays for products includes costs of IR&D.

Prior to May 1964 ASPR provided that, where a military department provided substantial financial support to a contractor's specific project within his independent research program, the department could obtain for the Government patent license rights to inventions, improvements, or discoveries conceived or first actually reduced to practice during or as a result of such support.

Although there was apparently no widespread application of this permissive regulation, DOD reported two instances where agreements with contractors required granting the Government royalty-free license rights to inventions developed under IR&D programs. Limited application of the regulation was undoubtedly due to the stated general policy of DOD of not seeking any rights in patents evolving from IR&D.

According to information furnished by three contractors included in our study, a significant portion of their patents resulted from inventions arising from their IR&D programs.[1] The Government is not entitled to royalty-free license rights for use of such inventions. Two of these three contractors are primarily engaged in R&D activities

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[1]The other four contractors included in our study did not provide information as to the number of patents resulting from their IR&D programs.

for the Government, and they recover from the Government a substantial part of the costs of their IR&D programs in addition to earning profits. Under these circumstances, question arises as to whether, as a matter of equity, the Government should be entitled to royalty-free rights to the use of such inventions.

In a memorandum dated October 18, 1966, the Director of Defense Research and Engineering posed the following question to the Defense Science Board:

> "(10) How can the DoD justify its position of not taking data and patent rights for IR&D, particularly in cases where the majority of the contractor's business is with the government."

In response, the Defense Science Board task group, comprising corporate officials of six major defense contractors, one research firm, and one university, responded in February 1967, as follows:

> "The corporation that competes in the open market has a right to choose its markets. The fact that the government is a principal customer does not grant to the government any special privilege. In the analogous commercial situation, the customer obtains no rights to a seller's or contractor's independently developed background patent and data rights, even though IR&D is a necessary element of cost in the price of the product and is paid for by the contractor's customers.
>
> "Current DoD policy is consistent with general business practice. A departure from this policy would tend to make selected large components of industry captives of the government to an extent not now intended or desired."

RATIO OF PATENTS RESULTING FROM IR&D PROGRAM TO PATENTS RESULTING FROM R&D CONTRACTS

As stated previously, information obtained from three contractors indicates that in many cases a significant portion of their inventions were attributed to their IR&D programs, under which the Government is not entitled to royalty-free license rights.

One company, for example, informed us that, during a 6-year period, it had been issued 22 patents for inventions resulting from its IR&D program and that it had received 17 other patents resulting from Government contract work to which the Government received royalty-free licenses.

A second company informed us that, during the 3-year period from 1964 to 1966, it had received 23 patents, of which 22 related to work under its IR&D program. We were told, however, that many of these patents were for inventions developed in earlier years and that a more current picture would be obtained by considering patents applied for during the same 3-year period. The company stated that during this period it filed 10 applications for patents and the Government was granted licenses to five of the 10 inventions involved. The company further informed us that the Government received five patents during the period on inventions developed by the company and applied for patents on an additional seven company-developed inventions.

Information obtained from the third contractor showed that, during the period from 1961 to 1966, 57 patent applications resulted from its IR&D work whereas 26 resulted from its Government-contracted R&D work. During the same period 35 patents were obtained by the same contractor under the IR&D work whereas 19 were obtained under the Government R&D work. The company informed us that during these years the Government-contracted R&D work represented about one third of its total business and that less than one third of its IR&D program costs had been reimbursed by the Government.

It should be noted that the expenditures by these three companies for contracted R&D work were substantially greater

than the expenditures for IR&D. However, in view of the fact that the work under the IR&D programs is generally exploratory in nature and normally does not result in production of a fully developed item, it is conceivable that the IR&D work might result in a greater proportion of inventions than contracted R&D work.

Our study also indicated that a close relationship may exist between contractors' IR&D programs and their R&D work performed under direct Government contracts. In those cases where the R&D work is directly funded by the Government, the Government is entitled, as a minimum, to royalty-free rights to any inventions conceived or first reduced to practice in performance of the contract. On the other hand, if the work is not financed directly by the Government, as in IR&D programs, the contractor retains all rights to any inventions. Frequently, the work is begun under the IR&D program and subsequently is included in a direct Government R&D contract. At times, the Government contract may be followed by IR&D work in related fields. Under these circumstances, it appears that it may be difficult to determine whether the Government should be entitled to rights to a given invention.

Although as stated above, it is not DOD policy to take rights to inventions arising from IR&D, we were informed that, under certain circumstances, contractors grant the Government rights to such inventions.

In the Air Force all newly developed equipment for use in the operation of aircraft must undergo successful flight-testing before being approved for use. Most ideas that originate from IR&D require some further development and flight-testing before an acceptable item is produced. Inasmuch as development and flight-testing are expensive, most contractors, we are informed, prefer having this portion of the development process financed by the Air Force. The Air Force considers this work as representing the first actual reduction of the invention to practice and requires the contractor to grant it royalty-free rights to the invention.

Our study did not include any review into the accuracy of the contractors' classification of inventions into those

in which the Government is entitled to rights and those in which the contractor retains all rights. However, previous studies that we made disclosed a need for DOD to take steps to provide greater assurance that the Government is obtaining all of the rights to which it is entitled.[1]

Revisions were made in ASPR in October 1966 to (1) provide the contracting officer or his authorized representative access to contractors' records that are directly pertinent to the discovery or identification of subject inventions (inventions conceived or first reduced to practice under Government R&D contracts), (2) require the contractor to forfeit all rights in any subject invention that he failed to report to the contracting officer, and (3) prescribe more specific Government "follow-up" procedures for assuring that subject inventions are identified and the Government's rights are established and protected. These revisions, if properly applied, should provide greater assurance that the Government is obtaining rights to all inventions developed under R&D contracts.

CONCLUSIONS

In view of the substantial amounts of contractor IR&D being absorbed by the Government and the close relationship of IR&D to R&D (under which the Government is entitled to rights), we believe the question as to whether the Government should be entitled to royalty-free rights to the use of inventions arising from IR&D programs warrants further consideration.

As previously stated (p. 30), we are suggesting that a Government-wide policy on IR&D be established by the Congress. One of the issues that we believe warrants consideration by the Congress in arriving at such a policy concerns the awarding of direct R&D contracts for those IR&D projects which the agency wishes to support. If such contracts are awarded, the Government would be entitled, as a minimum, to receive at least a nonexclusive royalty-free license to use any resulting invention throughout the world for governmental purposes. Therefore, we are making no further recommendations on this matter at this time.

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[1] B-133307, November 19, 1964; B-133386, November 27, 1964; B-154814, June 25, 1965; B-133386, April 12, 1966.

CHAPTER 5

OTHER PROBLEM AREAS

DELAYS IN NEGOTIATING ADVANCE AGREEMENTS

DOD, NASA, and AEC regulations provide that the required determinations of reasonableness and allocability for IR&D may be made either before or after the costs have been incurred. The IR&D costs of smaller contractors generally are treated in the same manner as other overhead costs and are subject to the customary postaudit review for acceptability. For larger contractors, limitations on the amount of IR&D costs that may be accepted in the pricing of Government work are generally set forth in agreements negotiated by the contracting parties.

These advance agreements provide some assurance to the contractor that its IR&D costs will be recovered and that disputes with other Government contracting personnel concerning the reasonableness or allocability of the costs will be minimized or avoided. At the same time advance agreements limit the Government's liability for IR&D costs. To be most effective, such agreements should be negotiated prior to cost incurrence. We found, however, that only about 38 percent of the agreements negotiated by DOD in 1966 were negotiated prior to cost incurrence.

Basis for advance agreements

Under current DOD regulations[1] a contractor may seek an advance agreement if a substantial portion of its business is with DOD and if the firm's IR&D costs are substantial in amount. We have been informed substantial means that the IR&D costs must exceed $1 million annually and that over 50 percent of the contractor's business must be with DOD. The agreement may cover the entire corporation or be limited to specific corporate divisions. DOD had 76 advance agreements for fiscal year 1966 involving 58 contractors.

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[1] As stated on page 27, revisions are now under consideration.

Many of the contractors are engaged in work with more than one military service. In determining which of the military services is to have cognizance over a contractor's IR&D program, consideration is given to the service which has the preponderant amount of work, has the cognizant plant assignment, or has an existing relationship with the contractor. For fiscal year 1966, the Air Force had 48 cognizant assignments, the Navy 23, and the Army 5.

When the contractor seeks an advance agreement, DOD may (1) request the contractor to submit a brochure describing its program, (2) perform a technical evaluation of the contractor's IR&D program, and (3) negotiate with the contractor the amount of the ceiling and the cost-sharing ratio. These procedures are separately discussed in detail in other sections of this report. (See pp. 33 to 37, 54 and 55, and 64 to 66).

Some of these firms do a significant amount of work for NASA and, in such cases, a NASA representative is on the negotiating team. The negotiations are sponsored or chaired by DOD. As a general rule, NASA accepts the agreements which result from these team efforts but reserves the right to negotiate independently if major interests of the agency are not recognized. We are told that only in rare cases has this exception been exercised.

AEC cost principles emphasize that it is important for agreement to be reached between AEC and its contractors in advance of the incurrence of costs in categories where reasonableness or allocability are difficult to determine in order that possible subsequent disallowance or dispute may be avoided. AEC has advised us that IR&D falls into this category; however, AEC regulations do not set forth any specific requirements which a contractor must meet to qualify for a formal advance IR&D agreement. We have been informed that, where substantial amounts of IR&D are reimbursed, AEC has either negotiated advance agreements or is in the process of negotiating advance agreements.

Delays noted

Prior studies into the administration of IR&D showed that many agreements were not being negotiated in advance

of cost incurrence but instead were being negotiated long after the IR&D programs had been in effect.

A study group formed by DOD in 1962 reported that negotiations were being completed from 8 to 10 months after the beginning of the contractor's fiscal period. The delay was attributed in part to DOD Instruction 4105.52, which stated that a sponsoring department might require a contractor to submit a brochure and that, if required, the brochure would normally be submitted before the beginning of the contractor's fiscal year in which the cost was to be incurred, or at least within the first 90 days after the beginning of that fiscal year. The study group also pointed out that the technical evaluations required from 3 to 8 months and the negotiations approximately one month.

We made an analysis of all the agreements negotiated by DOD for 1966 and found that only 38 percent of them had been established in advance of cost incurrence. About 9 percent of the agreements were established from 1 to 3 months after the start of the period, 17 percent were 3 to 6 months late, and 36 percent were more than 6 months late.

One of the firms included in our study had not had an agreement negotiated in advance of cost incurrence since 1962. Another firm in our study did not have an advance agreement until November 22, 1967, for the years beginning January 1, 1965 and 1966 and, as of August 1968, did not have an advance agreement for the year beginning January 1, 1967. This firm informed us that the long delay in receiving an agreement for 1965 and 1966 was due, in large part, to an inability to bring together a number of divergent views on some of the specific items under negotiation. The company also stated that the 1967 negotiation was not started by the Government until November 1967.

When agreements are not established on a timely basis, the agreements cannot be used in price negotiations although this is one of the primary justifications for requiring an advance agreement. In the absence of a timely agreement, pricing officials have to rely on prior agreements and must estimate the effect of adjustment needed to cover current conditions. In the event that substantial changes are in

order, a delayed agreement could result in unnecessary pricing problems to either party.

Under the present policy some contractors have been unwilling to negotiate advance agreements. The Armed Services' Board of Contract Appeals ruled on August 8, 1967 (ASBCA No. 11931), that, when advance agreement is not reached between the contractor and the Government, the ASPR does not prohibit allowability of 100 percent of the contractor's IR&D costs. Thus, it appears to be particularly important to the Government that advance agreements be negotiated promptly.

The proposed revision to the ASPR, released by DOD for comments in January 1968, provided that (1) where an advance agreement was required, it should be based on the contractor's proposed program which would be submitted no later than 30 days prior to the beginning of the period to be covered by the agreements and (2) where there was failure to agree on the terms of the advance agreement, the contracting officer would notify the contractor of the amount to be recognized.

Delays in negotiating advance agreements, such as those noted in our study, would probably be reduced if this revision were to be adopted. However, whether it would be possible to complete the technical evaluations and negotiate advance agreements within the 30-day minimum period stipulated is subject to question.

As stated on page 27, DOD further revised the proposed revision to the ASPR in February 1969. The modified revision would completely eliminate the need for advance agreements of the type discussed above.

EXTENSIVE USE OF COST SHARING
IN ADDITION TO DOLLAR CEILINGS

Ordinarily, the determinations of reasonableness, allocability, and allowability of individual overhead costs such as those for IR&D are made by local contracting officials, often on the basis of either historical costs or estimates of future costs. However, when its IR&D cost principle was originally developed in 1959, DOD believed that the reasonableness and allocability of IR&D would be difficult for these local officials to determine.

The difficulty of the task and the number of different contracts affected by separate negotiation indicated to DOD that it would be desirable to have the required determinations made centrally. This was accomplished by assigning the responsibility to individuals within each of the military departments, who, when functioning as a group are called the Tri-Service negotiators. One of their responsibilities is the negotiation of advance IR&D agreements with contractors.

An advance agreement is a formal contract between the contractor and DOD. The contractual document generally contains a cost-sharing ratio which establishes the basis for allocating the contractor's costs between the contractor and his customers, including the Government, and a dollar ceiling on the share which will be recognized by the Government for allocation to both Government and commercial work. The cost-sharing ratio and ceiling are established by negotiations between the contractor, representatives of the military departments, and NASA, if the latter also has contracts with the same company. Our study has shown that the Departments are bound by the agreements negotiated and that NASA usually accepts the product of these mutual efforts although NASA has the authority to negotiate separately.

In preparing for negotiations, the Government negotiating team usually establishes a prenegotiation position on ceilings by considering the total dollar amount of the contractor's IR&D program, whether the program costs include related overhead expenses, whether the total program costs exceed about 2 percent of the contractor's sales, and, if

so, whether there is a reasonable explanation for the excess. The position thus established can be changed during actual negotiations on the basis of additional data presented by the contractor.

The practices followed by the military services in the negotiations differ. (See p. 64.)

A major area of concern to the contractors is the extensive use of arrangements in the advance agreements for cost sharing from the first dollar of IR&D cost in addition to dollar ceilings.

As stated in ASPR 15-205.35:

> "(h) *** In recognition that cost-sharing of the contractor's independent research and development program may provide motivation for more efficient accomplishment of such programs, it is desirable in some cases that the Government bear less than an allocable share of the total cost of the program. *** ."

Although this provision indicated that cost sharing was to be used "in some cases," it became customary to include cost sharing in the advance agreement in addition to ceilings on the amount of IR&D that the Government would recognize as reasonable.

The effect of a cost-sharing agreement and a dollar ceiling is to require the contractor to spend a greater amount on his IR&D program than the agreed ceiling if he wishes to recover the maximum Government share. Following is a hypothetical example.

> A contractor whose sales are 75 percent to the Government proposes an IR&D program involving $2 million. The advance agreement provides for an 80-20 cost-sharing arrangement with a ceiling of $1.8 million. This means that the Government will recognize 80 percent of the actual incurred costs as being allocable to all the contractor's customers, provided that 80 percent of such actual incurred costs does not

exceed the ceiling of $1.8 million. If the contractor spends $1.5 million, the amount allocable to all customers will be $1.2 million (80 percent). If he spends $2 million, the allocable amount will be $1.6 million. Unless he spends at least $2.25 million, the allocable amount will be less than the agreed ceiling.

It should be noted that the amount allocable under the cost-sharing arrangement is to be distributed to all of the contractor's customers. Consequently, the Government share would be 75 percent of the amount determined under the cost-sharing arrangement. Using the above illustration, if the contractor spends $2 million, the Government share would be 75 percent of $1.6 million, or $1.2 million. If he spent $2.25 million, the Government share would be 75 percent of $1.8 million, or $1.35 million. This would be the maximum Government share.

There may be some instances, however, when the contractor absorbs that portion of IR&D costs allocated to fixed-price contracts. This will happen when the contractor is achieving less than target profit or when the contract is in a loss position. Further, when IR&D costs are allocable to AEC or any other contracts under which they are not allowable, the contractor will absorb the IR&D costs. This will result in the contractor's absorbing a higher percentage of the IR&D costs than would be indicated by the sharing ratio.

In our study, we found that cost sharing was applied to 70 of the 76 advance agreements negotiated for 1966. The cost-sharing ratios for the 7 firms included in our study varied from 65-35 to 90-10. We note that cost sharing has been applied at 6 of these firms every year since 1962. The records we examined did not reveal why cost sharing was not applied at the other firm.

In the majority of cases, there was little or no change in cost-sharing ratios used with the firms in our study during the period 1962-67. In one case, however, the cost-sharing ratio decreased from 85-15 to 65-35 as the cost of the IR&D program increased about 550 percent. In another case, we noted that the cost-sharing ratio had

increased from 70-30 to 80-20 as the program costs increased about 220 percent. In both cases, the rate of increase in the IR&D programs approximated the rate of increase in sales.

Views within the Office of the Secretary of Defense and the military services have differed as to the desirability of requiring the contractors to share in the cost of IR&D.

The DOD study group formed in 1962 to examine IR&D commented, as follows, with respect to cost sharing.

"a. The imposition of cost sharing arrangements in advance agreements is a standard practice that has been universally adopted by the three Services. In general both cost sharing and ceilings are required as a double limitation. This practice is not in keeping with the intent of the ASPR principle.

"b. Cost sharing is being imposed without any preliminary findings of unreasonableness. There is little evidence of any direct relationship between the cost sharing percentage and the quality of programs or the results of technical evaluation. To the contrary, there is a tendency to determine the degree of cost sharing by the ratio of commercial business to Government business."

Conversely, an Army Audit Agency report issued in April 1965 stated that the absence of a cost-sharing arrangement "provides no incentive to the contractor for more efficient accomplishment." The report noted that, when there was a ceiling on IR&D but no cost-sharing provisions, contractors worked up to the ceiling and did not exceed it.

The Assistant Secretaries of the Air Force for Research and Development and for Installations and Logistics, in a memorandum of February 23, 1967, commenting on an earlier proposal for revisions to ASPR cost principles on IR&D and B&P, stated, as follows, with respect to the proposal to eliminate cost-sharing arrangements.

"(b) (1) Cost sharing is generally speaking, poor procurement policy. ASPR 4-208 gives some of the reasons why it should be avoided. ASPR 1-311, on 'buying in,' in effect suggests others. But none of these reasons seems to bear on the established practice of negotiating advance agreements on IR&D with major contractors whose work is predominantly with the Government, under which the contractors agree to participate with 'their own money' in the IR&D programs they elect to pursue. This practice, confined as it is to major Defense contractor centers whose typical business is predominantly with the Government and largely uncontrolled by the restraints of price competition, neither undercuts equitable competition, nor influences competitive source selection, nor jeopardizes contract performance. Therefore, the practice is not inconsistent with the general ASPR ban on cost sharing. Further, it must be recognized that no matter what level of allowable IR&D may be agreed to by the Government, the contractor can and probably will, when it suits his business objective, fund additional IR&D out of his profits.

"(2)The practice of seeking contractor agreement to a definite financial stake in IR&D programs responds to important characteristics of the defense industry. Typically, a defense contractor will feel heavy pressures to expand his IR&D programs - pressures reflecting the facts that he is in a business dominated by rapid technical progress and innovation, that his customer seldom requires large quantities of the same item over long periods of time, that his competitors often compete with him more on a basis of development and engineering proficiency than on one of economic efficiency, that long-run survival and prosperity in this business have appeared to depend more on retaining and augmenting engineering strength than on maximizing short-run profits by severe cost controls. In this milieu, we need to create counter-pressures toward economic efficiency. Price competition, the only complete

> answer, is typically impractical. So we substitute so-called cost sharing as the best practical counter-pressure. We single out IR&D (and related technical effort) from overhead generally because the pressures on the contractor to increase expenditures are heaviest by far in this single area of overhead. We generally reject a flat ceiling on IR&D as an acceptable counter-pressure because it would not be effective until expenditures approached the ceiling. What we are doing is analogous to incentive contracting (which itself could be called cost sharing), recognizing that IR&D costs in the defense industry are particularly susceptible to upward pressures and therefore call for a particular form of financial participation by the contractor."

A Logistics Management Institute (LMI) report[1] reviewing the background of IR&D and B&P, and the changes in the past and present environment in which IR&D and B&P changes are conducted, commented as follows with respect to cost sharing:

> "A recent but limited sample of company profit structures indicates that a significant portion (40%) of contractors unallowable costs is IR&D expenditures. This could lead to the conclusion that IR&D expenditures under cost sharing arrangements and in excess of ceilings are reducing profits accordingly. However, it must be assumed that the companies involved, in making the decision to exceed the ceiling or absorb the additional cost under sharing, have made a trade-off which indicated to them that they would be in a better overall position in the long run if they invested those additional IR&D amounts."

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[1] Reconnaissance Study of Defense Contractor Bid and Proposal (B&P) and Independent Research and Development (IR&D) Costs, August 1967.

Another LMI study, concerned with profits earned by defense contractors[1] indicated that most defense contractors were planning to increase the percentage of their nondefense business, by concentrating growth efforts in this sector. LMI felt that this trend, if carried to the point where contractors reduced their defense work, could be harmful to the defense effort.

Elimination of cost sharing might provide contractors with greater incentive to compete for Government contracts, and this competition might be beneficial to the Government. On the other hand, elimination of cost sharing might only lead to additional cost to the Government. In any event, it appears that close monitoring of future IR&D trends is advisable.

The proposed ASPR revisions on IR&D and B&P, which were issued for comment in January 1968 and further modified in February 1969 (see p. 27), do not include any provision for cost sharing.

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[1] Defense Industry Profit Review, November 1967.

RELATIONSHIPS BETWEEN BIDDING AND PROPOSAL EXPENSE AND RELATED TECHNICAL EFFORT AND IR&D

A major problem in administration of IR&D by DOD and NASA has been the inability to distinguish IR&D effort from the technical effort involved in preparing bids and proposals and performing related activities.

Under the current ASPR, the cost of technical effort designated by the contractor as pertaining to its IR&D program generally is subject to limited acceptance in accordance with the advance agreement negotiated with the contractor. The cost of technical effort involved in preparing bids and proposals generally is not subject to such limitations. The Government bears its full allocable share of such costs so long as they meet the broad criteria in the procurement regulations for reasonableness.

The types of costs involved in IR&D and B&P categories of effort are quite similar, and in view of the difference in their acceptability, there could be an incentive for a contractor to classify IR&D efforts as B&P and, thus, increase the probability of full reimbursement of the costs. This would be particularly advantageous to the contractor where his IR&D costs are in excess of the agreed ceiling.

This problem has been of concern to DOD officials for many years. A special study group formed by DOD to examine into the IR&D area commented in November 1962 on the need to resolve this problem. The Army Audit Agency, as a result of a review of IR&D and related technical effort at 28 contractor locations, reported in April 1965 on the intermingling of IR&D with bidding and proposal and other technical effort costs. In March 1967 we issued a report to the Congress[1] on this subject and pointed out the

[1]Report entitled "Review of Costs of Bidding and Related Technical Efforts Charged to Government Contracts--Department of Defense and National Aeronautics and Space Administration," B-133386, March 17, 1967.

continuing existence of this problem and the announced plan of DOD to conduct a study to develop an appropriate remedy.

At the request of DOD, a study was initiated by LMI in June 1967 to identify the issues and problems confronting both industry and the Government in this area and to determine whether the growth of IR&D and B&P was reasonable and controlled. In its report issued in August 1967, LMI concluded that the increases in IR&D and B&P costs were caused by technological growth, increased complexity of weapons systems, increased competition, and changes in DOD contracting and procurement methods.

The proposed revisions to the ASPR for IR&D and B&P costs, as prepared by DOD in January 1968 and modified in February 1969 (see p. 27), would, if adopted, eliminate the problem of distinguishing IR&D from B&P.

AEC does not have the problem of distinguishing IR&D from B&P because its regulations require that the subject matter of both be of benefit to AEC. As stated on page 17, AEC only accepts costs of IR&D projects that individually benefit AEC contract work. As for B&P, the costs of preparing both successful or unsuccessful bids and proposals are allowable if their subject matter is applicable to the AEC program. The subject matter is assumed to be applicable to the AEC program if the bid or proposal is made either (1) to AEC or to an AEC contractor for work to be performed under an AEC contract or (2) to others for the performance of work determined by the contracting officer to be of benefit to the AEC program.

ALLOCATION OF OTHER OVERHEAD COSTS TO IR&D

A major area of dispute involves the question as to whether indirect and general and administrative (G&A) costs applicable to the IR&D effort should be included in determining the total amount of allocable IR&D cost. The significance of this question is illustrated by the following hypothetical example.

Assume that a company has a $2 million IR&D program, an advance agreement cost-sharing arrangement of 80-20 with a ceiling of $1.8 million, an indirect overhead rate of 100 percent, a G&A rate of 10 percent, and 90 percent of the contractor's sales are to the Government. If the IR&D costs are confined to direct costs only, 90 percent of the indirect and G&A costs applicable to the IR&D program will be absorbed by the Government through allocation to Government contracts. If, on the other hand, the IR&D costs are burdened with the indirect and G&A costs, the Government would absorb 90 percent of 80 percent of the costs in accordance with the advance agreement, so long as the allocable IR&D and burden costs combined did not exceed the ceiling of $1.8 million. None of the burdened IR&D above $1.8 million would be borne by the Government.

ASPR 15-205-.35(f) provides for the allocation of an appropriate share of indirect and administrative costs to IR&D costs unless it is the consistent policy of the contractor to treat such costs otherwise.[1]

In its report of April 1965 the Army Audit Agency stated that it had found over the years that contractors generally did not burden their IR&D effort but direct R&D work was burdened.

Our analysis of 73 advance agreements on IR&D for fiscal year 1966 showed that burdening of IR&D was provided for in most cases. In 49 cases the burdening of departmental overhead was stipulated. In 17 cases the burdening of both departmental and G&A overhead was provided for. In only seven cases was burdening not provided for. Thus, it seems that there has been a trend for contractors to agree to include at least the departmental burden in computing IR&D costs.

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[1] As pointed out on p. 19, AEC regulations require that the costs of IR&D must include an amount for the related indirect and administrative costs.

The proposed ASPR revisions on IR&D and B&P would eliminate the current discretionary provision and provide for burdening with all applicable indirect costs except G&A expense.

DIFFERENCES AMONG MILITARY SERVICES ADMINISTERING IR&D

Our study showed that the military services did not use uniform procedures or practices in administering the IR&D program. The inconsistences in their activities, described below, have been pointed out in previous studies by a study group formed by DOD, by the Army Audit Agency, and by LMI.

We found that different practices are used by the Air Force, Navy, and Army for establishing a prenegotiation position on cost-sharing ratios. All of the services assume that every contractor should share in the cost of his IR&D program presumably because such cost sharing would motivate the contractor to increased efficiency. The Air Force and Navy start with a 75-25 sharing ratio for contractors engaged exclusively in Government work. This means that only 75 percent of the contractor's total actual cost may be accepted for allocation through overhead to all customers. The remaining 25 percent of the costs are treated as an unrecoverable cost.

The Air Force increases the accepted portion of the IR&D costs if the contractor has commercial sales. For example, the Air Force will increase the accepted portion by 1 percent for each 2 percent of commercial sales on the theory that a contractor with commercial work is more likely to exercise effective cost control. Thus, a firm which has 90-percent Government sales and 10-percent commercial sales would have a share ratio of 80-20. If the contractor's sales are half commercial, cost sharing would be eliminated.

The Navy increases the accepted portion of the costs if the contractor applies overhead expenses to basic IR&D costs. Thus, a firm which charges both engineering overhead and G&A expenses to IR&D may receive the highest sharing ratio allowed by the Navy which is 80-20.

Unlike the Air Force and the Navy, the Army does not have well-defined procedures for establishing a prenegotiation position.

Regulations have not been issued by DOD establishing specific, uniform requirements for submittal of brochures. We found, for example, that the Air Force obtained brochures from each of the contractors under its cognizance in each of the years we examined; the Navy had not required one of the two Navy contractors covered in our study to submit a brochure for the last 2 years; and the Army had not required one of the two Army contractors covered in our study to submit a brochure for 1965.

Uniform guidelines have not been provided Government personnel for evaluating the IR&D program. Personnel performing a technical evaluation are required to report to the negotiator on the scientific and technical factors affecting the basis or extent to which IR&D programs should be supported. We observed that DOD has not furnished laboratory personnel a clear description of these factors or an explanation of how they might affect the basis or extent to which IR&D programs should be supported.

Each of the military departments has its own procedures for conducting technical evaluations. Air Force procedures are set forth in a 19-page instruction whereas the Navy has not issued any formal instructions. The Army has prepared informal instructions which are given to the technical personnel immediately prior to the evaluation.

In 10 of the 12 evaluations completed in 1965 and 1966 for the seven firms we visited, adverse and/or critical comments were included in the evaluators' reports to the negotiator. The contractors generally were not informed of the results of these evaluations and were not given a chance to review any of the adverse comments before they were presented to the negotiator. In one instance, however, we were informed that the technical evaluator had given critical advice to the contractor, and as a result, the contractor redirected its efforts in the IR&D project and obtained better results.

According to DOD instructions, one of the objectives of a technical evaluation is to ensure that the contractor has maintained a proper segregation of independent research projects from independent development projects. We were told that, if such a segregation is done with care, it is very time consuming; if it is not done with care, the results are of little value. We were informed by technical personnel of two contractors that such a segregation is made only to satisfy the Government. We found that one of the seven contractors did not make such a segregation.

We found that the laboratories do not usually devote much time to a technical evaluation. There are often several hundred projects in the contractor's brochure and making technical evaluations is only one of many tasks to be performed by Government laboratories, which constitute an additional burden to the technical personnel. The technical evaluation performed for 1965 and 1966 at one of the firms in our study was limited to a cursory review of the contractor's brochure. In the nine other cases, the laboratories selected a few specific projects for review, assembled a team of nine to 15 scientific and technical personnel, and visited the contractor's plant for 2 or 3 days.

The latest proposed ASPR revision for IR&D would eliminate the negotiation of advance agreements and the need for brochures and technical reviews to aid such negotiation. We have been informed, however, that DOD would continue to receive brochures and to make technical reviews for other purposes. (See p. 40.) Whereas it appears to us that the differences, noted above, between the military services in administering IR&D would be eliminated if the proposed ASPR revision were implemented, DOD's plans for requiring brochures and technical reviews have not been sufficiently advanced to enable identification of any other problem areas that might result.

RELEVANCY OF INDEPENDENT DEVELOPMENT EFFORTS TO GOVERNMENT INTERESTS

ASPR 15-205.35(e) provides that costs of the contractor's independent development "are allowable to the extent that such development is related to the product lines for which the Government has contracts, provided the costs are reasonable in amount and are allocated as indirect costs to all work of the contractor on such product lines ***."

In view of questions which arose concerning the interpretation of the term "product lines for which the Government has contracts," Defense Procurement Circular No. 7 was issued in May 1964. This instruction is still in effect.

Defense Procurement Circular No. 7 states that "product lines" consist of all those lines of effort which are assigned for administration to a distinct organizational or management unit of the business because such lines of effort involve related physical properties, purpose, structure or closely associated operational or production techniques. Such units may be a department, group, division, or plant depending on characteristics rather than size. The circular further points out that the quoted ASPR requirement does not mean that the development project must directly benefit or be related specifically to products for which the Government has contracts. The circular states also that it should not be interpreted, however, to permit allocation of development costs which obviously have no correlation to lines of effort within the business unit in which the Government has contracts.

It appears that, under this interpretation, the Government may participate in the cost of any independent development conducted by the company provided it bears some relationship to lines of effort within the business unit in which the Government has contracts.

Under this interpretation it seems that a contractor could diversify into new product lines and services and the Government would participate in his cost of entering such new fields unless they "obviously" had no correlation to the lines of effort within the business unit in which the Government has contracts.

Our limited study did not disclose any significant indication that the contractors visited were using their independent development programs as a means of entering new fields of endeavor at Government expense. However, we did note in one instance that a contractor had been placing increasing emphasis on meeting shifts in defense requirements by diversification beyond existing product lines and services, and a limited effort to extend defense technologies to nondefense fields.

On the basis of discussions with DOD officials, we understand that, because of the broad involvement of DOD in practically all aspects of the economy, it would be unlikely that any independent development effort would not in some way be related to areas of Government interest.

The proposed ASPR revision does not require a showing that independent development expenses bear a relationship to the contractor's product lines. We understand that this requirement was eliminated because of the ambiguity of the current regulation. We recognize that the term "product lines for which the Government has contracts" is broad. Nevertheless, we question whether the removal of this criteria may not result in the absorption by the Government of independent development costs completely unrelated to the Government's interests.

CONCLUSION

The problem areas described above have existed for many years and most of them have been of concern to either contractor or Government officials, or both. Corrective action is needed.

The revisions to the ASPR for IR&D and B&P, proposed in January 1968 would have, if adopted, alleviated most of these problems. (See app. III.) The differences in procedures among military services administering IR&D (see pp. 64 to 66) would not have been alleviated, however, because these differences all involved advance agreements which would have continued to be in use under the proposed ASPR revisions.

We, therefore, suggested in our draft report that DOD devise uniform procedures for administering IR&D, including prenogotiation arrangements, brochure requirements, and the scope and nature of technical evaluations. In its response DOD stated that it recognized the opportunity for improvement that could be made in both procedures and practices and informed us of certain actions already initiated.

These proposed ASPR revisions were withdrawn and replaced in February 1969 by two new proposed revisions which would have provided for the use of a formula to determine reasonableness of costs, and which would have completely eliminated the use of advance agreements. It was our belief that, if adopted, these proposed revisions would have alleviated the problems discussed in this chapter. However, as discussed on page 28, it seemed to us that the revisions should not be adopted because of additional costs and other factors. We understand that DOD does not plan to implement these changes, at least during fiscal year 1970.

It is apparent, therefore, that the problems discussed in this chapter will continue.

In view of the fact that we are providing the Congress with several suggestions and alternative methods for handling IR&D and related technical costs, we are not making any recommendations to the agencies at this time.

CHAPTER 6

CONTRACTORS' COMMENTS

We asked each of the seven companies included in our study and the Council of Defense and Space Industry Associations (CODSIA) to comment on our draft report. CODSIA is composed of representatives from nine member industry associations of contractors which have common interests in defense and space fields. We were informed that one of CODSIA's major functions was to provide a central channel of communications in order to simplify, expedite, and improve industry-wide consideration of policies, regulations, problems, and questions of broad application involved in procurement actions by DOD, NASA, AEC, and other Government agencies.

In commenting on our draft report, most of the companies did not discuss policy issues in view of the fact that CODSIA was presenting an industry-wide position. Consequently, we are limiting our evaluation in this section to CODSIA's reply (app. X). We have, however, revised other sections of the report, where appropriate, to recognize the comments made by individual companies on matters of particular concern to them, as well as portions of CODSIA's comments.

CODSIA stated that the report "falls short of achieving the usually desirable objective of presenting a factual, complete, essentially unbiased display of the information available ***." CODSIA concluded that "substantial revision is necessary in order to achieve a document which would be an accurate and objective report."

As pointed out in the report (p. 4) and as recognized by CODSIA in its comments, our study did not include a detailed examination into the management or performance of IR&D. However, a significant amount of work was performed at nine contractor plants and 10 Government agencies, and in our opinion the information obtained warrants presentation to the Congress in view of the substantial cost absorbed by the Government and the major policy issues involved.

In order to ensure that the information presented in the report was factual and accurate, we forwarded a copy of the draft report to the agencies and to each of the companies included in our study for comment, specifically identifying pertinent pages and paragraphs. In contrast to CODSIA's general contention that the report is not objective, other parties commenting on the draft were complimentary as to the tone and content of the report. One contractor, for example, stated "we commend your report for what appears to us to be a genuine attempt to achieve an objective and thorough analysis of the subject."

CODSIA presented in its reply the industry point-of-view with the general theme of maintaining the Government/contractor relationship in IR&D matters substantially as it is at the present time. In brief, CODSIA believes that contractors' IR&D efforts are "clearly mandatory and beneficial to the Government," that IR&D programs are most effective when the companies have freedom in selecting tasks and redirecting efforts and retaining proprietary control over the products of IR&D, and that companies are motivated through competition and cost and price negotiation to control their IR&D costs. In our opinion, CODSIA's discussion of these factors is much more subjective than factual; nevertheless, we believe that they should be considered by appropriate Government organizations in evaluating or developing policy on IR&D programs.

In several places in its comments, CODSIA attributed to us conclusions that we neither made nor intended to imply. In one instance the comments say that:

> "*** The phrasing of the report indicates a disposition to question whether the Government is receiving commensurate value. Indeed, the report seems to render a judgment of lack of value and seems to suggest that a further effort to limit IR&D is in order.***"

As explained on page 10 of the report, we did not make the type of study that would enable us to reach a conclusion as to whether or not the benefits derived from IR&D are commensurate with the costs. It follows, therefore, that we are not suggesting that IR&D necessarily should be reduced,

as attributed to us by CODSIA. However, we are interested, of course, in the Government's conducting necessary business in the most efficient and economical manner possible.

In another instance the comments say that:

"*** the GAO is at this time apparently fully endorsing the proposed revisions to ASPR 15-205.3 and 15.205.35 as probable solutions to much of GAO's concern with DOD managing of IR&D and B&P costs.***"

Although we stated in the draft report that the revisions proposed in January 1968, if adopted, should alleviate some of the problems that had existed for years, this did not mean that we were fully endorsing such proposals. In fact, we identified in a letter to the Chairman of the ASPR Committee several areas in which we believed some changes should be made to the proposed cost principles to clarify them or to improve their administration.

After the ASPR Committee had reviewed the response, it further modified the proposed ASPR revisions in February 1969 and asked for our comments. Our analysis led us to believe that the proposed changes would result in increased Government costs and in decreased Government awareness of the value of programs it is substantially funding. Consequently, we suggested that the proposed revisions not be implemented.

The ASPR Committee has the formidable task of evaluating numerous responses to its proposals from both Government and industry and of reaching agreement as to the most acceptable approach. Although we feel that it is desirable for us to comment upon proposed revisions, we have no direct responsibility for the changes that may evolve from the ASPR Committee's deliberations.

In still another instance CODSIA stated that:

"*** this report gives the impression that as a general rule a contractor should not be permitted to recover his properly allocable and allowable expenditures for IR&D as an item of cost in

> the price of products purchased by the Government--this without regard to any test that might be applied to such expenditures such as necessity, reasonableness and benefits."

We do not see how CODSIA could have received this impression from the report, but, in any event, we certainly did not intend to leave such an impression. In fact, we believe that the basic theme throughout our report is to explore ways and means whereby the Government can best assure itself that it is paying contractors what is properly allocable and allowable.

CHAPTER 7

AGENCY COMMENTS

We received comments on the contents of our draft report from six Government organizations--BOB, OST, NSF, DOD, NASA, and AEC. Their complete replies are included in appendixes IV through IX.

The comments from these organizations were directed principally to the four proposals we had made in our draft report. Our first proposal was that a joint study be undertaken by OST and BOB, with the assistance of NSF, looking toward the establishment of a Government-wide policy to provide guidance to participating agencies as to the extent to which and under what circumstances they should participate in contractors' IR&D costs.

DOD stated that it did not see any need for a Government-wide study because of: the close cooperation between DOD and NASA; the relatively small amount of AEC's IR&D/B&P expense and its reasons for pursuing an independent policy; and the need for the General Services Administration to include the DOD ASPR cost principle on IR&D in the Federal Procurement Regulations on an optional, rather than a mandatory, basis, as is ordinarily the case with Federal Procurement Regulations.

DOD stated further that a requirement for uniformity, such as that proposed, appeared to be a provision of uniformity for its own sake but that it would welcome any evidence of gain that might be demonstrated in a study such as we proposed.

NASA said that it had some reservation about the desirability of an overall Government policy but endorsed the conducting of a joint study. Other agencies responding to our draft report did not oppose making a study.

The comments by DOD and some of the other agencies appeared to us to be based principally on the premise that the study we were proposing would be concerned solely with the development of cost principles for IR&D and with the application of these principles on a uniform basis

throughout the Government. We intended, however, that the study would develop basic Government policy concerning IR&D, rather than be restricted to the development of cost principles, and that this policy could have built-in flexibility to cover varying conditions in the agencies involved if the policymakers determined this to be the best approach.

As discussed on page 30, both the Senate Armed Services Committee and the House Armed Services Committee plan to hold hearings on IR&D and related technical efforts, which should bring about a greater understanding of the problems involved and should facilitate the development of a Government-wide policy.

Our second proposal was that consideration be given to establishing a more systematic method of disseminating to Government personnel the information contained in IR&D brochures. None of the agencies objected to this proposal, although NSF and AEC did not comment on this matter. It was pointed out in the replies that DOD was developing such a system to cover DOD and NASA contractors and that BOB was monitoring DOD's progress. DOD indicated that the system could provide for the inclusion of the IR&D programs of contractors of non-DOD/NASA agencies, if the agencies so desire. OST indicated that the Federal Council for Science and Technology (FCST) would be the appropriate interagency mechanism for promoting the exchange of such information among the interested Federal agencies.

Subsequently, DOD reported to us in more detail how it planned to establish a data bank of IR&D work being performed by contractors. (See p. 40.) It appears to us, however, that the establishment of the data bank depends upon the implementation of the proposed ASPR revisions covering IR&D and B&P. We see no reason why the data bank would not be equally appropriate under the current ASPR. We are making no recommendations to the agencies on this matter, however, in view of the planned congressional hearings.

The third proposal was directed to the Secretary of Defense and suggested that, to minimize difficulties in administering IR&D caused by inconsistent methods of operation within the military services, he devise uniform procedures. We suggested that these procedures include prenegotiation arrangements, brochure requirements, and the scope and nature of technical evaluations.

DOD stated that it had a highly uniform approach to IR&D resulting from the centralized determinations of reasonableness and allocability of IR&D costs, the establishment of the ASRSC, the single department responsibility for conducting DOD-wide negotiations with selected contractors, and the fact that the Air Force was responsible for 63 percent of all DOD advance agreements in 1966. Nevertheless, DOD stated that it recognized the opportunity for improvements in procedures and practices that could be made and reported to us the actions it was taking on this matter. Also, NASA indicated that it had joined DOD in improving procedures and practices for administering IR&D. BOB reported that it was monitoring DOD's actions.

However, as discussed on pages 68 to 69, it appears to us that these administrative problems, as well as other problems noted in chapter 5, will continue. We are providing the Congress with several suggestions and alternative methods for handling IR&D and related technical costs. Consequently, no recommendations are being made to the agencies at this time.

The fourth proposal was made to FCST. We proposed that, in view of the substantial amount of IR&D costs absorbed by the Government and the close relationship between IR&D and contracted R&D work, FCST undertake a study as to whether the Government should receive royalty-free license rights to inventions arising from IR&D. This proposal was concurred in by the Director of OST, who is also the Chairman of FCST, and by BOB and NASA. DOD, however, stated its belief that no useful purpose would be served by a study of the type we proposed.

DOD stated that the taking of rights by the Government would exert a restraining influence on industry in its pursuit of patents, consequently minimizing probabilities of exploiting the technology developed under Government sponsorship. This opinion, as well as other reasons given by DOD for its position on the question of royalty-free rights should, of course, be considered in any study made of this matter. NSF and AEC did not discuss this proposal in their replies.

We are not continuing our recommendation to FCST in view of our suggestion that the Congress establish a Government-wide policy on IR&D. (See p. 30.)

CHAPTER 8

SCOPE OF STUDY

Our study was directed toward obtaining information on the policies, practices, and procedures followed in the management of IR&D. It did not encompass a detailed examination of the costs of managing or performing this effort. Our study was performed at 10 Government agencies and at nine plant locations of seven different contractors.

We reviewed congressional hearings involving IR&D, particularly the hearings held by the House Subcommittee on Department of Defense, Committee on Appropriations, for fiscal years 1967 through 1969.

During our study, we met with representatives of the Office of Science and Technology, Bureau of the Budget, and National Science Foundation which are charged with the responsibility for formulating Government-wide policy in the R&D area. We reviewed available documents setting forth the responsibilities of these agencies toward IR&D and discussed with officials their policymaking responsibilities.

We also reviewed records and obtained information from Government officials responsible for management of R&D, procurement, and financial administration in the Department of Defense; the Departments of the Army, Navy, and Air Force; the National Aeronautics and Space Administration; the Atomic Energy Commission; and the Defense Contract Audit Agency. We inquired into the basis and source of existing and proposed IR&D policies and related implementing IR&D directives.

Our study also included extensive fieldwork in 1967 at the Aerojet-General Corporation, Sacramento, California; Bell Helicopter Company, Fort Worth, Texas; The Boeing Company, Seattle, Washington; General Dynamics Corporation, Pomona and San Diego, California; General Electric Company, Syracuse, New York, and San Jose, California; McDonnell Douglas Corporation, St. Louis, Missouri; and Raytheon Company, Lexington, Massachusetts. Our efforts at these contractors' plants included identification of their procedures for managing IR&D

programs, relating IR&D to R&D, and identifying factors affecting the level of IR&D expenditures.

Also, we reviewed previous studies made by the Government into IR&D. These included the report of a study group formed in 1962 by the Deputy Assistant Secretary of Defense (Procurement), a report issued on April 16, 1965, by the Army Audit Agency (No. NY 65-1366), reports by the Logistics Management Institute in August 1966 and August 1967, and a report of the Defense Science Board Task Group in February 1967.

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APPENDIX I
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COST OF PERFORMING IR&D AND RELATED TECHNICAL EFFORT

Schedule I (DOD), page 86, and schedule II (NASA), page 88, contain information on IR&D, other technical effort, and B&P costs for approximately 90 major defense contractors doing business with DOD and approximately 60 with NASA for the years 1963-68.

As shown in the schedules, DOD's share of major defense contractors' total IR&D and related costs increased from $459 million in 1963 to $685 million in 1968, while NASA's share for the same period increased from $57 million to $131 million.

In 1968, DOD's share of major defense contractors' IR&D costs amounted to $333 million, while its share of B&P costs amounted to $275 million. As explained on page 61, it appears that a substantial portion of B&P costs involves technical effort similar to that of IR&D. Consequently, we believe that much of DOD's share of B&P expense and the $77 million designated as DOD's share of other technical effort costs should be considered along with the $333 million for IR&D as a more realistic measure of the total DOD share of contractors' independent technical efforts, or up to $685 million for 1968.

Conversely in 1968, NASA's share of major defense contractors' IR&D costs amounted to $60 million, B&P costs to $48 million, and other technical effort costs to $23 million, or up to $131 million for 1968. Thus, the combined DOD-NASA share of IR&D and related costs increased from $516 million in 1963 to $816 million[1] in 1968.

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[1]These figures are subject to adjustment as follows:

a. Factory burden applicable to these costs is not included in all cases. (See p. 62.)

b. The B&P expense portion includes an undetermined amount of costs incurred in direct response to requests for bids, as distinguished from purely independent technical effort. (See p. 61.)

c. The B&P expense portion also may include nontechnical costs to the extent they are not separately recorded by the contractor.

AEC's expenditures for IR&D have increased modestly in recent years, and AEC advised us in June 1968 that, based on a recently completed study, AEC's participation in its contractors' IR&D and related technical effort costs amounted to about $2.1 million a year. In addition, the same study showed that about $800,000 was spent annually by AEC for B&P expense.

We have been informed by industry representatives that the figures we used to show an increase in IR&D costs have been influenced by extraneous factors which, if nonexistent, would have resulted in less of an increase. They pointed out that (1) the 1963-66 period was a wartime period in which much Government-sponsored R&D spending was deferred and therefore more IR&D was necessary, (2) the trend toward burdening direct IR&D and B&P costs with indirect costs (see p. 63) had caused part of the increase, (3) DOD procurement policy changes have had the effect of requiring more IR&D and B&P expenditures, and (4) large increases in salaries of scientific and engineering personnel have unusually affected all R&D costs during this period.

We do not know the extent of the actual effect of these factors on IR&D and other technical effort costs. However, there is no question that the increases in such costs are significant in amount. We noted from information provided us by DOD that the increase trend continued through calendar year 1968. During that year the costs for all independent technical effort of DOD's major defense contractors increased by about 14 percent over 1967. The total sales of these companies increased by about 10 percent during the same period.

Concerning DOD procurement policy changes, some of the contractors in our study stated that IR&D and related technical effort costs had significantly increased because of the manner in which DOD transacted business with contractors. The contractors contended, for example, that agencies increased the use of competitive awards and required contractors to assume greater risks; these factors, in turn, increased the amount of technological knowledge a prudent businessman needs before accepting contract work. A contractor contended also that agencies decreased the latitude given contractors for exploratory work within the

scope of R&D contracts and that the extent of R&D effort being performed under direct contracts had been reduced and, as a result, increased work must be performed under IR&D.

In 1959, when the current IR&D policy for DOD was established, there was an extensive use of cost-type contracts which provided contractors with the minimum amount of cost risk. However, in recent years through increased use of fixed-priced and incentive types of contracts, the military services have increased significantly the general level of cost risk assumed by contractors.

The military services have also changed the manner in which they contract for major weapons systems, and this has led to increases in contractors' IR&D expenditures. In a report to DOD, Logistics Management Institute (LMI)[1] discussed these changes and commented on their effect on contractors. LMI noted that historically the initial step in the acquisition of weapons systems was an idea generated from a new concept arising from R&D, the need to meet a new threat proposed by a potential enemy, or normal system growth such as an improved product of the same family. According to the LMI report, IR&D played a relatively minor role in systems development at that time. Either the Government requested proposals or the contractors submitted unsolicited proposals. After a technical evaluation of the proposed project, a letter contract was awarded to the development contractors for the performance of the necessary R&D.

The LMI report stated that it was frequently necessary for the development contractor to perform extensive work under a letter contract to define the scope of the R&D work and to develop meaningful cost estimates. There were many changes in the scope of the work often enlarging the fund requirements and changing system performance specifications. Such R&D constracts frequently were performed concurrently with production contracts and, as a result, technological breakthroughs and new developments were injected as programs progressed.

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[1] Reconnaissance Study of Defense Contractor Bid & Proposal (B&P) and Independent Research and Development (IR&D) Costs, August 1967.

The LMI report pointed out that in the present environment R&D contracts for major weapons systems are placed after a series of actions by prospective contractors and the Government to better define in more specific terms the scope and cost of the work to be performed. These steps are called concept formulation and contract definition. During these phases, contractors may perform basic research, analyze possible aggressor threats, discuss existing system deficiencies with military services, or conduct system feasibility studies before the award of an R&D contract for a major weapon system.

According to the LMI report, although direct R&D contracts may be awarded for the concept formulation and the contract definition work, the contractors frequently incur additional costs in carrying out these efforts. Furthermore, to be in a position to compete for such contracts, the contractors must engage in more extensive research and development. Thus, the LMI report concludes that the changes in procurement practices have contributed to the significant growth in IR&D and B&P costs. However, the LMI report points out that, because of the lack of data, it is not possible to make an objective determination of the reasonableness of this growth.

DEPARTMENT OF DEFENSE

SUMMARY OF INDEPENDENT RESEARCH AND DEVELOPMENT
OTHER INDEPENDENT TECHNICAL EFFORT AND
BID AND PROPOSAL COSTS FOR
MAJOR DEFENSE CONTRACTORS (note a)

	1963			1964			1965		
	Costs incurred	Amount accepted by Government (note b)	DOD share	Costs incurred	Amount accepted by Government (note b)	DOD share	Costs incurred	Amount accepted by Government (note b)	DOD share
	(000,000 omitted)								
Independent research and development	$389	$255	$197	$419	$272	$199	$439	$300	$198
Other independent technical effort	157	118	84	182	119	71	237	140	76
Bid and proposal (note c)	236	230	178	252	245	182	277	271	186
Total (note d)	$782	$603	$459	$853	$636	$452	$953	$711	$460

a
Information was obtained from reports prepared by the Defense Contract Audit Agency.

b
Represents amount accepted in overhead negotiations for distribution to all work of the contractors-Government or commercial.

c
May include nontechnical costs where contractors' records do not segregate such costs.

d
Represents costs as recorded by the contractors and includes related overhead costs only where the contractors' accounting systems so provide.

1966			1967			1968		
Costs incurred	Amount accepted by Government (note b)	DOD share	Costs incurred	Amount accepted by Government (note b)	DOD share	Costs incurred	Amount accepted by Government (note b)	DOD share
(000,000 omitted)								
$ 502	$357	$224	$ 591	$439	$277	$ 752	$ 572	$333
238	171	91	292	163	92	252	126	77
315	302	202	338	325	230	387	372	275
$1,055	$830	$517	$1,221	$927	$599	$1,391	$1,070	$685

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SUMMARY OF INDEPENDENT RESEARCH AND DEVELOPMENT
OTHER INDEPENDENT TECHNICAL EFFORT AND
BID AND PROPOSAL COSTS FOR
MAJOR NASA CONTRACTORS (note a)

	1963 (note b)			1964 (note b)			1965 (note b)		
	Costs incurred	Amount accepted by Government (note c)	NASA share	Costs incurred	Amount accepted by Government (note c)	NASA share	Costs incurred	Amount accepted by Government (note c)	NASA share
	(000,000 omitted)								
Independent research and development	$304	$203	$24	$394	$254	$ 50	$366	$249	$ 60
Other independent technical effort	143	110	10	190	126	28	224	133	17
Bid and proposal (note d)	194	190	23	236	228	43	232	228	54
Total (note e)	$641	$503	$57	$820	$608	$121	$822	$610	$131

a
Information was obtained from reports prepared by the NASA audit division.

b
The amounts represent an estimate of the total costs of all NASA contractors for the categories indicated. The estimates were developed on the basis of actual cost data secured for 62 selected NASA contractors, which accounted, in general, for over 90 percent of NASA's total R&D procurement, other than for grants and research contracts.

c
Represents amount accepted in overhead negotiations for distribution to all work of the contractors-Government or commercial.

d
May include nontechnical costs where contractors' records do not segregate such costs.

e
Represents costs as recorded by the contractors and includes related overhead costs only where the contractors' accounting systems so provide.

1966			1967			1968		
Costs incurred	Amount accepted by Government (note c)	NASA share	Costs incurred	Amount accepted by Government (note c)	NASA share	Costs incurred	Amount accepted by Government (note c)	NASA share
(000,000 omitted)								
$417	$299	$ 65	$392	$300	$ 58	$532	$409	$ 60
220	156	21	237	141	16	161	98	23
267	257	59	244	236	50	274	266	48
$904	$712	$145	$873	$677	$124	$967	$773	$131

APPENDIX II
Page 1

CONTRACTORS' MANAGEMENT OF IR&D

The contractors included in our study generally used the following process for developing, reviewing, and approving operating plans for IR&D.

Prior to the start of the contractor's fiscal year, corporate management requests each division of the company to develop a program and budget for the coming fiscal year. Divisional program managers state their views concerning what effort should be undertaken and how much it should cost. Division managers review, evaluate, and redirect as necessary any individual projects or program segment. After the programs are approved by the division manager, they are forwarded to top corporate management for review and evaluation. Basically, this review is to ensure that the divisions' programs are coordinated and designed to accomplish overall corporate plans and objectives.

As the IR&D work progresses through the year, all major deviations to either the long-range plan or the current program are submitted to corporate management for review and evaluation. Periodically throughout the year corporate management reviews and evaluates the execution of the approved program. At these times, division managers are expected to be able to explain the present value of individual projects and to demonstrate how the technical knowledge gained through the project applies to the long-range plans and objectives. Further, during the year the program managers are required to prepare monthly summaries of each project under their jurisdiction. These summaries, which show accomplishments, measure performance, and report actual costs, are considered by division managers and corporate management in reaching decisions on the need to redirect, terminate, or initiate projects to ensure the accomplishment of corporate objectives.

Some companies have established special procedures to ensure that duplication of effort within the company is minimized and to facilitate the intercompany transfer of related technology. Such procedures may consist of requirements for special interdivisional meetings, provision for interdivisional exchange of technical data, and presentations or briefings for various steering committees.

We found that some companies were very flexible with respect to their IR&D programs. For example, at the start of 1966, one firm programmed 42 development projects in one division but initiated work on only 24 of these, and it added 51 new projects during the year. We also noted that substantial revisions were frequently made in the budgeted expenditures for individual projects. We did not test the various controls used by companies to ensure that program expenditures were made effectively, efficiently, and economically.

APPENDIX III
Page 1

MAJOR POLICY CHANGES

IN 1968 PROPOSED ASPR REVISIONS

AND OUR EVALUATION

The major changes in IR&D policy involved in the January 1968 proposed ASPR revisions were as follows:

1. The definition of IR&D was broadened to include additional technical effort, such as systems and feasibility studies.

2. B&P costs were divided into two categories--those incurred after the date of a formal Request for Proposal or formal notice of a pending request, referred to as solicited B&P, and those costs incurred before such request or notice, called unsolicited B&P. The unsolicited B&P costs would have been subject to rules similar to those applicable to IR&D.

3. IR&D and B&P would have been burdened with applicable overhead cost in the same manner as if they were projects under contract, except that G&A expenses would not have been included.

4. Profit centers which incurred less than $1 million of IR&D costs and less than $1 million of unsolicited B&P costs would have been subject to a formula for determining reasonableness of expenditures, except where CWAS[1] applied or the Secretary determined that an advance agreement would be needed.

5. When a contractor's costs were not subject to the application of CWAS or the formula, the contractor would have been required to negotiate an advance agreement within 30 days after the start of its fiscal year. We understood that advance agreements generally would have been required whenever the

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[1] See page 22 of the report for explanation of CWAS.

IR&D or unsolicited B&P costs were expected to reach $1 million or more in a given profit center. Also, where an advance agreement was required for either IR&D or unsolicited B&P costs, it would have been required for both. Where there was a failure to agree on the terms of the advance agreement, the contracting officer would have notified the contractor of the amount to be recognized.

6. The advance agreement would have provided for acceptance by the Government of its full allocable share of costs incurred up to the ceiling amount.

7. In unusual cases when application of the ASPR provision would have been inequitable, IR&D costs could have been deferred to later periods for possible recovery in the prices of products sold to the Government if approved on a case-by-case basis by the head of a procuring activity.

8. The proposed ASPR revision did not contain a requirement stipulated in the current ASPR that reasonableness of a contractor's independent development expense be contingent upon its being incurred on effort related to the contractor's product lines for which the Government has contracts.

It was our opinion that, if the January 1968 proposed revisions to the ASPR covering IR&D and B&P had been adopted, they would have alleviated some of the problems that had existed for several years. We believe that the problem of attempting to distinguish between IR&D and B&P and the inconsistency in allocation of burden expense would have been resolved and that the cost-sharing device which had been of special concern to industry would also have been eliminated.

It appeared that the January 1968 proposal might have resulted in additional cost to the Government, at least initially. The elimination of the provision for cost sharing from the first dollar of IR&D cost would probably have accounted for a major portion of the increase. In addition, the formula approach applicable to profit centers,

which incurred less than $1 million of IR&D or unsolicited B&P costs, might have resulted in increased cost inasmuch as the Government could have accepted, as reasonable, costs up to 110 percent of the average of the two highest of the preceding 3 years of contractors' costs, if not in excess of the product of the current year's sales and the average of the two highest of the preceding 3 years' ratios of incurred IR&D or B&P costs to sales.

On the other hand, the January 1968 proposed revisions would, in our opinion, have resulted in improved control over the extent of Government participation in IR&D. At present the cost of B&P, whether solicited or unsolicited, normally is an acceptable cost without special limitation. The proposed revision would have placed a control over the amount of unsolicited B&P that would have been acceptable.

In addition, the requirement that contractors negotiate advance agreements where the IR&D or unsolicited B&P costs were $1 million or more was expectdd by DOD to result in reduced cost. Under the present policy, some contractors have been unwilling to negotiate advance agreements. As stated on page 53, in a recent ruling of the Armed Services Board of Contract Appeals,[1] it was held that where advance agreement is not reached between the contractor and the Government there is nothing in the ASPR to ban allowability of 100 percent of the contractor's IR&D costs. Consequently, the requirement that advance agreement be reached should have served to limit the cost allocable to Government contracts.

Furthermore, the proposed revision required that IR&D be burdened with all applicable indirect costs other than G&A expense. This change could have resulted in a reduction in the amount of burden expense being borne under Government contracts, in those cases where the contractor exceeds the planned IR&D program. (See p. 62.)

Thus we believe that the proposed January 1968 ASPR revisions, if adopted, would have resulted in some

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[1] ASBCA No. 11931, 8-8-67.

increases in costs as well as decreases in costs. DOD and NASA officials informed us at the time these revisions were being considered that, although a net increase in cost might result, they believed such increase would be less than that which would occur if the proposed revisions were not adopted.

DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D. C. 20301

11 SEPT 1968

Mr. Charles M. Bailey
Director, Defense Division
U. S. General Accounting Office
Washington, D. C.

SUBJECT: GAO Draft Report of July 5, 1968,
"Government-Wide Study of Contractors' Independent Research and Development"

Dear Mr. Bailey:

We have reviewed the subject draft report and wish to offer the following comments on your four recommendations (pp 88-89):

1. The Need for a Government-Wide Policy on IR&D

The Department of Defense comes to just the opposite conclusion that GAO does from the evidence presented in the report. That is, it sees no need for a Government-wide policy on IR&D in the face of: (a) the admitted (p 29) continuing high degree of voluntary cooperation on IR&D policy between NASA and DoD, the two agencies which fund the overwhelming bulk of such work in the Government; (b) the relatively quite small amount of AEC's IR&D/B&P expense (p 17), and its understandable reasons for pursuing an independent policy on the topic (p 31); and (c) the need for GSA to include the DoD ASPR cost principle on IR&D in the Federal Procurement Regulations (FPR) on an optional, rather than a mandatory, basis, as is ordinarily the case with FPR's (p 29).

This last, incidentally, was undoubtedly due, at least in part, to the unsuccessful attempt already made by BoB in the early 1960's (noted on page 80) to help establish such Government-wide policy for IR&D. It, as well as the other attempt noted on page 80, illustrate that GSA and other non-DoD agencies as well as DoD recognize that unless there is a demonstrable gain to be achieved by uniformity of policy as between one executive agency and another, a requirement for uniformity such as that proposed appears to be the provision of uniformity merely for its own sake. We would therefore welcome any such evidence of gain that might be demonstrated in the probable future review of IR&D by OST and BoB noted on page 44.

2. Establishment of a More Systematic Method of Disseminating Information about IR&D Programs to Government Personnel

As noted in the Report (p 51), my Office, based in part on work with an industry committee (p 50), is already well along in establishing a

procedure that will assure that knowledge of the content of the various industrial IR&D programs supported by DoD and NASA will be made available to appropriate Government personnel (only) on a regular basis. Provision for the inclusion in the procedure of the programs of contractors of non-DoD/NASA agencies can readily be made, of course, where such contractors are not already on the DoD/NASA lists and a given agency so desires.

3. Uniform Procedures for the Military Departments

As discussed in the Report (p 41), DoD already has a highly uniform approach to IR&D as a result of its decision in 1959 that determinations of the reasonableness and allocability of the bulk of IR&D costs should be made centrally rather than locally. This decision, the consequent creation of the Armed Services Research Specialists Committee (ASRSC) to help implement it, and the assignment of single department responsibility for the conduct of DoD-wide IR&D negotiations with selected contractors was implemented in DoD Instruction 4105.52 of June 28, 1960 "Uniform Negotiation for Reimbursement of Independent Research and Development Costs". Too, a certain amount of uniformity of DoD procedure, statistically speaking, is inherent in the Report's own finding that the Air Force was responsible for 63% of all DoD advance agreements in 1966. Finally, it might be pointed out that several of the findings on pages 62-65 used to illustrate the lack of uniformity of DoD procedures are really problems of practice rather than procedure.

Nevertheless, the Office of the Secretary of Defense does recognize the opportunity for improvement that can be made in both procedures and practices in the IR&D area across the Military Departments now that the proposed revisions to the ASPR cost principles on IR&D and B&P are nearing completion. As a consequence, in parallel with this last, it has also already (a) reinstituted its direct responsibility for the ASRSC, (b) moved to assure a higher degree of interface between ASRSC and the so-called "Tri-Service negotiators", and (c) initiated an effort to revise DoD Instruction 4105.52 not only to include "Bid and Proposal" costs in it for the first time, but also to satisfy other pertinent procedural needs emerging from the drafting of the revised cost principles.

4. Study of License Rights Arising from IR&D

A policy of obtaining a royalty free license right to an invention arising from IR&D would raise the practical problems of (a) having to distinguish quite carefully between true IR&D and other independent technical effort (such as B&P) by contractors--a difficulty fully recognized on page 16 of the report when it lumped them all together, and (b) having to recognize the fact that IR&D is financed as an overhead not a direct contract item--and an overhead item only partially allocated to the Government at that--and therefore presenting a major difficulty in ascertaining whether the Government was entitled to such rights in a given case, as also recognized by the Report (p 8).

Aside from the deterence of these and other practical difficulties, however, are the existing policies of the Department of Defense on the

subject. These are detailed in DoD's comments of 17 November 1964 and 11 June 1966 to GAO on OSD Cases 2065 and 2284 and in a 4 February 1964 letter to Senator John L. McClellan attached to the former. Briefly, these documents state that it is not our policy to acquire rights in inventions and technology arising out of IR&D. The essence of this policy is the concept that the Government is in no different position than any other customer in the purchase of a product. IR&D is a necessary activity of a going concern. Because we reimburse a contractor for our allocable share of this necessary cost of doing business does not suggest that we have rights in inventions and technology eventuating from it, any more than we have rights, for example, in the plant and equipment amortized through allowed overhead costs.

To hold to the contrary would be inconsistent with the President's Patent Policy, promulgated on October 10, 1963. One of the principal objectives of the President's Policy is to encourage exploitation of technology developed under Government sponsorship. We are firmly convinced that the profit motivation provides the best stimulus for assuring that inventions arising under IR&D are exploited to the public benefit. The taking of rights by the Government would exert a restraining influence on industry in its pursuit of patents, consequently minimizing exploitation probabilities.

The present policy concerning rights in IR&D was the result of a number of years of study and interagency coordination. Our experience under it has consistently sustained the soundness of the principles which it embodies.

Because of the proven soundness of the policy, and because of the thoroughness with which this subject has already been treated, we believe that no useful purpose would be served by a study of the type proposed in this recommendation.

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The Report quite appropriately withhelp comment in certain areas as a result of the proposed ASPR revisions, in spite of delineating them as "problem areas" (pp 9-11). Two of these were noted as being of particular concern, however, and are therefore considered worthy of special comment. These were:

1. Delays in Negotiating Advance Agreements

The Department of Defense recognizes the substantial benefit to the Government of assuring the independence of contractors' IR&D effort. It also recognizes the need for it to fully control the amount of its funds that are involved. A key instrument for effectuating such control is individual advance agreements with those contractors who spend the bulk of the IR&D/B&P funds. In this regard, the Report states on page 53 that "it would appear particularly important to the Government that (those) advance agreements be negotiated promptly". The DoD agrees. As a consequence, in its current consideration of revised ASPR cost principles and DoD Instruction 4105.52, it is paying particular attention to means for assuring that incentive for such prompt negotiation is provided to industry with concomitant direction to DoD personnel.

2. Distinguishing IR&D from B&P

To further assure full DoD control of the amount of its funds that are involved in IR&D, in a situation where a number of different types of contractor independent technical effort are so similar, the January 1968 draft of the proposed revisions to the ASPR cost principles (a) provided that all such independent efforts should be defined as either IR&D or B&P, and (b) put ceilings for the first time on B&P--to the extent it was unsolicited in nature. The Report commented favorably on these moves (p 55). As a result, because close study since the January proposals were made shows (a) that distinguishing between unsolicited and solicited B&P is more a question of "when" rather than "what", as a practical matter, and (b) that determining a cut-off date for the "when" is both arbitrary in nature and nearly impossible to do equitably, you should know that serious consideration is being given to deleting the current distinction being made between solicited and unsolicited B&P in the proposed principles.

We would be happy to answer any questions you may have on these comments.

John Foster J.

John B. Foster, Jr.

42-060 O - 70 - 7

APPENDIX V
Page 1

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

AUG 23 1968

IN REPLY REFER TO: KDC

Mr. Morton Henig
Assistant Director
U. S. General Accounting Office
Washington, D.C.

Dear Mr. Henig:

We have reviewed the GAO draft report entitled "Government-Wide Study of Contractor's Independent Research and Development." As you know, we were privileged to work with the staff of the GAO Defense Division in the development of the report and in reviewing a preliminary draft. We are pleased to note that many of our suggestions and comments on the earlier draft have been incorporated in the present draft. In general, we feel that the report is a comprehensive and well-organized discussion of a decidedly complex subject.

Following are a few remarks regarding the report's specific recommendations:

1. Overall Government IR&D Policy

We have some reservation about the desirability of an overall Government IR&D policy, however, we endorse the conducting of a joint study which would examine this matter. If such a study is decided upon, we would be glad to assist in it.

2. Establishment of a More Systematic Method for Disseminating Information About IR&D Programs to Government Personnel

Your report notes on pages 50 and 51 that the DOD (DDR&E) is in the process of developing the kind of system which would fill the information needs that you feel to be essential. The effort under way is planned to cover the IR&D programs of DOD/NASA contractors. We agree that other contractors' programs could also be included in the system.

3. Uniform Procedures for Administering IR&D

Your recommendation is consistent with actions already being taken by the DOD and NASA jointly. We are participating in the development of a uniform procedure for the conduct of IR&D negotiations, including prenegotiation actions. We are represented on the Armed Services Research Specialists Committee (ASRSC) which is re-assessing brochure requirements and the scope and nature of technical evaluations. Our negotiation representative, together with DOD negotiation representatives, is working with the ASRSC

to improve both the technical and business criteria which are used to negotiate the level of IR&D to be supported by the Government.

4. Study of Royalty-Free License Rights

We concur with your recommendation for an in-depth study of whether or not the Government should seek royalty-free license rights to inventions arising from IR&D. We will also be glad to assist in this study, if one is decided upon.

We consider the Independent Research and Development and Bid and Proposal area to be an important one that requires thoughtful examination by all involved Government groups, as well as careful consideration by industry to assure that our requirements can be most effectively met and that our technological competence is advanced in the process. This should be a major consideration in establishing Government policies and practices in this area. We are devoting high level attention and effort to this matter and, as indicated above, we are prepared to assist in the overall governmental consideration in any way possible.

Sincerely yours,

Harold B. Finger
Associate Administrator for
Organization and Management

APPENDIX VI

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

OCT 17 1968

Mr. A. T. Samuelson
Director
Civil Division
U. S. General Accounting Office

Dear Mr. Samuelson:

This will confirm that senior staff of the AEC have reviewed the draft report to Congress titled "Government-Wide Study of Contractors' Independent Research and Development." We have no disagreement with the facts relating to IR&D cost principles of AEC as stated in the draft report when revised to incorporate changes suggested by AEC staff and accepted by GAO representatives.

We note, however, that although the report concludes that a Government-wide policy as to participation in contractor IR&D costs is needed, it does not set forth the efforts previously made to achieve this objective. In the early 1960's, various attempts were made to establish a uniform Government-wide policy for IR&D. The most notable attempt was made in 1962 and 1963 when the Bureau of the Budget, acting as a mediator, initiated meetings with those Government agencies that recognized IR&D as an allowable item of cost. By November 1963, agreement was reached by these agencies on Government-wide uniformity in cost principles, not only for IR&D, but for bid and proposal costs, selling expenses, direct costs, indirect costs, etc.

Proposed modifications to ASPR XV, Part 2, were submitted to industry for comment. Industry reaction to the proposed modifications was generally negative and no further action was taken to formalize the agreed upon cost principles. Correspondence pertinent to these efforts to achieve uniformity was furnished to GAO representatives.

Subsequent to receipt of industry comments, the Department of Defense suggested that cost reasonableness be determined on the basis of an industry-wide average of actual incurred costs. Although this was acceptable to NASA, AEC objected to this method because it did not require a clear showing of benefits to the contract work as a basis for determining acceptable costs.

Sincerely,

William T. Ellis

Acting Controller

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY
WASHINGTON, D.C. 20506

September 30, 1968

Dear Mr. Samuelson:

Thank you for the opportunity to comment on the GAO staff study of contractor's independent research and development programs.

Your staff has conducted a thorough review of the history of the IR&D provision in government contracting and the policies and practices of the Federal agencies with respect to participation in IR&D costs. However, I am concerned that, as presently drafted, the report is misleading and requires clarification in the following respects:

a. The need for Federal participation in IR&D costs.

Although the report discusses the nature of IR&D, why contractors perform IR&D and the benefits to the government arising from IR&D, it fails to state a basic reason for government participation in IR&D costs: that IR&D is one of several indirect costs of doing business necessarily incurred by the contractor. In competitive bid, fixed price contracts IR&D is normally included as one of the items of the contractors costs. Likewise, in cost reimbursement type contracts IR&D is recognized as an allowable overhead cost to which the government agencies contribute their reasonable and allocable shares.

b. The quality of IR&D results.

There is an implication in the wording of Highlights, Conclusions and Recommendations Sections of the report that IR&D is of questionable quality. However, in contrast to this implication, the main body of the report refers to the benefits from IR&D cited by a Task Group of the Defense Science Board and states that the GAO staff was unable to express an opinion on the value of the benefits.

c. The need for government-wide uniformity in IR&D policy.

The report implies that more explicit government-wide cost principles on IR&D are both feasible and desirable and that the lack of uniformity is somehow disadvantageous to the government and its contractors. On the other hand the background section points out that the GSA has included the DoD cost principle in the Federal Procurement Regulations on an optional basis and that the operating agencies have adopted policies for IR&D based on their respective needs. The report correctly observes that DoD and NASA being oriented toward development and highly diversified have followed the same policy guidelines whereas the AEC's research is concentrated in the area of atomic energy (in which the government has made the predominant investment). Thus, there is virtual uniformity since the AEC share of Federally financed IR&D was only 1/2 of 1% in 1966 according to the GAO report.

d. The role of the Office of Science and Technology in IR&D policy.

The report inaccurately implies that the OST has sole overall responsibility to recommend coordinated policies on IR&D and has made no studies relating to the government's role with respect to IR&D. In 1962 and 1963 the OST participated in an interagency examination of the need for uniformity in commercial cost principles under the leadership of the Bureau of the Budget. As far as IR&D was concerned, the study was not able to establish the desirability of bringing the AEC into complete conformity with the uniform cost principle practices of the DoD and NASA.

However, in consideration of the growing research and development interests in agencies other than DoD, NASA and AEC, the need for further study of the present approach to IR&D, including the desirability of adopting government-wide cost principles on IR&D, may warrant exploration.

The GAO study also raises a policy question concerning the rights of the government in inventions arising from contractor IR&D programs, while pointing out that such factors as the relative amount of contractor IR&D being absorbed by the government and the relationship of the IR&D to the R&D being performed under contract must be considered. It would be

appropriate for the Federal Council for Science and Technology to examine whether there are circumstances where the government should receive royalty-free rights to inventions arising from IR&D, and whether additional procedures are needed to safeguard the government's rights to inventions made under related R&D contracts.

With respect to the report's conclusion that there should be systematic dissemination to government personnel of the content of the various industrial IR&D programs supported by the Federal agencies, I am pleased to note that the DoD is moving expeditiously in this direction. The Federal Council for Science and Technology would be the appropriate interagency mechanism for promoting the exchange of such information among the interested Federal agencies.

Sincerely yours,

Donald F. Hornig
Director

Mr. Adolph T. Samuelson
Director
Civil Division
General Accounting Office
441 G Street, N. W.
Washington, D. C. 20548

APPENDIX VIII

Page 1

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

NOV 16 1968

Mr. Adolph T. Samuelson
Director, Civil Division
General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Samuelson:

The Bureau appreciates the opportunity to review and comment on the GAO draft report "Government-wide Study of Contractors' Independent Research and Development." The report contains much useful information and highlights a number of matters regarding IR&D which are of continuing interest to BOB. The Bureau will give careful consideration to the report's recommendation that BOB and OST jointly undertake a study "looking forward toward the establishing of an overall policy in this area...." The following comments refer to the report's conclusions and recommendations (pages 88-89):

Need for a Government-wide IR&D Policy

There is at present a high degree of collaboration between the DOD and NASA in negotiating overhead rates with their contractors, and they generally follow the same policies regarding IR&D. These agencies account for over 90 percent of Federal spending for IR&D. Thus, considerable policy uniformity has already been achieved with respect to the guidelines for Federal participation in IR&D costs and in the cost principles applied. The AEC, which is the other principal participant in IR&D, differs from DOD and NASA in that it has developed criteria for restricting IR&D to those efforts appropriate to its more specialized mission. DOD and NASA have not developed such a restrictive definition due to the breadth of their missions and requirements.

During 1962 and 1963 the Bureau of the Budget, in collaboration with pertinent agencies, studied the feasibility of obtaining the maximum possible uniformity for commercial cost principles. One area in which it was not then possible to obtain complete uniformity was IR&D because the differences between DOD-NASA and AEC could not be resolved. It was agreed that DOD would study this matter further; DOD has just developed a new proposal which is now being circulated for comment.

Establishment of a more systematic method for disseminating IR&D program information to Government personnel

DOD is taking action to establish procedures for more effective dissemination of such information. The Bureau is monitoring DOD's progress.

Uniform procedures for the three military services

DOD has initiated action to insure greater uniformity among the military departments with respect to the detailed procedures employed in administering IR&D. The Bureau is monitoring these efforts.

Royalty-free license rights to inventions from IR&D

The Bureau agrees with the GAO recommendation that it would be appropriate for the Federal Council for Science and Technology to examine through its Patent Advisory Panel questions related to the appropriateness of the Federal Government receiving royalty-free license rights to inventions arising from IR&D.

Sincerely,

PHILLIP S. HUGHES
Deputy Director

APPENDIX IX
Page 1

NATIONAL SCIENCE FOUNDATION
OFFICE OF THE DIRECTOR
WASHINGTON, D.C. 20550

AUG 12 1968

Mr. Philip Charam
Associate Director, Civil Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Charam:

The Foundation has reviewed the preliminary draft report to the Congress on your Government-wide study of contractors' independent research and development programs forwarded to the Foundation with your letter of July 5, 1968. It strikes us as a sound and useful treatment of the history and present status of the subject.

Your recommendations include a recommendation that NSF participate to some extent in a study of and the formulation of policy in this area. The Foundation has had no direct experience in examining commercial IR&D and related problems. Therefore, it would seem that our role ought to be one of commenting on policy proposals rather than developing them. The development of proposals on this very technical subject ought to be the province of the agencies which have the greatest interest and experience in it (DOD, NASA and AEC). They have definite mission reasons for their respective positions on IR&D and because there has been recent progress in the treatment of IR&D and related costs, it might be a useful first step to have these agencies jointly examine the question of the extent to which there should be a Government-wide uniformity with respect to the treatment of IR&D costs. Their recommendations and the reasons for them might be the proper subject of a BOB-OST-NSF review.

Sincerely yours,

Leland J. Haworth

Leland J. Haworth
Director

COUNCIL OF DEFENSE AND SPACE INDUSTRY ASSOCIATIONS
1730 K Street, N.W.
Washington, D.C. 20006

September 23, 1968

Mr. Charles M. Bailey
Director, Defense Division
United States General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Bailey:

As member Associations of the Council of Defense and Space Industry Associations (CODSIA), we are appreciative of the opportunity to comment on the preliminary draft of your proposed report to the Congress of your Government-wide Study of Contractors' Independent Research and Development Programs which was forwarded with your letter of July 5, 1968. We appreciate also Mr. Harold Rubin's extension of time to September 23 for the CODSIA reply. This has afforded more of the member companies of the CODSIA the opportunity to review the GAO Study and contribute to this reply.

CONTRACTOR'S RIGHT TO RECOVERY OF IR&D COSTS

Fundamentally, we believe that in negotiated procurement the recognition and allowance of IR&D, as with all other indirect costs of business, should be based on attention to cost principles, including the necessity, reasonableness and allocability of a cost item. A carefully planned and executed IR&D activity is fundamental and necessary to a contractor capable of doing defense business for the Government as it does not differ in essence from the many hundreds of other tasks generally included in the overhead necessary to maintain and operate the business. The complexity of the work and the difficulties and delays in evaluating the efforts that are involved may add to the managing problem, but do not in any way detract from the value of the work or alter the fact that these costs must be recovered in the prices of the products of the company in order to sustain a sound and dynamic business. The complexity does not in itself constitute ground for instituting arbitrary or mechanical limiting devices; quite the contrary - it calls for flexibility and latitude for judgment on the part of those responsible for results.

JUSTIFICATION FOR IR&D AND THE CONTRACTOR'S RIGHTS AND CAPABILITY IN MANAGEMENT OF IR&D

One inescapable responsibility of the managers of companies accepting defense contracts is that of maintaining a competitive business. Where a business depends on the development and sale of technologically advanced products, a well conceived independent research and development program is indispensable. The management authority which has the responsibility of planning and employing its total resources and balancing such factors as current profits with future stability is in the best position to evaluate the true worth of a given IR&D task, and the allocation of resources required by it.

The longevity of a technological business is not dependent wholly on IR&D efforts that are aimed at producing an end product. The more rapid the technological progress of an industry, the greater is the company's need for an active and productive IR&D program to maintain a technological base that includes the wisdom, the current knowledge and the finely honed skills of an aggressive, well-motivated professional and scientific staff. An important function of any well-balanced IR&D program is to maintain technical currency of the scientific staff through their participation and accomplishment of IR&D efforts. Indispensable to the utility of the program from the company's standpoint are - (1) independence in selection of task and goal, (2) flexibility including ease of decision as to redirecting efforts, and (3) retention of the fruits of the effort through an appropriate measure of exclusive or proprietary control over the products resulting from such IR&D programs.

In the long history of filling government requirements by procurement from private industry, there has been general recognition of the Government's need to control its procurement on the one hand and industry's need to manage its own business on the other. In setting out to buy only what it needs and to incur only those costs that are necessary and proper, the Government admittedly has a large and involved task. However, as the draft report itself notes, the force generally recognized as most telling in the control of the cost of products purchased is an active, effective and well-motivated management in the companies seeking to serve the Government's needs. The ever-present motivating force on management, in turn, is competition and cost and price negotiation. This motivational force is not lessened by the fact that some defense procurement is under other than price competitive type contracts. Although by definition certain negotiated contracts are described as being "non-competitive," the Government's contract negotiation process effectively simulates the competitive atmosphere of the market place and motivates contractors to control costs, including IR&D. In the competitive environment of today with fewer procurements and many more potential contractors, the technologically-based company cannot permit its costs or its offering prices to increase as the result of faulty management or excessive indulgence in its IR&D efforts. It is equally improvident for a management to permit erosion of profits through this same cause. It is therefore apparent that there are self-enforcing controls in this realm.

VALUE OF IR&D TO THE GOVERNMENT

It is important to recognize, we feel, that such IR&D expenditures as are made in the proper management of the business do have a positive effect on the product which the customer buys. Furthermore, the aggregate effect across industry is a constant upgrading of products and a healthy stimulation of innovation. This, in turn, feeds both GNP growth and technology advance, and certainly is near the core of our national capability in defense, space, and the nuclear fields. The phrasing of the report indicates a disposition to question whether the Government is receiving commensurate value. Indeed, the report seems to render a judgment of lack of value and seems to suggest that a further effort to limit IR&D is in order. It is therefore most disappointing to find that the GAO in its draft fails to fully recognize that contractors' IR&D efforts are clearly mandatory and beneficial to the Government.

NEED FOR FURTHER GAO REVIEW OF PROPOSED ASPR REVISION

In its text, the draft report generally recommends additional studies to the end of assuring proper, and seemingly additional controls of IR&D and relatable types of contractor effort. If, as seems elsewhere indicated, the draft report wishes to convey that "less" IR&D is a proper objective of the Government and "more" control is the only way to get there, then we must seriously question if such objectives can ever be met without destroying the true technical benefits to the Government that derive from these efforts.

We are further disturbed that among its conclusions and recommendations, the GAO is at this time apparently fully endorsing the proposed revisions to ASPR 15-205.3 and 15-205.35 as probable solutions to much of GAO's concern with DoD managing of IR&D and B&P costs. Industry representatives have examined the drafts in detail and have already suggested to DoD certain defects in these proposed revisions to ASPR. It is possible that GAO's researchers may not have had an opportunity to review the many objections raised by industry to the proposed ASPR revisions. We are therefore enclosing copies of comments (Exhibits I and II) already furnished DoD and the ASPR Committee which state our very grave concern.

This whole subject must also be examined in the context of the current profit trends which, as indicated by the recent Logistics Management Institute report to the DoD, corroborates the judgment of individuals and the financial market that defense business stands in an unfavorable relationship to commercial business, with clear implications as to the quality of effort which vital defense programs can command in the future. The effect on profits of ceilings and cost-sharing agreements on IR&D has been an important factor in the profit erosion that has been taking place through the cost-disallowance route.

CONGRESS' RELIANCE ON GAO

It was industry's hope that an objective and thorough report by the GAO, as the principal professional representative of the Congress in matters of accounting philosophy and practice, would place IR&D in proper perspective among the many other costs of doing business. Instead, we find a report that seems largely a subjective presentation and which avoids addressing basic accounting principles. Moreover, this report gives the impression that as a general rule a contractor should not be permitted to recover his properly allocable and allowable expenditures for IR&D as an item of cost in the price of products purchased by the Government - this without regard to any test that might be applied to such expenditures such as necessity, reasonableness and benefits.

TREND TOWARDS INCREASED IR&D COSTS

Another point of great concern is the overall implication relating to trends in the amount of IR&D cost. The draft presents data indicating that contractors have reported increases in the amount of IR&D costs incurred. The nature and causes of the reported increases are not detailed, and the report suffers from this omission. The implication is that these increases are bad for the Government. However, there are many factors to be considered: changes in funding policies of DoD and NASA resulting in less contracted R&D and consequently more IR&D, increased use of conceptual studies to reduce technical risks (and at a saving to the Government in product costs), Government required changes in accounting treatment, increased cost of professional people, the effects of inflationary factors generally, and the ever-increasing sophistication of technology in every field.

RIGHTS IN INVENTIONS

The GAO Report raises for possible study the question of whether the Government should receive royalty-free license rights to inventions arising from IR&D. Such steps would lead to destruction of the contractor's incentive to invent or innovate. In fact a negative incentive results when the prices of one company's current products must bear the burden of IR&D while other companies can compete with lower prices because they are not performing IR&D. Any step in the direction of destroying this incentive should most certainly be avoided.

NEED FOR FURTHER CONSIDERATION BY GAO

We would like to express our concern with the present form of the draft report. The report states that the GAO study was initiated to obtain a better understanding of IR&D and to identify the Government's management and review policies, procedures and practices, as related to IR&D and related technical effort. As the report indicates, the study did not include a detailed examination into the management or performance of IR&D and for this reason contributes to our view that the draft report falls short of achieving the usually desirable objective of presenting a

factual, complete, essentially unbiased display of the information available on such a vital subject.

We conclude that the report, if finally presented in its present draft form, cannot serve the best interests of the nation, let alone the procuring agencies or industry. Substantial revision is necessary in order to achieve a document which would be an accurate and objective report.

GAO CONCLUSIONS AND RECOMMENDATIONS

With respect to the Conclusion and Recommendations contained in the draft report, we do not consider it appropriate for industry to comment on whether or not a further study should be made on any specific subject.

The comments provided in this letter do reflect, however, industry views with respect to each of the areas recommended for further study.

We have included the following attachments, most of which elaborate further upon the points of our concern with certain provisions of your draft report. It is strongly recommended that you consider these additional views in the further work on your report.

A. IR&D - General Discussions

B. IR&D - Benefits to the Government

C. Costs and Cost Trends of Performing IR&D

D. IR&D Policies

E. Procedures for Determining Acceptable Share of IR&D

F. Proposed ASPR Changes

G. Rights to Royalty-Free Use of Inventions

H. Treating IR&D as a Profit Factor

CODSIA representatives will be most happy to assist you further in clarifying any of the material or points we are providing to you. Please

GAO note: The attachments to this letter are not included in this appendix due to their length. We have, however, considered their contents in developing the report.

do not hesitate to contact us if we can help you in any way.

Very truly yours,

Robert W. Barton
Robert W. Barton, Vice President
Western Electronic Manufacturers Assn.

Leo V. Bodine
Executive Vice President
National Association of Manufacturers

George E. Lawrence
Executive Vice President
Scientific Apparatus Makers Assn.

Kenneth M. Jackson
Kenneth M. Jackson, Chairman
Procurement Regulation Committee
National AeroSpace Services Assn.

Edwin M. Hood, President
Shipbuilders Council of America

James G. Ellis
James G. Ellis, Manager
Defense Liaison Department
Automobile Manufacturers Association

Karl G. Harr, Jr., President
Aerospace Industries Association

Wm H. Moore
William H. Moore, Vice President
Electronic Industries Association

Joseph M. Lyle, President
National Security Industrial Association

PRINCIPAL OFFICIALS OF GOVERNMENT AGENCIES RESPONSIBLE FOR ADMINISTRATION OF ACTIVITIES DISCUSSED IN THIS REPORT

	Tenure of Office	
	From	To
DEPARTMENT OF DEFENSE		
SECRETARY OF DEFENSE:		
Melvin R. Laird	Jan. 1969	Present
Clark M. Clifford	Mar. 1968	Jan. 1969
Robert S. McNamara	Jan. 1961	Feb. 1968
DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING:		
Dr. John S. Foster, Jr.	Oct. 1965	Present
Dr. Harold Brown	May 1961	Sept. 1965
ASSISTANT SECRETARY OF DEFENSE (Installations and Logistics):		
Barry J. Shillito	Feb. 1969	Present
Thomas D. Morris	Sept. 1967	Jan. 1969
Paul R. Ignatius	Dec. 1964	Aug. 1967
Thomas D. Morris	Jan. 1961	Dec. 1964
DEPARTMENT OF THE ARMY		
SECRETARY OF THE ARMY:		
Stanley R. Resor	July 1965	Present
Stephen Ailes	Jan. 1964	July 1965
Cyrus R. Vance	July 1962	Jan. 1964
ASSISTANT SECRETARY OF THE ARMY (Installations and Logistics):		
J. Ronald Fox	June 1969	Present
Vincent P. Huggard (acting)	Mar. 1969	June 1969
Dr. Robert A. Brooks	Oct. 1965	Feb. 1969

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APPENDIX XI
Page 2

PRINCIPAL OFFICIALS OF

GOVERNMENT AGENCIES

RESPONSIBLE FOR ADMINISTRATION OF ACTIVITIES

DISCUSSED IN THIS REPORT (continued)

	Tenure of office	
	From	To
DEPARTMENT OF THE ARMY (continued)		
ASSISTANT SECRETARY OF THE ARMY (Installations and Logistics) (continued):		
Daniel M. Luevano	July 1964	Oct. 1965
A. Taylor Port (acting)	Mar. 1964	June 1964
Paul R. Ignatius	May 1961	Feb. 1964
DEPARTMENT OF THE NAVY		
SECRETARY OF THE NAVY:		
John H. Chafee	Jan. 1969	Present
Paul R. Ignatius	Sept. 1967	Jan. 1969
Charles F. Baird (acting)	Aug. 1967	Sept. 1967
Robert H.B. Baldwin (acting)	July 1967	Aug. 1967
Paul H. Nitze	Nov. 1963	June 1967
ASSISTANT SECRETARY OF THE NAVY (Installations and Logistics):		
Frank Sanders	Feb. 1969	Present
Barry J. Shillito	Apr. 1968	Jan. 1969
Vacant	Feb. 1968	Apr. 1968
Graeme C. Bannerman	Feb. 1965	Feb. 1968
Kenneth E. BeLieu	Feb. 1961	Feb. 1965
DEPARTMENT OF THE AIR FORCE		
SECRETARY OF THE AIR FORCE:		
Dr. Robert C. Seamans, Jr.	Jan. 1969	Present
Dr. Harold Brown	Oct. 1965	Jan. 1969
Eugene M. Zuckert	Jan. 1961	Sept. 1965

PRINCIPAL OFFICIALS OF

GOVERNMENT AGENCIES

RESPONSIBLE FOR ADMINISTRATION OF ACTIVITIES

DISCUSSED IN THIS REPORT (continued)

	Tenure of office	
	From	To
DEPARTMENT OF THE AIR FORCE (continued)		
ASSISTANT SECRETARY OF THE AIR FORCE (Installations and Logistics)		
Phillip N. Whittaker	May 1969	Present
Robert H. Charles	Nov. 1963	May 1969
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
ADMINISTRATOR:		
Thomas O. Paine	Oct. 1968	Present
James E. Webb	Feb. 1961	Oct 1968
ATOMIC ENERGY COMMISSION		
CHAIRMAN:		
Glenn T. Seaborg	Mar. 1961	Present

APPENDIX II

REPORT TO

THE CONGRESS OF THE UNITED STATES

REVIEW OF
COSTS OF BIDDING AND RELATED TECHNICAL EFFORTS
CHARGED TO GOVERNMENT CONTRACTS

DEPARTMENT OF DEFENSE
AND
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

BY
THE COMPTROLLER GENERAL
OF THE UNITED STATES

MARCH 1967

(2607)

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-133386 March 17, 1967

To the President of the Senate and the
Speaker of the House of Representatives

The General Accounting Office has made a review of the costs of bidding and related technical efforts charged to Department of Defense and National Aeronautics and Space Administration contracts. The accompanying report presents our findings, conclusions, and recommendation.

The report is concerned with the need for improved control over the costs of contractors' bidding and other related technical efforts absorbed by the Government. It is based mainly on our findings at Lockheed Missiles & Space Company, Division of Lockheed Aircraft Corporation, Sunnyvale, California. However, auditors of the Departments of the Army and Air Force have noted similar problems during their audits of numerous other Government contractors. We have summarized their findings in this report.

In our opinion, the need for improved control results principally because the Armed Services Procurement Regulation, which provides the basis for limiting charges to contracts for contractors' bidding costs and other technical effort costs, is not sufficiently clear and is subject to varying interpretations. We, as well as agency auditors, have noted that, where the procurement regulations do not clearly define the types of costs allowable under Government contracts or do not clearly establish the extent of allowability, the interpretations made by contractors most often prevail.

This situation is best illustrated where contractors, such as Lockheed Missiles & Space Company, are engaged simultaneously in the preparation of bids and proposals and the conduct of independent research and development. These two activities involve similar technical efforts. For the larger contractors, including Lockheed Missiles & Space Company, agreements are negotiated in advance covering the

extent of the contractors' independent research and development programs that will be absorbed by the Government but advance agreements generally are not made limiting the amount of bid and proposal expenses to be absorbed by Government contracts.

Thus, technical effort designated by the contractor as pertaining to its independent research and development program is subject to reduced reimbursement by the Government, whereas similar effort designated as bid and proposal expense may be accepted without limitation.

Our review indicated that at least half of the $3.8 million of bidding and related costs claimed by Lockheed Missiles & Space Company for 1962 either were similar to independent research and development costs or were not, in our opinion, clearly necessary to support the contractor's bids and proposals. The items in question were costs incurred (1) after the Government indicated that it was not interested in a proposal, (2) before the time a request for proposal was received, (3) after a bid or proposal had been presented to the potential customer, and (4) to develop capability to respond to future anticipated requests for proposals.

The Lockheed Aircraft Corporation, in commenting on our draft report, disagreed with our position with respect to these items.

The Department of Defense and other Government agencies, including the National Aeronautics and Space Administration, have recognized the problem of determining allowability of bidding and related costs when such determination is based on a subjective review of the reasonableness of the contractor's classification of the technical effort for which he is claiming reimbursement. For the past several years, the Department of Defense had been in the process of amending the procurement regulations to deal with all types of contractors' independent technical effort as a package and to provide certain limitations on the charging of such costs to Government contracts.

The Department of Defense informed us, however, that the plan to combine the costs of independent research and development and bid and proposal technical effort had been recently discontinued and that a study would be made to develop an appropriate remedy for effective management of bid and proposal costs charged to Government contracts. Both the Department of Defense and the National Aeronautics and Space Administration stated that it would not be feasible at this time to issue interim guidance, as we had proposed, with respect to allowability of bid and proposal costs.

We recognize that the many facets of the bid and proposal problem deserve intensive consideration before revised procedures are established. However, we are concerned that, in the meantime, contracting and auditing officials will continue to be faced with the need to interpret the procurement regulations in the areas covered by this report. In our opinion, the planned study should be expedited.

We therefore are recommending that the Secretary of Defense give the proposed study of bidding and related costs a high priority and that he establish goals to ensure the earliest possible completion of required revisions to the procurement regulations.

We are reporting this matter to the Congress to advise it of a significant problem that is affecting several Government agencies and numerous contractors and of reported plans for its solution.

Copies of this report are being sent to the Director, Bureau of the Budget; the Secretary of Defense; the Secretaries of the Army, Navy, and Air Force; and the Administrator, National Aeronautics and Space Administration.

Elmer B. Staats

Comptroller General
of the United States

REPORT ON REVIEW OF COSTS OF BIDDING AND RELATED TECHNICAL EFFORTS CHARGED TO GOVERNMENT CONTRACTS DEPARTMENT OF DEFENSE AND NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

INTRODUCTION

The General Accounting Office has made a review of the costs of bidding and related technical efforts incurred by contractors and charged to contracts awarded by the Department of Defense (DOD) and the National Aeronautics and Space Administration (NASA). Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53); the Accounting and Auditing Act of 1950 (31 U.S.C. 67); and the authority of the Comptroller General to examine contractors' records, as set forth in 10 U.S.C, 2313(b).

This report is concerned with the need for improved control over the costs of contractors' bidding and other technical efforts absorbed by the Government. The report is based mainly on our findings at Lockheed Missiles & Space Company (LMSC), Division of Lockheed Aircraft Corporation, Sunnyvale, California. However, auditors of the Departments of the Army and Air Force have noted similar problems during their audits of numerous other Government contractors. We have summarized their findings in this report.

Our review at LMSC was made to obtain detailed information concerning a long-standing problem area for which a solution had not been developed. The examination was directed primarily toward determining the types of technical efforts included in bid and proposal expense which was claimed in the overhead rate charged to

Government contracts. We reviewed LMSC's policies and procedures to account for and claim reimbursement of such expenses and the controls established and surveillance maintained by the Government. We reviewed pertinent Government regulations and directives and the decisions reached by Government negotiators as to the allowability of bidding and related costs.

We reviewed principally the bidding and related costs pertaining to selected projects included in LMSC's claim for reimbursement of overhead costs for its fiscal year ended December 30, 1962; however, we also reviewed some projects in overhead claims for prior and subsequent years to satisfy ourselves that the conditions in 1962 were not unique.

Our review for 1962 included 140 of the 390 work orders involving $3,234,000 of the total cost of $3,832,000 of bidding and related technical efforts incurred during that year. Bidding and related costs are included in LMSC's overhead (Contract and Administrative Expense) claim, which totaled $30,331,000 for 1962. This claim still had not been fully settled by the Government as late as January 1967. Our review was limited to bidding and related costs and did not include a review of any other costs in LMSC's overhead claims.

BACKGROUND

Lockheed Missiles & Space Company is concerned principally with satellite and missile design and development under contracts with the Departments of the Air Force and Navy. A minor portion of LMSC's workload involves contracts with other Government agencies, including the National Aeronautics and Space Administration.

The Government and LMSC are concerned with various categories of technical engineering effort, the principal categories being technical effort in (1) performance of contract work, (2) independent research and development (IR&D), and (3) bids and proposals. The scope and cost of technical effort in the performance of a contract are controlled by the terms of the individual contract. IR&D efforts of LMSC are covered by an advance agreement limiting the Government's participation in the costs. The Government's participation in bidding costs is not controlled by Government regulation, except for the broad limitation in procurement regulations that such costs must be reasonable.

Paragraph 15-205.3 of the Armed Services Procurement Regulation (ASPR) defines bidding costs as follows:

> "Bidding costs are the costs of preparing bids or proposals on potential Government and non-Government contracts or projects, including the development of engineering data and cost data necessary to support the contractor's bids or proposals. Bidding costs of the current accounting period of both successful and unsuccessful bids and proposals normally will be treated as allowable indirect costs, in which event no bidding costs of past accounting periods shall be allowable in the current period to the Government contract. However, if the contractor's established practice is to treat bidding costs by some other method, the results obtained may be accepted only if found to be reasonable and equitable."

LMSC's definition of bid and proposal expense is substantially the same as the ASPR definition of bidding costs, and such costs are included by LMSC in its overhead costs for the period in which they are incurred.

Various Government customer agencies solicit proposals from LMSC and other contractors for studies, design, and development of satellites, missiles, and their components. Formal solicitations are made in the form of a request for proposal (RFP)[1] issued by authorized contracting officers. LMSC not only replies to RFP's but also initiates unsolicited proposal efforts, some of which are submitted to customer agencies, and undertakes engineering studies--referred to as preproposal efforts--to develop its own capability to bid for new work. Preproposal efforts are defined by LMSC as:

> "*** those efforts required to assure a competitive position in responding to an anticipated program or program area proposal request."

The costs of these efforts are charged to bid and proposal expense.

In addition, during 1962 LMSC established a new category of costs related to bid and proposal expense which it designated as "contract capability costs." These costs are defined as the costs of:

> "*** that effort devoted to sustain continuity of the proposed program subsequent to submission of the proposal, but prior to and in anticipation of the contract award."

Preproposal and contract capability costs are not defined in the ASPR. LMSC accumulates its bid and proposal expense and contract

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[1]The term "request for proposal (RFP)" as used in this report is to be interpreted to include reference to "request for quotation."

capability costs in overhead work orders. These work orders are charged with direct labor and material, purchased services, computer use, and interdivision charges. Indirect labor, overtime premium, reproduction, travel, and other applicable overhead are not allocated to these work orders.

Total direct costs of bidding and related efforts claimed by LMSC in recent years are summarized as follows:

Direct Costs of
Bidding and Related Efforts

Year	Bid and proposal		Contract capability	Total
	Preproposal	Bidding		
1960	$ 561,000	$ 743,000	$ -	$1,304,000
1961	1,020,000	1,209,000	-	2,229,000
1962	1,068,000	2,404,000	360,000	3,832,000
1963	2,668,000	2,169,000	204,000	5,041,000
1964	3,686,000	1,844,000	69,000	5,599,000
1965	4,839,000	2,572,000	301,000	7,712,000

As stated on page 2, bidding and related costs are part of Contract and Administrative Expense which is included in LMSC's overhead claim for allocation to Government contracts. LMSC's claims for Contract and Administrative Expense were $22,033,000 in 1961, $30,331,000 in 1962, $35,997,000 in 1963, $35,001,000 in 1964, and $35,806,000 in 1965.

The Government's financial interest in LMSC's bidding and related costs stems from the fact that LMSC's sales are almost exclusively to the Government, and these costs are allocated to the various contracts. For instance, during 1962, 99.99 percent of LMSC's sales were to the Government under negotiated contracts, 98.37 percent being under cost-reimbursement-type contracts and the remainder under other types of negotiated contracts. LMSC's sales for 1962 amounted to $824 million.

Subsequent to 1962, an increasing proportion of LMSC's sales to the Government has been made under firm fixed-price and fixed-price incentive contracts. For example, in 1965 about 44 percent of LMSC's sales were made under fixed-price-type contracts. During that year total sales amounted to about $601 million, of which 99.97 percent were to the Government.

The Air Force, Navy, and NASA contracts awarded to LMSC are administered by representatives of each agency, who are located at the contractor's plant. Audit responsibility is vested in a representative of the Defense Contract Audit Agency, formerly the representative of the Air Force Auditor General, also located at the contractor's plant. The overhead rates are negotiated by a joint-services negotiation team headed by a representative of the Air Force Systems Command, Andrews Air Force Base, Washington, D.C.

A listing of the principal officials of the Department of Defense and the National Aeronautics and Space Administration responsible for matters discussed in this report is included as appendix I.

FINDING AND RECOMMENDATION

NEED FOR IMPROVED CONTROL OVER COSTS OF BIDDING AND RELATED EFFORTS CHARGED TO GOVERNMENT CONTRACTS

There is a need for improved control on the part of the Department of Defense and the National Aeronautics and Space Administration over the costs of bidding and related technical efforts charged to Government contracts.

In our opinion, the need for improved control results principally because the Armed Services Procurement Regulation, which provides the basis for limiting charges to contracts for contractors' bidding costs and other technical effort costs, is not sufficiently clear and is subject to varying interpretations. We, as well as agency auditors, have noted that, where the ASPR does not clearly define the types of costs allowable under Government contracts or does not clearly establish the extent of allowability, the interpretations made by contractors most often prevail.

This situation is best illustrated where contractors, such as LMSC, are engaged simultaneously in the preparation of bids and proposals and the conduct of independent research and development. These two activities involve similar technical efforts. For the larger contractors, including LMSC, agreements are negotiated in advance covering the extent of the contractors' IR&D programs that will be absorbed by the Government but advance agreements generally are not made limiting the amount of bid and proposal expenses to be absorbed by Government contracts.

Thus, technical effort designated by the contractor as pertaining to its IR&D program is subject to reduced reimbursement by the Government, whereas similar effort designated as bid and proposal expense may be accepted without limitation.

The findings resulting from our review at LMSC and the findings of agency auditors concerning bid and proposal costs of several Government contractors, including LMSC, are included in the sections that follow.

Government administration of bidding and related costs

The allowability of a defense contractor's claim for bidding and related costs is governed by the Armed Services Procurement Regulation. The contractor's claim is reviewed by the cognizant Government auditor who issues an advisory report in which he questions such costs as do not appear to meet contractual or ASPR criteria. The Government negotiator reviews the auditor's advisory report and, on the basis of the questions raised in the report and explanations received from the contractor and the auditor, negotiates a settlement of the contractor's claim. Although the cognizant auditor has questioned a significant portion of the bidding and related costs claimed by LMSC in recent years, the Government negotiator has allowed virtually all such costs.

Paragraph 15-205.3 of the Armed Services Procurement Regulation, as quoted on page 3 of this report, defines bidding costs. The ASPR provides that bidding costs are allowable if they are reasonable. Reasonableness is defined in paragraph 15-201.3 in the ASPR as:

> "A cost is reasonable if, in its nature or amount, it does not exceed that which would be incurred by an ordinarily prudent person in the conduct of competitive business. The question of the reasonableness of specific costs must be scrutinized with particular care in connection with firms or separate divisions thereof which may not be subject to effective competitive restraints. What is reasonable depends upon a variety of considerations and circumstances involving both the nature and amount of the

cost in question. In determining the reasonableness of a given cost, consideration shall be given to--

(i) whether the cost is of a type generally recognized as ordinary and necessary for the conduct of the contractor's business or the performance of the contract;

(ii) the restraints or requirements imposed by such factors as generally accepted sound business practices, arm's length bargaining, Federal and State laws and regulations, and contract terms and specifications;

(iii) the action that a prudent business man would take in the circumstances, considering his responsibilities to the owners of the business, his employees, his customers, the Government and the public at large; and

(iv) significant deviations from the established practices of the contractor which may unjustifiably increase the contract costs."

DOD has not provided auditing and contracting officials with specific guidelines for implementing the "bidding cost" provision, and these officials, as well as contractors, must interpret the "bidding cost" provision guided only by the general terms of the "reasonableness" provision.

Our review indicates that several contractors, including LMSC, have interpreted the phrase in the definition of bidding costs which reads "including the development of engineering data and cost data necessary to support the contractor's bids or proposals" to mean that preproposal and other technical efforts incurred in anticipation of the release of an RFP are allowable costs. These efforts are similar to independent research and development efforts, and, in our opinion, it is not clear whether they should be

considered as bidding, IR&D, or other technical efforts. Government negotiators, in the absence of implementing instructions, have been reluctant to disallow such costs from claims for bid and proposal expenses, even though auditors have often questioned the allowability of such costs.

The ASPR permits contractors to recover costs of independent research and development and bidding efforts as indirect charges to Government contracts. In recognition of the difficulty in some cases of determining the reasonableness and allocability of certain types of costs, DOD recommended in the ASPR (15-107) the negotiation of an agreement in advance of the incurring of such costs. The ASPR 15-107 provides that:

> "*** the reasonableness and allocability of certain items of cost may be difficult to determine, particularly in connection with firms or separate divisions thereof which may not be subject to effective competitive restraints. In order to avoid possible subsequent disallowance or dispute based on unreasonableness or nonallocability, it is important that prospective contractors, particularly those whose work is predominantly or substantially with the Government, seek agreement with the Government in advance of the incurrence of special or unusual costs in categories where reasonableness or allocability are difficult to determine."

The Government and LMSC have for several years negotiated advance agreements limiting the Government's participation in the cost of IR&D efforts pursued by the contractor. These advance agreements provide for cost sharing of IR&D expenses and place a maximum limit on the costs that the Government will absorb each year. The cost sharing between the Government and LMSC has been on a 75-25 percent basis, respectively, subject to a ceiling amount established for the Government's share. The following schedule shows the Government share ceiling, the total IR&D expenses

incurred, and the amounts allowed by the Government negotiator in overhead negotiations:

Year	Government share ceiling	Total IR&D expense incurred	Allowed in overhead negotiations
1960	$3,422,000	$ 4,390,000	$3,208,000
1961	3,365,000	4,337,000	3,121,000
1962	5,175,000	6,793,000	5,076,000[a]
1963	5,981,000	8,425,000	5,981,000[a]
1964	7,471,000	10,823,000	7,471,000
1965	6,764,000	11,703,000	Not yet negotiated

[a]Although overhead negotiations were not settled as of January 27, 1967, the parties had agreed to these amounts for IR&D.

The advance agreements for IR&D provide, in part, that:

"The above ceilings include only the independent research and development costs as defined in ASPR 15-205.35, including the applicable engineering and manufacturing overhead, but do not include the allocation of G&A nor costs of other research effort such as defined by ASPR 15-205.3, Bidding Cost, and 15.205.21, Manufacturing & Production Engineering Costs. ***"

Although some technical efforts--such as the development of engineering data for an unsolicited proposal or in anticipation of a request for proposal--are in our opinion very similar to IR&D, costs of these efforts have been charged by LMSC to bid and proposal expense and have not been covered by advance agreements.

The Air Force auditor has questioned the reasonableness of bidding and related costs claimed by LMSC for several years. For LMSC's 1960 claim, he questioned $561,000 of preproposal costs and $743,000 of bidding expenses. The Government negotiator was of the opinion that the preproposal costs were very similar to IR&D and

should be subject to a cost-sharing arrangement similar to the advance agreement negotiated for IR&D. His offer of a 75-25 percent sharing plan was accepted by LMSC and, as a result, $140,000 of the contractor's claim for preproposal costs was disallowed.[1] The negotiator, however, allowed all of the bidding expense claimed, on the basis that the amount was reasonable and consistent with past experience and sales volume.

The auditor, for LMSC's 1961 claim, questioned $925,000 of the bid and proposal expenses claimed by Lockheed on the basis that this amount represented a significant increase over comparable costs in 1960. The Government negotiator considered $650,000 of the costs questioned by the auditor to be reasonable but disallowed $275,000. While neither the auditor's records nor the Government negotiator's records identified the amount of preproposal effort included in the amounts questioned and disallowed, the Government negotiator advised our representative that it had been a signifcant factor in arriving at the amount disallowed.

The auditor, in his 1962 overhead review, questioned $1,912,000 of the $3,472,000 bid and proposal expense and all the $360,000 contract capability costs claimed by LMSC. He questioned the $1.9 million bid and proposal expense on the basis that it represented an extraordinary increase in such costs. The $1.9 million consisted of about $1 million in preproposal effort, $111,000 on LMSC's study on a spacecraft bus, $54,000 for a mock-up display not needed, excessive proposal activity for NASA in relation to volume

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[1] Lockheed Aircraft Corporation, in comments dated 9-26-66 (app. II), stated that disallowances were at times accepted as a compromise to conclude negotiations but not on the basis that the preproposal costs should have been treated as IR&D.

of business with NASA, and substantial dollar expenditures on several individual proposal projects.

The Government negotiator reinstated all of these questioned expenses, except the $111,000 expended on the spacecraft bus for a lunar logistics system. The negotiator informed us that the $111,000 expended on the spacecraft bus had been disallowed because LMSC had been notified of the award to another company and continued incurring costs on something that LMSC could not sell and from which the Government would have little benefit.

In connection with the $1 million of preproposal efforts, the auditor pointed out that, because of their apparent research-oriented nature and nonapplicability to specific proposals, these efforts could be considered as IR&D. As such, the costs of the preproposal effort would be subject to regular overhead application and cost sharing under the negotiated IR&D advance agreement ceiling. The Government negotiator, however, claimed he had no guidelines to follow and had to apply the test of reasonableness. He recognized that the preproposal effort could be used to circumvent the limits contained in the advance IR&D agreement but maintained that it was a normal business expense and should be allowed. He claimed that he was aware of the nature of the costs and agreed that they were not strictly proposal costs.

The Government negotiator's explanation for reinstating the preproposal expenses was inconsistent with his prior years' determinations that certain of these same types of costs were not allowable under Government contracts.

The auditor, in reviewing LMSC's overhead claim for 1963, questioned over $3 million of bid and proposal expenses and almost $200,000 of contract capability costs of the over $5 million bidding and related costs claimed. Although the negotiations had not

yet been completed at the time of our review, the Government negotiator informed us that, except for a disallowance of $60,000 on the spacecraft bus to which LMSC had agreed, he had reinstated all the other bid and proposal expense and contract capability costs questioned by the auditor.

The problem of determining the allowability of bidding and related costs arises because ASPR defines several types of technical effort in such a way that a given technical effort may be costed in more than one category. This problem is compounded by the passage of time because of the loss of employees familiar with the work performed and the lack of sufficiently detailed supporting records. Although LMSC presents its overhead claim shortly after the close of its fiscal year, the audit, negotiation, and settlement of the claim are often delayed for several years. Thus, as of January 27, 1967, LMSC's overhead claims for 1962 and 1963 had not yet been completely settled.

DOD management officials, auditors, contracting officers, and negotiating officers have recognized the problem of determining the allowability of bidding and related costs when such determination is based on a subjective review of the reasonableness of the contractor's classification of the technical effort for which he is claiming reimbursement. For the past several years DOD and other Government agencies, including NASA, have been working on a revision of procurement regulations to provide a better means of controlling the costs charged to Government contracts for the technical efforts of contractors. Because various types of technical effort were difficult to clearly and conclusively identify, DOD was considering the desirability of amending the ASPR to place the costs of all such technical effort under a single category to be called contractor's independent technical effort (CITE).

We were informed in November 1966, however, that, although this approach had merit, it had been determined that on balance it was not an acceptable solution. Consequently, DOD is now planning further studies to aid in the development of new methods of dealing with bid and proposal costs.

Army and Air Force auditors have also reported on the inadequate control over the costs of various types of technical efforts charged to Government contracts. In a report, dated October 18, 1963, on the review of bidding costs incurred in 1961 and 1962 at 35 contractor locations, the Air Force Auditor General showed that (1) various bases were used by negotiating officials to determine allowability of bidding costs and (2) bidding costs were not allocated to contracts of agencies in proportion to bids and proposals made to the agencies so that an agency which generated a substantial amount of bidding costs absorbed only a small fraction of the bidding costs incurred.

On May 13, 1965, the Air Force Auditor General reported on a review of bidding and proposal costs incurred by bidders on 20 small (from $11,000 to $89,000) research and development procurements. The report showed that the total bidding costs of all bidders ranged from 7 to 178 percent of the amount of the basic procurement contract and that the average cost was 43 percent of each procurement.

In a report, dated April 16, 1965, on the review of IR&D and other related technical effort at 28 contractor locations, the Army Audit Agency reported (1) intermingling of IR&D with bidding and proposal and other technical effort costs, (2) inconsistent allocation of indirect costs to IR&D effort, and (3) inadequate implementation of existing procedures by procurement personnel when negotiating IR&D advance agreements.

We reviewed bidding and related technical effort costs incurred by LMSC for the period 1961-63, with particular emphasis on 1962. In our opinion at least $1,936,000 of the $3,234,000 of costs we reviewed for 1962 either were similar to IR&D effort costs or were not clearly necessary to support the contractor's bids and proposals. These costs are summarized in the table below and are discussed in the sections of the report that follow.

Type of cost		Amount
Preproposal efforts		$1,068,000
Studies pursued after notification that Government not interested:		
Spacecraft bus	$111,000	
Titan III upper stage	38,800	
Synchronous Orbit Communication System	4,336	154,136
Engineering studies before and after proposal period		354,336
Contract capability		359,755
		$1,936,227

Cost of preproposal efforts charged to Government contracts

For 1962, LMSC claimed as bid and proposal expenses direct costs of $1,068,000 for studies to develop engineering capabilities. For 1963, LMSC claimed $2.7 million for such studies. (See p. 5 .) These studies, generally referred to as preproposal efforts, were initiated to investigate and develop data on given projects or program areas.

As stated on pages 11 through 13, the Air Force auditor questioned substantial amounts of preproposal expense in LMSC's claims for 1960, 1961, 1962, and 1963. The negotiator disallowed $140,000 of such costs for 1960 and about $275,000 for 1961 but advised us that he had allowed all such costs included in LMSC's claims for 1962 and 1963.

Following are examples of preproposal efforts charged by LMSC as bid and proposal expense:

Advanced Agena vehicles

In 1962 and 1963 LMSC expended about $353,000 on an 18-month preproposal study of advanced Agena vehicles. The study effort was to provide recommendations to LMSC management on courses of action for further development of an upper stage vehicle and to initiate further development of appropriate LMSC capabilities.

On January 8, 1962, LMSC issued a preproposal work order describing the effort, as follows:

> "This study is intended to cover the investigation of Agena derivatives and alternatives. Consideration will be given to: increased diameter and length, other high energy fuel, and compatibility with both present and future large 1st stage boosters, including solids."

From time to time the work plan was revised, authorizing additional time and further defining the scope and objectives of the study. For example, the October 12, 1962, revision stated, in part:

> "The study will investigate the missions and systems requirements, systems engineering, and developmental requirements of a Lockheed [LMSC] advanced post-Agena Upper Stage Vehicle, and will have as its objective a firm recommendation on Lockheed's [LMSC's] course of action with regards to developmental proposals to NASA and the USAF."

The June 25, 1963, revision of the work order described the preproposal effort, as follows:

> "This revision is issued to cover the Second Quarter effort on the subject study. It will continue the investigation of mission and systems requirements, systems engineering and developmental requirements of a LMSC Advanced Post-Agena upper stage vehicle. The data compiled will be used on anticipated future proposals."

LMSC made a presentation of the major results of the effort to NASA in June 1963. Shortly after the presentation, the effort was discontinued. LMSC neither received a request for a proposal nor submitted a proposal to the Government.

Eurospace study

In 1962 and 1963 LMSC expended about $23,000 on an analysis and commentary on a proposal prepared by Eurospace, a nonprofit, nonpolitical organization whose members are from European industry. The purpose of Eurospace is to promote space activities in Europe. LMSC, as a corresponding member, was invited by Eurospace to undertake a study. LMSC charged the costs of the study to bid and proposal expense and ultimately allocated these costs to Government contracts.

The October 12, 1962, LMSC work order described the study, as follows:

> "Preliminary effort, which supported by the funds of this workplan, involves evaluation and comment on various proposals generated by Eurospace members."

In April 1963, after a 3-month suspension of work, the project was renewed under a new work order which described the effort, as follows:

> "This work order is issued to cover the effort required on the subject study. It will involve critical review and analysis of the Eurospace proposals for a European nonmilitary space program and a determination of potential areas for major LMSC participation."

LMSC neither received a request for proposal nor submitted a proposal to a Government or commercial customer.

The LMSC preproposal work orders showed that the purpose of the studies was to establish capability for future participation in program areas and to prepare LMSC for future proposals in various fields. The preproposal efforts extended over many months. They were not specifically directed toward responding to requests for proposals or toward developing data for current unsolicited proposals.

Costs of studies pursued after notification that the Government was not interested in proposals

LMSC, in 1962 and 1963, claimed direct costs of about $230,400 for reimbursement under Government contracts for studies pursued on three different projects after it had been notified that the Government was not interested in the proposals. These costs were part of the total bidding costs of $2,404,000 and $2,169,000 claimed by LMSC for 1962 and 1963, respectively. (See p. 5.)

As stated on pages 11 through 13, the Air Force auditor questioned, and the Government negotiator disallowed, the costs of the spacecraft bus project in LMSC's overhead claims for 1962 and 1963. However, the auditor did not question the fact that LMSC's overhead claims included costs incurred on the Titan III upper stage project and the synchronous orbit communication system project after LMSC had learned that the Government was not interested in LMSC's proposals on these two projects. The negotiator advised us that he had not disallowed costs incurred on the latter two projects which were included in LMSC's overhead claims for 1962 and 1963.

Following are the details on these three projects.

Spacecraft bus for lunar logistics system

On August 1, 1962, NASA issued a request for proposal for a study of a spacecraft bus for a lunar logistics system. LMSC submitted a proposal on August 17, 1962. The direct costs incurred for this proposal effort totaled about $4,000. While waiting for NASA's evaluation of the proposal, LMSC undertook a review and extension of the work submitted in the proposal, including design configurations and concepts. The study costs during this waiting period totaled about $2,000. On September 6, 1962, NASA notified LMSC that it was negotiating a contract for the study of the spacecraft bus with another company. The Government paid this successful bidder $178,448, plus a fixed fee under this contract.

Eleven bidders responded to the request for proposal for a spacecraft bus. NASA considered several of the contractors in its final evaluation. Although LMSC was not one of those considered and was notified on September 6, 1962, that the contract was being awarded to another company, it continued with its study of the spacecraft bus. During September 1962, LMSC started the 3-month

study that it had outlined in its August 17 proposal. In December 1962 LMSC made a technical presentation of its findings to NASA. LMSC continued its studies on the spacecraft bus until the middle of May 1963. In the table below, the total costs LMSC incurred to perform the study are compared with the successful bidder's proposed contract costs.

	LMSC cost	Successful bidder's proposed cost
Direct Labor	$131,092	$ 64,754
Computer and other costs	39,573	36,523
Total direct charges	$170,665	$101,277
Overhead	108,700[a]	76,167
Total cost	$279,365	$177,444[b]

[a]Estimated by GAO

[b]Total contract cost was $178,448 exclusive of fee.

LMSC charged the direct costs of the proposal effort and the subsequent study effort to a single bid and proposal work order. No overhead was applied to the work order. The direct costs of the study in 1962 and 1963 were about $111,000 and $60,000, respectively.

Titan III upper stage

LMSC, in 1962, incurred direct costs of about $38,800 on a proposal effort for the Titan III upper stage after it had been notified by the Government that the design and development of the vehicle had been assigned to another company. LMSC pursued the study for about 5 months and then terminated the effort without

submitting a proposal. LMSC claimed reimbursement of the cost of the study as bid and proposal expense.

On April 6, 1962, LMSC started a preliminary study of the Titan III upper stage. On April 12, LMSC's New Business Committee approved a proposal effort. LMSC's records show that, on that same day, the Air Force Chief of the Procurement Directorate for the Titan III told the LMSC representative that the Air Force had assigned design and development cognizance to another company and that LMSC would not have an opportunity to participate in this program because of the critical schedules and time limitations. Despite the knowledge that the Government was already working with another company, LMSC proceeded with its study. On May 10, 1962, LMSC made a presentation of the preliminary study to the cognizant Government Review Committee. In September 1962, after LMSC had charged $42,098 to bid and proposal expense, the effort on the Titan III upper stage was abandoned without submitting a proposal. About $38,800 of this amount was incurred after the Government had notified LMSC that another company had been selected.

Synchronous orbit communication system

In July 1962, LMSC undertook a study in anticipation of a request for a proposal on the synchronous orbit communication system program. In December 1962, after incurring costs of $114,500 on the company-initiated synchronous orbit proposal effort, LMSC made a presentation of its findings to the Air Force. It then found that no fiscal year 1963 or 1964 funds were available for the synchronous orbit system. The limited funds available for the communication satellite program had all been allocated by the Air Force to a medium altitude random orbit system. After it had been notified that funds were not available for that program, LMSC continued its effort on the synchronous orbit proposal for several weeks and incurred additional direct costs of $21,000. Of this amount, $4,336 was charged to 1962 costs and the remainder to 1963. No proposal was submitted by LMSC.

Engineering studies before and after the proposal period charged as bidding costs

For 1961, 1962, and 1963, LMSC claimed about $1,527,000 as bidding costs incurred on four projects we selected for review; about $777,000 of these costs were incurred before receipt of requests for proposal (RFP) or after submission of the proposal.[1] These costs were part of the total bidding costs of $1,209,000, $2,404,000 and $2,169,000 claimed by LMSC for 1961, 1962, and 1963, respectively. (See p. 5.)

As stated on pages 11 through 13, the Air Force auditor questioned substantial amounts of bidding costs included in LMSC's overhead claims for 1961 through 1963. However, the Government negotiator reinstated and allowed almost all such costs claimed for those years.

LMSC incurred the following costs on the four projects during 1961 through 1963:

Direct Bid and Proposal Expenses

Project	Before release of RFP	During proposal period	After submission of proposal	Total	Costs outside proposal period
RIFT (note a)	$663,386	$275,866	$23,460	$ 962,712	$686,846
NOVA Vehicle System Study	32,401	236,960	15,056	284,417	47,457
Missile B	22,921	183,648	8,635	215,204	31,556
MMRBM (note b)	3,005	53,353	8,330	64,688	11,335
Total	$721,713	$749,827	$55,481	$1,527,021	$777,194

[a] Reactor-in-flight-test.

[b] Mobile medium range ballistic missile.

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[1] The term "after submission of proposal" as used in this report is to be interpreted to mean subsequent to any required postproposal presentation.

Of the total cost of $777,194, shown in the table above as incurred outside proposal periods, $354,336 was charged in 1962, consisting of $279,266 for RIFT, $45,457 for NOVA, $18,278 for Missile B, and $11,335 for MMRBM. LMSC also claimed contract capability costs of about $360,000 in 1962 on these four projects. (See discussion of contract capability costs on pp. 25 to 29.)

Analysis of one of these projects, the RIFT proposal effort, shows that LMSC, in anticipation of the release of an RFP, started engineering studies on a proposal in July 1961. NASA issued the RFP on this program in two phases. The RFP for Phase I covered the management proposal and was released on December 7, 1961. The purpose of this RFP was to permit the Government to evaluate the capabilities of interested contractors and, accordingly, limit the list of potential contractors to those who possess demonstrable competence and capability to successfully perform the requirement under consideration. LMSC submitted the management proposal on January 2, 1962. We were informed that the cost of preparing the management proposal was nominal.

On February 26, 1962, after evaluating the management proposals, NASA released the RFP for Phase II to the three qualified contractors selected under the earlier phase. LMSC, as one of the selected contractors, submitted its cost and technical proposal for Phase II on March 26, 1962, and made a required oral presentation to NASA on April 11, 1962. LMSC continued the study effort with the last charge being recorded in February 1963.

Contract capability costs
charged to Government contracts

In 1962, LMSC charged about $360,000 to Government contracts for what it termed "contract capability costs." LMSC identified

these 1962 costs as those incurred in support of four major proposals after the proposals had been submitted. As stated on pages 11 through 13, the Air Force auditor questioned the contract capability costs included in LMSC's overhead claim for 1962 and also for 1963; however, the Government negotiator reinstated and allowed all such costs claimed for those years.

LMSC introduced contract capability costs as a new category of costs in April 1962. In November 1963, LMSC, at the request of the Air Force auditors, defined these costs, as follows:

> "*** that effort devoted to sustain continuity of the proposed program subsequent to submission of the proposal, but prior to and in anticipation of the contract award. This activity includes:
>
> a. Consolidation and finalization of technical data and reports generated during the proposal effort.
>
> b. Retention of the basic team commitment made to the customer insofar as it is practical and feasible.
>
> c. Planning of complete staff and organizational requirements.
>
> d. Accumulation and presentation of additional information in support of the proposal or as requested by the customer.
>
> e. Preparation and submission of data, subsequent to contract award required by the customer for definitive contract finalization."

Contract capability costs were an unusual type of cost neither defined by the ASPR nor previously categorized by LMSC. ASPR 15-107 recommends that, to avoid a possible dispute based on unreasonableness or unallocability, the contractor should seek agreement

with the Government in advance of incurring unusual costs in categories where reasonableness or allocability are difficult to determine.

LMSC did not seek or obtain Government approval in advance of incurring contract capability costs. For 1962, it claimed costs on the following four major projects.

Project	Direct costs
RIFT	$ 69,145
NOVA Vehicle System Study	275,534
Missile B	13,754
Integrated Mission Control Center	1,322
	$359,755

In 1963, LMSC claimed an additional $5,000 as contract capability costs on these projects and $199,000 on three other projects.

As discussed on page 24, LMSC incurred costs after it had submitted the proposals and made subsequent required presentations and charged these costs to bid and proposal expense. In addition, it incurred contract capability costs on the same projects after the proposals were submitted. For example, on the NOVA Vehicle System Study, LMSC submitted its proposal on April 26, 1962. After submission of its proposal, LMSC incurred direct costs of $15,000 which it charged to bid and proposal expense and, in addition, incurred direct costs of about $275,000 which it classified as contract capability costs.

Furthermore, LMSC incurred part of these costs after July 13, 1962, the date when LMSC was notified that the contract was being awarded to two other companies, and as late as August 10, 1962. Thus, LMSC incurred costs of about $28,000 of the total cost of

$275,000 for contract capability on the NOVA Vehicle System Study after it was notified that it was an unsuccessful bidder on that project.

On the NOVA Vehicle System Study, NASA invited proposals for a cost-sharing contract. NASA indicated that the Government would finance costs of approximately $700,000. LMSC estimated that the NOVA Vehicle System Study would cost $1,900,000 and proposed a cost-sharing contract whereby NASA would finance $700,000, or 37 percent, while LMSC would absorb $1,200,000, or 63 percent, of the total costs.

After submitting the proposal on the NOVA Vehicle System Study, LMSC, without approval from NASA, proceeded with development studies on vehicle design. The introduction to one of the reports stated:

> "This fourth Progress Report concludes the company-funded design effort on the NOVA Vehicle Program as defined in the NASA RFQ." (Empahsis supplied.)

Although the report stated that the work was company funded, LMSC charged the cost of these studies to contract capability work orders and ultimately passed these costs to Government contracts.

LMSC charged Government contracts with the following costs in connection with the NOVA Vehicle System Study.

	Direct costs
Bid and proposal expense	$284,000
Contract capability cost	275,000
	$559,000

Thus, although LMSC was not awarded the contract, it charged Government contracts almost as much for its effort on the NOVA Vehicle System Study as the $700,000 NASA indicated it would finance for such a study.

Contractor comments and our evaluation

Lockheed Aircraft Corporation (Lockheed) submitted comments on the findings and proposals for corrective action included in our preliminary draft report. The full text of its reply is included as appendix II.

Lockheed stated that its review did not sustain the conclusion in our draft report that the costs discussed in the report were not clearly necessary to support LMSC's bids or proposals and, therefore, were not clearly within a reasonable interpretation of the ASPR definition of bidding costs. Lockheed agreed that determinations as to reasonableness require a degree of subjective judgment but did not believe that this, by itself, indicates that additional guidance is required.

In its reply, Lockheed presented justification for having included as bidding and related costs the various types of expenses discussed in this report. Engineering and other costs incurred prior to receiving a request for a proposal were justified on the basis that without such effort a firm has a minimal chance of successfully competing for Government contracts; that the Government directly benefits from this preliminary work in the enhanced quality of the proposals it receives; and that the Government through emphasis on increased competition, more realistic pricing, more completely defined requirements, and a higher level of sophistication in systems management has made preproposal work necessary on the more complex programs.

Costs incurred after proposals had been submitted and contracts had been awarded to other companies, or after LMSC had been notified that Government funds were not available for contract coverage, were justified on the basis that there was a potential for later contracts for the same or similar items.

Contract capability costs incurred between the time that proposals were submitted and contracts were awarded were justified as being necessary to retain personnel to provide timely and effective performance if LMSC received the contracts.

Lockheed's comments, of course, were based upon its own interpretation of what was allowable under ASPR. As stated in this report, however, we believe that the ASPR is not sufficiently clear and is subject to varying interpretations. We pointed out how Government auditors and contract negotiators disagreed on what was allowable under ASPR. Because ASPR requires a considerable amount of subjective judgment on the part of the contractor, both the auditor and the negotiator must evaluate the propriety of this judgment. Evaluation of the judgment of others is difficult at best, but the degree of difficulty increases as time passes after the judgment has been made. Since the Government's audits and negotiations of contractors' overhead claims, including bidding and related costs, are normally made at long intervals after incurrence of the costs involved, the auditors and negotiators are not in a favorable position to question the contractors' judgments.

The purpose of the proposals in our preliminary draft report was, therefore, to reduce the extent of subjective judgment required by establishing a more precise set of rules for determining the allowability of bidding and related costs. Although we are showing several examples in this report of costs which in our judgment were not clearly necessary to support LMSC's bids or proposals, we recognize that other persons may not concur in our judgment.

Similarly, the line of distinction between bidding and proposal costs and IR&D costs may be very fine and the intent of the

contractor may be an important factor in deciding the proper classification. This is particularly true when the interval of time between the beginning of an engineering effort and the date the contractor receives a request for a proposal is lengthy, or when an engineering effort does not result in the submission of a bid or proposal.

Although there will probably always be disputes between contractors and the Government as to the proper application of ASPR provisions, we believe that this problem would be reduced in the bid and proposal area by the establishment by the Government of more specific guidance as to allowability.

Agency comments

The Department of Defense and the National Aeronautics and Space Administration also submitted comments on the findings and proposals for corrective action included in our preliminary draft report. Neither DOD nor NASA took issue with the facts and conclusions in the draft report. Both agencies directed their comments strictly to our proposals to correct the conditions we had described. Their replies are included as appendixes III and IV.

In making our proposals we recognized that DOD and NASA had been working on a revision of procurement regulations to provide a better means of controlling the costs charged to Government contracts for technical efforts of contractors. (See p. 14.) Consequently, we proposed in our preliminary draft report that DOD and NASA consider the matters discussed in our report in their proposed amendment of procurement regulations so as to control and limit charges to Government contracts for all types of contractors' independent technical efforts. We proposed also that, pending satisfactory amendment of procurement regulations, DOD and NASA provide

auditing and contracting officials with interim guidance for ensuring protection of the Government's interests in considering the allowability of costs of the types discussed in this report.

In its reply, DOD indicated that the proposed revision of procurement regulations had been determined to not be an acceptable solution and that it had been discontinued. DOD conceded that there had been some difficulties in interpreting ASPR but that it was not clear that these difficulties had had any widespread effect on cost allowance. DOD pointed out that there had been major changes in the past 5 years in its methods of initiating major programs which undoubtedly contributed to the increase in both IR&D and bid and proposal costs but that at this time the cause and effect relationships are not clear.

Recognizing the need for effective management in this area, DOD advised that it was planning to study the nature of bid and proposal costs more thoroughly. Methods for dealing with this cost would then be adopted, which should provide the necessary visibility and discipline without lessening the contractors' ability to respond to requests placed upon them by DOD.

DOD also stated that--in view of the lack of clarity in the bid and proposal area, and in view of other unanswered questions, such as the impact of Defense-sponsored procedures on cost incurrence--it was not prepared to issue interim guidance at this time.

NASA also advised that it did not believe that issuance of interim guidelines would be feasible at this time. In support of this statement, NASA said that it did not yet know the extent to which tighter control of bid and proposal expense is in the interest of the Government, or the technique of control which would be appropriate to implement such further limitation as might be decided upon.

Conclusions and recommendation

In our opinion, the costs discussed in this report are similar to IR&D effort costs or are not clearly necessary to support LMSC's bids or proposals. Consequently, there is doubt as to whether such costs are clearly within a reasonable interpretation of the ASPR definition of bidding costs. We recognize, however, that, because the ASPR definition is in general terms, it is subject to various interpretations and that, in the absence of definitive guidelines, contracting and auditing officials can only be guided by the general ASPR provision that costs, to be allowable, must be reasonable. What is reasonable, however, requires a subjective determination, and what is reasonable to one person may not be reasonable to another.

Consequently, we believe that, in order to provide improved control over bidding and related costs charged to Government contracts, the ASPR should be amended to as clearly as possible define the types of costs that are allowable and establish guidelines for determining the extent of allowability. Although DOD and other Government agencies had recognized the need for revision and for several years had been studying the problem with the objective of developing a means to better control not only bidding and related costs but all types of contractors' independent technical effort, both DOD and NASA informed us that additional information was required to enable them to develop revised methods of control. Consequently, DOD plans to make a study to obtain the necessary information.

We recognize that the many facets of the bid and proposal problem deserve intensive consideration before revised procedures are established. However, we are concerned that, in the meantime,

contracting and auditing officials will continue to be faced with the need to interpret ASPR in the areas covered by this report. In our opinion, the planned study should be expedited.

Recommendation

We therefore recommend that the Secretary of Defense give the proposed study of bidding and related costs a high priority and that he establish goals to ensure the earliest possible completion of required revisions to the procurement regulations.

APPENDIXES

PRINCIPAL OFFICIALS

OF

THE DEPARTMENT OF DEFENSE AND

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

RESPONSIBLE FOR MATTERS

DISCUSSED IN THIS REPORT

	Tenure of office	
	From	To
DEPARTMENT OF DEFENSE		
SECRETARY OF DEFENSE:		
Robert S. McNamara	Jan. 1961	Present
ASSISTANT SECRETARY OF DEFENSE (Installations and Logistics):		
Paul R. Ignatius	Dec. 1964	Present
Thomas D. Morris	Jan. 1961	Dec. 1964
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
ADMINISTRATOR:		
James E. Webb	Feb. 1961	Present

APPENDIX II
Page 1

LOCKHEED AIRCRAFT CORPORATION
BURBANK, CALIFORNIA

September 26, 1966

Mr. Harold Rubin
Associate Director
U. S. General Accounting Office
Defense Accounting and Auditing Division
Washington, D. C. 20548

Dear Mr. Rubin:

In your letter of August 29, 1966, you requested comments on an enclosed draft of a report to the Congress on a review of bidding and related costs charged to Government contracts at Lockheed Missiles & Space Company. We appreciate the opportunity to offer comments and have carefully reviewed the matters discussed in the report.

The report and the accompanying letter to the Secretary of Defense conclude that procurement regulations should be amended to more clearly define and limit the types of bidding and related costs which will be considered allowable under Government contracts and that pending such amendment interim guidance should be furnished to Government audit and contract personnel. The factual material included in the report regarding particular proposal efforts and expenditures at LMSC does not support this conclusion in our opinion. Having in mind the internal controls over bid and proposal and related costs at LMSC, the manner in which those costs have been incurred, and the nature of our overhead negotiations with Government representatives, we cannot agree with the statements in the report that the determinations supporting allowability of most of these costs resulted from a lack of guidelines in the Armed Services Procurement Regulation (ASPR).

In reviewing these costs, particularly those which have been questioned by the Government auditors, the Government negotiator has required the LMSC representatives to substantiate the reasonableness of these costs in relation to LMSC's bid and proposal activity. In some instances he did not fully agree with our conclusions and disallowed portions of the costs, as noted in the report. While generally the LMSC negotiators did not agree with his position, in a few cases disallowances were accepted as a compromise in order to conclude this portion of the negotiation. There was no instance, however, in which LMSC accepted the disallowances on the basis that the costs should have been treated as independent research and development expense and, in our view, there is no support for the underlying assumption in the draft report that certain of the costs which have been charged to bid and proposal should more properly have been charged to IR&D.

Mr. Rubin September 26, 1966

The report emphasizes the "similarity" in technical effort involved in bid and proposal preparation and that related to performance of IR&D. However, the intent and nature of the two types of effort differ. Under bid and proposal effort only that is accomplished which is necessary to tell the potential customer what will be done and how it will be accomplished. Independent development, on the other hand, generally is directed toward design and development of a specific product; under independent research there is a broad objective to increase knowledge in science.

In short, we feel that the bid and proposal expenses and related costs were determined to be allowable, not because of a lack of guidelines, but because they were, in fact, reasonable and allocable as provided in ASPR. The negotiation results would not have been changed even though more detailed guidelines had been included in ASPR unless such guidelines were in the form of an arbitrary limitation on the allowability of such costs. A limitation in the form of a negotiated ceiling on allowable bid and proposal costs would be inappropriate because these expenses are incurred in response to the Government's requirements. In the highly competitive environment which now exists in the aerospace industry, contractors must respond vigorously and effectively to the Government's anticipated requirements. Even without a dollar ceiling there are built-in limitations which force contractors to equate the effort and expense involved in preparing a proposal with their chances of winning a contract. First, there are limits to the number of qualified technical people who can devote their time to the preparation of proposals and can be assigned to any resulting contracts. Second, and more severe, is the over-all necessity for rigid cost control which is made mandatory by the extensive use of incentive and fixed-price contracts. Regardless of whether particular costs are allowable, these contracts by providing contractors with greater returns for reducing costs of performance and penalties if costs are increased have strongly reinforced the cost disciplines imposed by Company management.

Although it is not explicit in its recommendations on the subject, the draft report by implication suggests that cost limitations should include a provision that bid and proposal costs will be allowable only to the extent that such costs are incurred after the receipt of a Request for Proposal (RFP) and before the submission of a proposal. While the report states that the primary concern is with "types of effort included in bid and proposal expense", the substance of the report indicates that the basic objection is not with the type of effort involved but the period in which the effort was expended in relation to the issuance of an RFP or the submission of a proposal. From a review of the various cost figures shown in the report it appears that the $1,936,000. of 1962 costs referred to as "not clearly within a reasonable interpretation of the ASPR definition of bidding costs, or not clearly necessary to support the contractor's bids and proposals" is comprised of $1,422,000. in costs incurred prior to the release of an RFP and $514,000. of costs incurred after submission of proposals. We can only conclude that it is primarily the period in which the costs were incurred, rather than the nature of the costs, which has caused your staff to question them.

Mr. Rubin

September 26, 1966

If our inference is correct, namely, that the report is intended to support a limitation on allowability of costs to those costs incurred after receipt of an RFP and prior to submission of a proposal, we most strongly disagree with this conclusion. It has become almost a truism that a firm has a minimal chance of successfully competing for a Government contract unless it has directed significant preliminary efforts toward responding to an anticipated Government requirement before the RFP has been received. The Government directly benefits from this preliminary work in the enhanced quality of the proposals it receives. In fact, the emphasis by the Government on increased competition, more realistic pricing, more completely defined requirements, and a higher level of sophistication in systems management, has made preproposal preparation a virtual necessity on the more complex programs. This would also militate against the submission of unsolicited proposals, which are a vital factor in channeling the innovative capabilities of industry toward meeting the Government's needs.

The validity of proposal expense as an allowable cost is not lessened in those situations where no proposal is actually submitted to the Government because anticipated Government requirements do not materialize, or the Company's competitive position is determined to be poor. At LMSC the decisions not to submit proposals, even after substantial preliminary effort has been expended, reflect the fact that proposal effort is closely monitored by management. If either changing requirements or changed appraisal of the Company's ability to compete effectively for a program indicates that the proposal probably will be unsuccessful, work on the proposal is discontinued. The draft report seems to suggest that bidding costs should not be allowed unless a proposal is actually submitted. From the Government's standpoint, this would be unwise since it would penalize a contractor by disallowing costs already incurred when, in the exercise of reasonable judgment, the contractor had determined that it would be uneconomic and not in the Government's interests to continue its proposal effort on a particular program.

Even when a particular proposal effort is concluded without submission of a proposal, the data developed may prove useful subsequently on other proposals. The advanced Agena proposal study resulted in data which was used in a number of proposals and resulted in contract awards or contract modifications. At the present time the Air Force is considering a significant program based on an LMSC proposal which incorporated a substantial amount of data developed during the Agena study referred to in the report. The insight developed in the Eurospace study, referred to on pages 17 and 18, was useful in developing proposals on the German National Scientific Satellite Program (625A-1 program) and Highly Elliptical Orbiting Satellite Program (HEOS). As a result of the latter proposal, LMSC received a subcontract under the prime contract issued by the European Space Research Organization (ESRO), which has a cooperative agreement with the U.S. Government for launching of the satellite. The costs of the Eurospace study clearly were allowable as a reasonable expense necessary to LMSC's business efforts. In no way could these costs be classified as IR&D.

Mr. Rubin September 26, 1966

The report also questions the allowability of costs incurred after certain proposals have been submitted which LMSC in recent years has designated "contract capability costs". As your staff was advised at LMSC, these costs are incurred on a selective basis with high level management approval for the purpose of maintaining intact the key capabilities represented by the team which prepared the proposal and sustaining a degree of continuity of effort during the period in which the Government is evaluating the proposal. This is necessary in order to insure that we can give timely and effective performance if a contract is awarded by having immediately available the high level of technical and managerial teamwork which is required.

The report refers to several situations in which LMSC incurred costs after it had been notified that the contract had been awarded to another company. Work on the proposals was continued in these cases because it was determined by LMSC management that, despite the award of the initial contract to another company, there were substantial possibilities that LMSC might, through continuation of its efforts, secure contracts to be awarded in the next phase of the procurement. On major programs the value of the follow-on procurement is generally vastly greater than the value of the contract awarded as a result of the initial competition. This may well make it highly worthwhile to a contractor to continue work on a proposal looking toward the follow-on contracts even after the award of the initial contract has been made to another firm. This allows the Government the opportunity to take advantage of alternate approaches which may result from the continued proposal activity.

LMSC's intent to compete for substantial follow-on hardware contracts was the reason for continuing proposal effort after notice of award to other firms on both the Titan II Upper Stage discussed on page 21 of the report, and the Nova Vehicle System Study referred to on pages 26 and 27. In both cases the proposal efforts were discontinued when it was determined that the prospect of securing such contracts was not favorable.

Similarly, the down-stream potential was the factor which persuaded LMSC management to complete the proposal for the Synchronous Orbit Military Communications System after LMSC had been advised that funds were not then available for contract coverage. It is worth noting that the data developed in 1962 for this proposal was used extensively in preparation of the proposal for the Advanced Defense Satellite Communication Program in 1965.

The proposal on the spacecraft bus for a lunar logistics system illustrates how meaningless it is to compare proposal costs with the value of the initial contract, as is done on page 20 of the report. There, LMSC's direct proposal costs of about $171,000. (plus a GAO-estimated overhead factor of $108,700.) are compared with the successful bidder's proposed contract costs of about $177,000. LMSC's proposal costs are placed in more meaningful perspective by comparing them to the total anticipated cost of $500 million for the development effort to be covered by subsequent contracts.

With this potential in mind LMSC continued its study even after award to another company and subsequently made a technical presentation to NASA, but then discontinued its efforts when it was determined that the prospect of securing contracts was not good. In my opinion the Government's as well as contractors' interests would be poorly served if the proposals prepared by potential contractors did not reflect an appreciation of the magnitude and complexity of the particular over-all program planned by the Government.

For the reasons mentioned, our review does not sustain the conclusion that the costs discussed in the report were not necessary to support LMSC's bids and proposals and were therefore not reasonable. It is true, as observed in the report, that determinations as to reasonableness require a degree of subjective judgment but this, by itself, does not indicate that additional guidance is required. In fact, considering the DOD study directed toward comprehensive ASPR treatment of costs of contractor's independent technical effort, the development of interim guidance would be abortive and unnecessary. If, despite this, interim instructions are to be issued, I would strongly urge that they be in the form of a fully coordinated amendment to the ASPR rather than being issued as internal instructions. To the extent that additional guidelines would be directed toward limiting allowability of costs which would otherwise have been allowable under ASPR they would adversely affect substantive rights of contractors under their contracts. This, on the face of it, would represent interference with the integrity of contracts and might well be of doubtful legality.

Our corporate staff and LMSC management will be available for further discussions if you feel that this would be helpful.

Copies of this letter are being forwarded to the Office of the Assistant Secretary of Defense (I&L), and to the National Aeronautics and Space Administration.

Very truly yours,

D. J. Haughton

D. J. Haughton
President

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

INSTALLATIONS AND LOGISTICS
CA

NOV 14 1966

Mr. Harold H. Rubin
Associate Director of
Research and Development
General Accounting Office
Washington, D. C. 20548

Dear Mr. Rubin:

This is in response to your letter of August 29, 1966 to the Secretary of Defense requesting comments on your draft report on Review of Bidding and Related Costs Charged to Government Contracts, Department of Defense and National Aeronautics and Space Administration (NASA), (OSD Case #2517).

Your report is concerned with the need for improving control over the amount of contractors' bidding and other technical effort costs absorbed by the government. The report is predicated principally on a review of bidding and related effort costs incurred at Lockheed Missiles and Space Company. Your review disclosed bidding expenditures which you believe are not clearly reasonable under ASPR or are not necessary to support contractors' proposal effort. A major part of the reviewed and questioned costs represented technical effort which you believe were more properly charged to independent research and development (IR&D) expense.

You conclude that ASPR does not provide sufficient guidance, at the present time, and, as a consequence, the allowance of bid and proposal (B&P) costs may be subject to different interpretations by contracting and auditing officials.

Your report recommends, pending satisfactory amendment of procurement regulations, that the Secretary of Defense and the Administrator of NASA: (1) provide auditing and contracting officials with interim guidance for ensuring protection of the government's interest in considering the allowability of costs of the types discussed in the report, and (2) consider the matters discussed in the report in the proposed ASPR amendment so as to control and limit charges to government contracts for all types of contractors' independent technical efforts.

The Department of Defense has been considering an arrangement whereby (IR&D) and (B&P) technical effort would be combined. Though this approach has merit, it has been determined that on balance it is not an acceptable solution. Therefore, the Department of Defense proposes to continue the current practice of maintaining separate cost principles for (IR&D) and (B&P) costs. Although there have been some difficulties in actual interpretation, it is not clear that these have had any widespread effect on cost allowance. There have been major changes in the past five years in our methods of initiating major programs which have undoubtedly contributed to the increase in both IR&D and B&P costs. At this time the cause and effect relationships are not clear.

Although selective controls have been used by means of advance agreements for IR&D costs, it is not clear that the same type of control or any "control", as such, will be appropriate for B&P. There is a need, of course, for effective management of this area. Before an appropriate remedy can be developed, a better understanding of the nature of B&P expense is considered necessary.

Therefore, it is planned to study the nature of B&P more thoroughly after which time methods for dealing with this cost will be adopted which will provide the necessary visibility and discipline without lessening the contractors' ability to respond to requests placed upon them by the Department. Pending completion of this effort, it is planned to continue the present procedure of managing the IR&D effort through selective use of advance agreements.

In view of the lack of clarity in the B&P area, and in view of other unanswered questions, such as the impact of Defense sponsored procedures on cost incurrence, we are not prepared to issue interim guidance at this time.

We appreciate the opportunity of commenting on your report.

Sincerely yours,

J. M. MALLOY
Deputy Assistant Secretary
of Defense (Procurement)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

IN REPLY REFER TO: K

NOV 23 1966

Mr. Morton E. Henig
Supervisory Accountant
General Accounting Office
NASA Assignment, CAAD
Washington, D.C. 20548

Dear Mr. Henig:

In Mr. Parker's letter of August 29, 1966, to Mr. Webb, comments were requested on the GAO preliminary draft of a report to the Congress entitled "Review of Bidding and Related Costs Charged to Government Contracts."

The report concludes that there is a need to improve controls over the amount of contractor's bidding and other technical effort costs absorbed by the Government, and makes two recommendations: that the matters discussed in the report be considered in amending the procurement regulations and that, pending such amendments, NASA and the DOD provide interim guidance to auditing and contracting officials to ensure protection of the Government's interest in considering the allowability of costs of the types discussed in the report.

In recent years, the volume of contracting for research and development has increased. This has resulted, of course, in greater contractor expenditures for bid and proposal preparation, independent research and development, and other nonsponsored technical effort in the seeking of new Government research and development business. Research and development expense at or prior to the bid and proposal stage has become a contractor expense necessary to maintenance of a contractor's competitive position as well as to maintenance of an industry capability or resource vital to the Government.

While individual advance understandings regarding contractor independent technical effort have met with difficulties and, admittedly, are not a final answer to the general problem, they are vehicles which will generate a feedback of information helpful to our continuing studies. Specifically, they should provide data upon which we can rely in deciding what kinds of controls prove most workable in meeting our objectives.

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To develop a larger experience base, we plan to discuss with the DOD the matter of making somewhat greater use of advance understandings than we have in the past. In order to avoid discrimination between contractors, it may be that we will identify an industry grouping and attempt to negotiate understandings on a comparable basis with the larger contractors within that grouping.

Advance agreements concerning the totality of a contractor's independent technical effort do not appear to be a solution to the overall problem because of the administrative burden they present and because of the difficulty in attaining comparable results with all contractors in a competitive area. In addition, they have met with objection from contractors because they force them to predict the volume and character of future Government requests for proposals. The contention is made that the prediction must be made without adequate information being furnished contractors. Government people also point out that any arbitrary restriction on contractor nonsponsored technical effort limits the capability of industry to respond competitively to a Government requirement.

Existing cost principles provide for a distinction between bid and proposal expense (including the development of engineering data and cost data necessary to support bids or proposals) and independent research and development expense. We are aware that this distinction has become blurred and have been studying the problem. A possible answer is the combining of bid and proposal and independent research and development expenses (together with all other nonsponsored contractor technical effort) into one account with a single control established over it. Although this approach has the virtue of simplicity and solves the definitional problem, it requires that a single control which is equitable to industry in general and to a particular contractor and in the interest of the Government be identified. A practical control of this nature has not as yet been devised.

It would be fair to state at this point that we do not feel we yet know the extent to which tighter control of bid and proposal expense is in the interests of the Government or the technique of control which would be appropriate to implement such further limitation as might be decided upon. It is for this reason that we feel that the issuance of interim guidance at this particular time would not be feasible.

We would be pleased to consider any suggestions you may offer to assist in resolution of this problem.

Sincerely yours,

Bernard Moritz
Deputy Assistant Administrator
for Industry Affairs

APPENDIX III

REPORT ON STUDY OF INDEPENDENT

RESEARCH AND DEVELOPMENT AND

OTHER RELATED TECHNICAL EFFORT

U. S. Army Audit Agency
New York District
Date of Issuance: 16 April 1965
Audit Report No. NY 65-1366

PART I

INTRODUCTION

The rapid advances which continue to be made in military weaponry and space technology can be attributed in major part to the Government's increasing sponsorship of and participation in research and development. More than $15 billion shall have been spent by the Government for research and development in FY 1965. In comparison, only $2 billion was spent in FY 1952 and less than $.1 billion in FY 1940.

The military departments are also participating to the extent of approximately $1 billion annually in defense contractor's current expenditures for independent (unsponsored) research and development and similar technical effort. There has been a marked upward trend in such expenditures during the past several years -- most markedly since 1959 when, by ASPR provision, independent research and development costs gained wider and more positive acceptance for allocation to defense contracts.

We considered it both necessary and timely to undertake an audit in depth of independent research and development at a representative number of major defense contractors. The audit had as its principal purposes the determination of the sufficiency of (i) the Government's procedures and controls for protecting its interests in those independent research and development programs to which it was providing substantial financial support and (ii) the contractors' financial management of such programs, in consideration of both the Government's and their interests.

PART II

SUMMARY OF CONDITIONS

This report sets forth the results of audit of the financial implications of the administration of independent research and development and other related technical effort expenses at 19 individual defense contractors involving 28 individual corporate divisions or plants, all under the audit cognizance of the U. S. Army Audit Agency.

The effectiveness of the financial administration of the Government's IR&D program is difficult to determine. Normally this measurement might have been determined by the results achieved in terms of new products, patents, processes, etc. resulting directly from this effort. However, this type of measurement, often referred to as the "cost-benefit ratio" cannot readily be applied to the results of independent research and development in the area of missile and aerospace exploration since the results of these efforts concern themselves with ideas, theories, concepts and hardware which are completely new. However, since modern defense demands on our resources in terms of both money and manpower are unparalleled and recognizing that our resources are not limitless, there has to be a means of determining the programs most deserving of Government support. Certainly, administrative procedures which do not permit the accumulation of IR&D costs, and the establishment of effective dollar limitations so that the Government's exposure to this expense category does not continually increase in an uncontrolled manner, are not desirable, and therefore require some constructive corrective action.

The conditions noted in this report may be categorized into two broad areas. Firstly, those that are caused by the lack of clarity and/or ambiguity of the existing Armed Services Procurement Regulations (ASPR's), and secondly, those that are caused by the absence of adequate implementation of the existing procedures by procurement personnel when negotiating IR&D agreements. The following subparagraphs summarize the conditions which are set forth in detail in Parts III and IV of this report.

A. For the Assistant Secretary of the Army (I&L)

1. Intermingling of Independent Research and Development (IR&D) with Bidding and Proposal and Other Technical Effort Costs. (Page 5)

Our audits disclosed that the costs of contractors' IR&D efforts are being intermingled with other independent technical effort costs such as bid and proposal, conceptual studies, contract support, etc. Thus, when the Government enters into advance IR&D agreements with cost sharing and/or ceiling limitations, proper control and administration are severely hampered. Contractors are charging costs for certain technical efforts which are similar to the ASPR definition of IR&D, to other classifications and recovering them by overhead allocations to all work. It is their contention that those technical efforts which were not identified as IR&D in the negotiations of advance agreements are allow-

able costs under other ASPR provisions. The applicable ASPR provisions that separate the several areas of independent technical effort by definition are difficult to implement in practice. Studies performed by DOD and others, have indicated that the various types of independent technical effort are so similar that separate identification is almost a matter of opinion. We believe that this problem can be resolved by making certain ASPR revisions and issuing new procedural instructions.

2. Allocating Indirect Costs to the IR&D Effort (Page 18)

Contractors, contracting officers and auditors have not been in agreement on the need for allocating indirect and administrative costs to IR&D efforts. Contractors have generally not been burdening IR&D although research and development efforts under sponsored contracts have been burdened. The position generally taken for this apparent inconsistency has been that IR&D is an indirect function and therefor overhead should not be applied to overhead. Contracting officers have taken varying positions on this matter since different interpretations of the applicable provision concerning burdening (ASPR 15-205.35(f)) may be made. It has generally been the contention of the three military audit services that acceptable cost accounting practices required that both sponsored and independent research and development efforts bear their allocable share of indirect expenses. This contention has been supported by the Comptroller General and recognized accounting authorities.

We believe that this problem should be brought to the attention of the ASPR Committee with the request that the cited ASPR provision be appropriately clarified or revised.

B. For the Commanding General, U. S. Army Materiel Command

1. Actions of Armed Services Research Specialists Committee (ASRSC) (Page 23),

Our audit disclosed that the technical personnel on the ASRSC who evaluate and rate contractors' proposed IR&D efforts (brochures) as an aid in negotiating advance agreements, are not performing in a manner which fully utilizes the advantages of a joint endeavor. Specifically, the members of the three services were performing their evaluations independently and were not exchanging their knowledge and experiences. The rating methods used are not consistent and the procurement officials are not instructed in the meaning of the ratings in relation to the technical and cost aspects of programs. The contents of the contractors' brochures were not maintained in a manner which would serve as a record of the types of research effort the Government is supporting.

We believe that the members of the ASRSC should function as a group with a complete interchange of knowledge and experiences. In addition, the committee should establish a uniform rating system and a centralized procedure for correlating and maintaining a record of all Government supported independent research and development programs.

2. Need for Timely Negotiation of IR&D Advance Agreements and Cost Sharing Arrangements (Page 29)

In our examination of contractors who received substantial Government support of IR&D efforts, we found cases where there were no advance agreements. In other cases, advance agreements had been negotiated without cost-sharing limitations or had been negotiated both during, and after, the period covered. The ASPR considers advance IR&D agreements to be particularly important and also emphasizes the desirability of having cost-sharing arrangements. Delayed, and more particularly, after-the-fact agreements lose the advantage inherent in advance understandings, of minimizing potential disagreements as to reasonableness and allowability of costs.

3. Advance IR&D Agreements (Page 33)

The performance of many contractors under advance IR&D agreements deviated significantly from their proposals concerning projects, cost and assignment of key personnel. The negotiated advance agreements did not contain any provisions committing contractors to perform in accordance with their proposed plans. Although such plans had been used as the bases for negotiations, and had been subjected to intensive technical reviews and evaluations, the IR&D agreements did not provide for Government approval of major deviations from proposed plans.

Draft statements of the conditions and suggested corrective actions contained in Parts III and IV were submitted to the Office of the Assistant Secretary of the Army (I&L) and the Commanding General, U. S. Army Materiel Command respectively, with a request for comment. These comments, either in summary or verbatim, are included after the suggested corrective action for each condition. In addition, these drafts were also submitted to the Department of the Army, Office, Chief Research and Development, which comments are likewise included.

PART III

STATEMENT OF CONDITION AND SUGGESTED CORRECTIVE ACTION

FOR THE ASSISTANT SECRETARY OF THE ARMY (I&L)

A. INTERMINGLING OF INDEPENDENT RESEARCH AND DEVELOPMENT WITH BIDDING AND PROPOSAL AND OTHER TECHNICAL EFFORT COSTS

SUMMARY OF CONDITION

Despite the Government's attempt at cost restraints relative to its reimbursement of contractors' independent research and development costs (IR&D), these limitations are frequently exceeded because the applicable procurement regulations that attempt to separate the several areas of technical effort by definition are difficult to implement in practice. In fact, studies performed in this area by a DOD, IR&D Steering Group and others have indicated that the various types of technical effort are so similar that separate identification is almost a matter of opinion. Further, even the differences between the broad area of research as contrasted with development effort, although meaningful, are difficult to identify and segregate. Accordingly, where the Government enters into IR&D advance agreements with cost sharing and ceiling limitations, proper control and implementation are severely hampered. Contractors are charging costs similar in nature to the IR&D effort to account classifications such as "bidding and proposal" expenses, "conceptual studies", "contract support", "technical services engineering", "product improvement", etc. Such costs are recovered by overhead allocations to all work under the contention that costs not identified as IR&D were excluded from the advance agreement.

BACKGROUND INFORMATION

With the advent of Change 50 to the Armed Services Procurement Regulations (ASPR), dated November 1959, which allowed IR&D as a normal contractor cost of doing business, the Department of Defense (DOD) was charged with the responsibility of establishing procedures in connection with that portion of the regulation dealing with advance agreements. Specifically, paragraph (h), ASPR 15-205.35 provides, in part, that when desirable, and to provide the contractor with motivation to accomplish the IR&D program in a more efficient manner, the Government should attempt to bear less than its allocable share of these programs by negotiating advance cost-sharing agreements. Further, this same ASPR reference, entitled "Research and Development Costs" defines (i) basic research and applied research, (ii) development, and (iii) independent research (IR) and independent development (ID) collectively and individually, and the basis upon which IR and ID should be allocated.

Subsequently, additional guidance to this ASPR provision was issued in the form of DOD Instruction 4105.52, dated 28 June 1960, entitled, "Uniform Negotiation for Reimbursement of Independent Research

and Development Costs." The purpose of this instruction was to (i) provide a method for the joint negotiation of a reasonable and uniform IR&D cost allowance; (ii) establish the Armed Services Research Specialists Committee, which, upon request, would review and assure that contractors have made proper segregation between their independent research and their independent development programs, and report to the sponsoring military departments their determinations concerning the scientific and technical factor which would influence the extent to which the Government should support these programs; and (iii) provide for the assignment of responsibility to a single military department to act as the sponsoring department in the conduct of joint negotiations on the allowability of a contractor's independent research and development costs.

The same ASPR change that provided for the acceptability of IR&D also considered bidding costs as allowable, subject to the test of reasonableness and equitability. Paragraph 15-205.3, Bidding Costs, defines this category as the costs of preparing bids or proposals on potential Government and non-Government contracts or projects, including the development of engineering data and cost data necessary to support the contractor's bids or proposals.

Appendix B of this report contains the applicable ASPR Section XV provisions pertaining to independent technical effort costs.

Notwithstanding the amount of guidance contained in the ASPR, the Department of Defense (DOD) has viewed with concern the continuous increase of costs relative to research and development, by whatever category the contractor may accumulate these technical effort costs. Accordingly, in June 1963, the Assistant Secretary of Defense (Installations and Logistics), in a memorandum to the Materiel Secretaries for each of the Military Services, requested that a task group be established to introduce procedures to effectively control the contractors' IR&D programs. This memorandum specifically stated that one of the objectives of this task group was to establish procedures to tighten the controls over IR&D cost allowances, "...to assure that the Government's exposure to this expense did not continually increase in an uncontrolled manner."

Finally, in connection with the provisions of ASPR 15-205.35 and DOD Instruction 4105.52, the Department of the Army issued Army Procurement Procedure 3-850 which was subsequently revised by Department of the Army Circular 715-2-28, dated 25 October 1963. This latter directive provided a procedure whereby the contracting officer would receive evaluations from the Armed Services Research Specialists and from the auditors before negotiating an advance agreement. It provided that contractors seeking support of their IR&D efforts are required to submit, for review and evaluation by the Armed Services Research Specialists, a brochure which described the areas of effort they intended to pursue together with the estimated costs thereof. Additionally, this directive provided for audit input consisting of a review of the (i) reliability of contractor's estimating and costing procedures;

(ii) methods used in identifying, segregating, and allocating costs of independent research and independent development programs; (iii) acceptability or nonacceptability of costs within the criteria of ASPR 15-205.35; and (iv) other observations to provide the cognizant purchasing office with cost guidance.

STATEMENT OF CONDITION

Our audits disclosed that technical effort costs applicable to IR&D are intermingled with other types of technical effort, including bid and proposal costs. This situation is significant when there is an advance IR&D agreement with cost sharing and ceiling restrictions, since the effect of intermingling these costs negates the intended limitation over the Government's participation in the contractor's IR&D program. Our audits also disclosed that when advance agreements are contemplated, contracting officers have only been requesting a technical evaluation of the contractor's brochure of proposed projects; they have rarely requested military auditors to evaluate the contractor's accounting procedures relative to the technical effort reflected in the brochure. Further, during this audit we have ascertained that the other military procurement services have not issued instructions similar or comparable to those contained in the aforementioned Department of the Army Circular. While this circular is applicable to those contractors assigned to the Department of the Army for the negotiation of IR&D advance agreements, there are numerous Army contracts, involving significant dollar amounts, assigned to contractors whose advance agreements are negotiated by procurement representatives of the Navy and Air Force.

The examples cited herein are presented under two categories, (1) those where technical effort costs which appear to be independent research and/or independent development in nature, were classified by contractors as bidding and proposal expenses; and (2) those technical effort costs which similarly appear to be independent research and/or independent development, but which are charged to account classifications such as, conceptual studies, contract support, technical services engineering, product improvement, etc. In connection with the first category, where the information was maintained and available, we ascertained that there was a steady increase in bidding costs from 1961 to 1963. Further, this increase bore little or no relationship to the contractor's sales volume over the same period. To illustrate, at one contractor the bid and proposal expenses increased 263 per cent from 1961 to 1963 while the sales volume during this same period, increased only 36 per cent. Additionally, this same contractor projected, for 1964 a figure in excess of 50 per cent over the 1963 figure, while forecasting a decrease in sales volume for the same period. The examples set forth in subparagraph "a", below, illustrate how the intent of the advance agreements is circumvented when contractors charge costs of an IR&D nature to bidding and proposal expenses. Subparagraph "b" below, presents examples where the contractors fragmentize what appears to be independent research and development, to other technical support type expense categories. It

should be noted that the contractor is reimbursed for bid and proposal and other technical support type expenses through normal indirect expense allocations.

a. The following are examples where IR&D costs were commingled with bidding and proposal costs.

(1) Our analysis of a contractor's recorded bidding expenses for a ten month period showed the following:

Unsolicited bids	$ 376,000
Formally solicited bids	445,000
Verbal solicitation	90,000
Miscellaneous and non-bid type	172,000
Total	$1,083,000

Of the $1,083,000 detailed above, approximately $400,000 represented research and development type work. For example, in the unsolicited bids category, the contractor included expenditures of approximately $190,000 for the design, fabrication and engineering tests in the development of a new type of command-reconnaissance vehicle. The project was started with a cost authorization of $10,000 for preparing a proposal to the Army Tank Automotive Command and supplemental authorization increased the costs to $190,000. Substantial portions of the projects charged to formal and verbal solicitations represented effort also related to unsponsored research and development work. One project, for example, was for the development of a new concept and design for an armored personnel carrier, including the production of scale and mock-up models at a cost of $104,000. The miscellaneous and non-bid type costs of $172,000 represented costs for such items as brochures, films, conventions, etc. which were not related to either bidding, proposal or research and development projects.

(2) The review of bidding costs at a contractor whose work was totally for the Government, and who also had an IR&D advance agreement with a ceiling limitation, disclosed several instances of basic experimental projects being charged to bidding expenses instead of IR&D. Generally, these projects involved development of information which eventually resulted in unsolicited bid proposals. One of the more recent projects for example, involved the extraction of water from rocks, a technique being considered for use on the moon in the production of rocket fuel. This effort resulted in an unsolicited proposal submitted to National Aeronautics and Space Administration. This contractor also included in his overhead accounts the costs of three projects which involved preliminary investigations into the possibility of using a command guidance system for the initial position of a relatively long range trajectory. We feel that this effort should have been charged to IR&D.

However, since the contractor's IR&D costs had already reached the ceiling limitation, had the cost of this effort been included in IR&D, the amount would have been unallowable as an excess over ceiling.

b. The following examples illustrate situations where the contractor established other account classifications outside of IR&D although the costs incurred were of the research and development category.

(1) Due to the technical and scientific nature of the functions, it is difficult to distinguish between the ASPR definition of independent development (ID) and the definition used by the contractor for functions called contract support engineering. The contractor submitted in his brochure for negotiating an advance agreement with the Government, $2.5 million for 1961 and 1962 and $4.7 million for 1963 as its estimated ID program for those years instead of submitting $6.8 million, $8.1 million and $7.2 million, respectively, which included contract support engineering. This classification of ID costs resulted in the presentation of incomplete data to Government evaluation and negotiation personnel. It also presented the contractor with the opportunity to recover the difference, which was classified as, "contract support engineering" against Government fixed price contracts by application of a separate contract support rate to manufacturing costs. The contractor's definitions for the functions performed under the category called "contract support engineering" were inconsistent and contradictory. For example, one definition the contractor used for contract support was similar to the definition of applied research in ASPR 15-205.35. At our request, Government technical representatives were asked to evaluate the propriety of the contractor's definitions. On the basis of selective tests, they informed us that the contractor's definitions of ID and contract support engineering were both for types of engineering activity covered by ASPR 15-205.35(b) which defined development costs. Thus, any cost-sharing arrangements and/or ceiling established on this contractor's proposed ID efforts would be based on only partial information and, in effect, the largest portion of the contractor's ID which was being charged to contract engineering support and other cost categories, was being allocated to Government contracts without any technical evaluation of the merits of the program and its desirability and need from a Government point of view.

(2) At a major space contractor whose workload was practically 100 per cent Government, we found that the largest part ($2.4 million out of $4.3 million for 1963) of its unsponsored efforts were included in other cost classifications such as, "Conceptual Studies," "Sales Proposals," "Technical Operations," etc. Based on a review of the contractor's definitions of the other unsponsored engineering categories and the examination of the programs and tasks involved, we are of the opinion that they are within or are closely related to the ASPR definitions of IR&D. Yet these programs were not submitted to the Government for review and evaluation even though the costs were allocated to Government contracts. It was further noted that the trend of costs

for this unsponsored engineering effort was steadily increasing although not necessarily in relation to the contractor's sales. This is illustrated in the following tabulation regarding the category "Conceptual Studies".

	Calendar Years			
	1960	1961	1962	1963
	(Expressed in thousands)			
Conceptual Studies	$ 377.3	$ 573.1	$ 947.8	$ 704.6
Net Sales	$226,090.9	$242,327.3	$234,895.0	$198,381.4

The upward spiral of these costs which are not subject to the regulatory controls and guidelines specified for IR&D (i.e., inclusion and submission of brochures, ceiling limitations, cost-sharing) further emphasizes the need for Government review and evaluation of such unsponsored technical effort which is ultimately allocated to Government contracts.

(3) At another plant where there was an advance IR&D agreement, the contractor maintained a number of accounts called "marketing", "bid proposal", and "sales engineering". During 1962 and 1963, the contractor incurred $458,400 and $120,600, respectively for such costs, and although the functions performed were similar to IR&D, he claimed reimbursement as new business costs. Moreover, had these costs been properly charged to IR&D, the ceiling limitation would have been exceeded by these exact amounts and the contractor would have had to absorb the total of these costs. However, by including these costs as new business items, the costs were absorbed by Government contracts through overhead allocations. In addition, our audit disclosed that as the calendar year progressed, and as expenditures charged to IR&D approached the ceiling limitation, charges to IR&D decreased while charges to proposals and sales engineering increased. This was particularly evident in the case of one IR&D project for which labor charges were budgeted at $8,300 a month for the last quarter of calendar year 1963. Actual labor charges showed $9,500 for October and November, but only $3,700 for December. This same project was scheduled for continuation in 1964, with monthly estimated labor costs averaging $12,000. We also noticed at least one individual who charged time to this IR&D project in each of the three months prior to December and no time to proposal work orders during the same period. However, during the month of December none of this individual's time was charged to IR&D, whereas a significant amount of time was charged to a proposal work order on a product which was related to the one being studied on the IR&D project.

It is interesting to note that the ceiling limitations established in the advanced IR&D agreements had been reached in examples a(2) and b(3), above, and if these costs were reclassified to their proper groupings the contractor would have had to absorb the excess of the established IR&D ceiling limitations. Further, there are other

effects resulting from the misclassification of what is apparently IR&D costs to other account classifications. The more obvious result is that it distorts the amount of dollar support underwritten by the Government to the extent that accurate amounts in this area cannot be determined. Accordingly, any Government planning in connection with its support of IR&D which would be predicated upon past or current amounts would necessarily be based upon incomplete information. Secondly, under current procurement procedures the Government frequently shares in IR&D costs identified as other than IR&D in the contractor's records. However, when the contractor submits a brochure in connection with an advance IR&D agreement, he does not include this type of technical effort. Hence, the Government is precluded from evaluating this effort to determine whether the programs warrant underwriting, and the extent of such support.

Department of Defense scientists have stated that the differences between research and development, although meaningful, are difficult to identify and to apply in practice. Similarly, the differences in the type of technical effort which constitutes formal independent research and development programs and those efforts charged to bid proposals, feasibility studies, product improvement studies, value engineering, and other types of technical expense, are equally difficult to identify. Too frequently the preponderance of costs in each of the cited groupings, lies near the borderline, and therefore Government scientific evaluators rely completely on the definitions established by each contractor relative to the cost accumulations of these categories. As a result, contractors have contended that they have been treated differently than their competitors.

SUGGESTED CORRECTIVE ACTION

Our suggested corrective actions, with respect to the problems encountered in this area, are presented under two categories; those actions requiring regulatory and procedural changes (Long Range) and interim actions to be effected as soon as possible (Short Range).

1. LONG RANGE

We recommend that the Assistant Secretary of the Army (I&L), through his representative on the Armed Services Procurement Regulations (ASPR) Committee, present the following to the members for their consideration:

a. Eliminate the current ASPR 15-205.35, "Research and Development Costs". Implementation of current provisions requires the separation of research from development costs and Government scientists and contractors have stated that this task is very difficult, time consuming, and in many cases only a matter of judgment. In addition, DOD in Defense Procurement Circular No. 7, dated 18 May 1964, has placed such a broad interpretation on the allocation of development costs, that the advisability of the separation is no longer significant. Experience

under the current regulation indicates that definitions of IR&D can never be sufficiently rigid to permit effective management, surveillance and control over this highly technical area. In place of this regulation, we are recommending (See paragraph d(1) below) one ASPR provision (CITE) which would provide that all technical efforts of a contractor not related to contract performance over a certain minimum level should be the subject of an advance agreement.

b. Revise ASPR 15-205.3, "Bidding Costs", to clearly provide for the allowability of only the clerical and administrative costs incurred in the preparation and submission of bids and proposals. Past experience under this current regulation indicates that contractors have interpreted, "...development of engineering data ...", in such a manner that permitted the inclusion of costs of projects and tasks which are similar to IR&D. The treatment of significant technical efforts which might be required by a contractor to respond to a solicited bid is covered in our suggested procedural instructions for implementing the aforementioned CITE (See succeeding paragraph d(2)).

c. Eliminate the current ASPR 15-205.21, "Manufacturing and Production Engineering Costs". Experience under this regulation has indicated that contractors have interpreted the provisions in a manner which permitted the charging to this category of costs of projects and tasks which are similar to IR&D. Examples of the current provisions which are in this category are "...Tool design and improvement ...", "...materials analysis...", and "...component design...",

d. Institute a new cost principle under Section XV, ASPR, entitled "Contractor's Independent Technical Effort" (CITE). The ensuing subparagraphs set forth the suggested provisions of the new ASPR and the procedural instructions which would implement the regulation.

(1) The ASPR provision would contain the following:

(a) Definition - A contractor's independent technical effort costs are those costs of all scientific and engineering work which are not required in the performance of any contract or grant. Such costs include all unsponsored work performed by scientists, engineers and technicians whether such work be basic research, applied research, conceptual studies, technical effort in connection with bid proposals or other endeavor under whatever name in the fields of science and technology.

(b) Allowability - A contractor's independent technical effort costs are allowable as indirect costs (ASPR 15-203) subject to the tests of reasonableness and allocability. In those instances when CITE advance understanding have been negotiated, the reasonableness of the amounts accepted will be determined by the limitations of the agreement. When advance understandings have not been negotiated, reasonableness will be determined in accordance with the general provisions of ASPR 15-201.3 and the specific provisions of

ASPR 3-1000. (The ASPR Committee is currently studying a concept for determining the degree of Government control to be exercised over costs allocable to Government contracts. Their method will utilize a technique called, Contractor's Weighted Average Share in Sales Backlog (CWAS), and the results of this study will be incorporated in ASPR 3-1000. A general description of the concept with regard to its specific applicability to CITE is expressed in paragraph (2)(e) below.) Therefore, technical effort costs which (i) exceed the amounts contained in advance understandings, or (ii) exceed the dollar limitations determined to be reasonable in accordance with the criteria established elsewhere in the ASPR, or (iii) were incurred in accounting periods prior to the current period, are unallowable.

(c) Advance Understandings - Advance understandings, as described in ASPR 15-107, are particularly important for CITE costs with respect to those contractors whose work is predominately or substantially with the Government and those contractors who expect their CITE costs to exceed amounts previously incurred and accepted by the Government. When an advance understanding involving a contractor's independent technical effort costs is contemplated, the reasonableness and allocability of the contractor's proposed costs in this area will be evaluated and, based on such evaluation, agreement will be reached on maximum dollar limitations and cost-sharing, which represent a reasonable independent technical effort program relevant to the Government's interests.

(2) To implement the ASPR principles discussed above, we suggest that a DOD Instruction be issued which would give consideration to the following procedural guidelines:

(a) Each contractor subject to an advance agreement will be placed in a category based on the nature of its business. In those instances where a contractor's independent technical effort is performed within a profit center, each of these centers will be placed in a category closest to its nature of operation. For purposes of this discussion, a profit center is defined as the smallest organizational segment of a company for which operations are normally appraised through the measurement of costs and sales. The objective of grouping each contractor in a category, is to establish basic standards of reasonableness for each class of contractor before applying additional criteria.

(b) For each category of business, averages will be established for the total amount of CITE expenses incurred (including burden), over the last five year period. (This period covers the time since IR&D had been considered allowable by ASPR). For purposes of these averages, the commercially-oriented contractor should be included with the Government-oriented contractor. This average should be expressed in both a dollar amount and in percent of sales or cost of sales. In addition, the study will determine the amount of contractor's CITE costs that were absorbed by the Government. Thus, standards will be established for the average amounts of CITE costs incurred and the

amounts absorbed by the Government during the period such costs (IR&D) have been allowable. Classes within each category of business should also be established since the standards will be shown by dollar amounts as well as percentages of sales or cost of sales. These standards should now be used as (i) a guide in determining the necessity for an advance agreement, (ii) a basis for the application of other criteria in negotiating a reasonable advance understanding, and (iii) a basic reasonable criteria in the absence of an advance understanding.

(c) Having established standards for each class, it is now incumbent upon the Government to apply other criteria to determine levels of acceptance without an advance understanding, and the amounts to be considered objectives in negotiating advance agreements which would be reasonable and equitable to both parties. The criteria to be considered should include (i) the past results of each contractor's technical efforts in terms of accomplishment, (ii) the extent of the contractor's past financial participation in the CITE effort, (iii) the contractor's anticipated share in the future program and (iv) the maximum amount established as a result of the average for the business class and category. (See ensuing discussion of the contractor's weighted average share in backlog (CWAS)). The use of these criteria as an objective for negotiating advance agreements is a method of controlling and motivating contractors to advance the state of the scientific art and to assume a greater portion of the cost of the technical effort necessary to maintain a competitive technical capability.

(d) As previously stated, the ASPR Committee is studying a method of determining the degree of Government control to be exercised over costs allocable to Government contracts. This concept contemplates a study and use of the "Contractor's Weighted Average Share in Sales Backlog" (CWAS). The results of this study will be formalized in ASPR 3-1000 and will include a method of contractor reporting. The CWAS concept contemplates maximum control when the contractor's share in sales backlog is relatively small, and minimal control where the share is high. It will be based on an analysis of the contractor's work backlog and a determination of the degree of its financial risk in this backlog. It gives recognition to the fact that all contractors do not have the same financial stake in decisions affecting the expenditure of funds for the conduct of their businesses. A contractor's stake is determined by the types of contractual arrangements he has with his customers. Thus, in commercial or firm, fixed price work, the contractor absorbs all properly allocable costs, while in cost-type work, the Government absorbs or reimburses all properly allocable costs. After analysis of all types of work to be performed (backlog), a determination can be made of how much of any cost the contractor will absorb and how much the Government will assume.

(e) As a general rule, it can be stated that the greater the percentage of absorption of cost by a contractor, the greater is its financial stake in decisions concerning expenditures which will become a part of the cost of performing its backlog. This

concept can be effectively applied in controlling the amount of unsponsored technical efforts to be absorbed by the Government, and in determining when an advance understanding should be sought. In substance, a determination would be required of the CWAS below which adequate protection of the Government's interests would dictate that an advance agreement be sought to provide a cost-sharing formula and a maximum amount for which the Government would be liable to a contractor during any fiscal year. The application of this procedure would assure that in all cases where the Government had a major stake (for example, 50% or more) in the contractor's costs, protective advance agreement would be negotiated to prevent excessive expenditures by the contractor. Where the CWAS is in excess of the minimum requirement for an advance agreement, Government contracts would bear their allocable share of all CITE costs subject to the application of other reasonableness criteria as stated in preceding subparagraphs under (2). However, when there is no advance agreement and the CWAS is below the minimum requirement (i.e., 50%), then the allocable CITE costs will only be allowable up to the amount resulting from the application of the minimum CWAS rate.

(f) The application of the CWAS technique can be demonstrated by assuming, for example, that a contractor's share in backlog is 20 per cent, and the Government's share is 80 per cent. This would definitely represent a situation in which an advance agreement is almost mandatory. Conversely, if the interests of the contractual parties were reversed, there would be built into this condition a strong incentive for the contractor to keep all costs, including CITE as low as possible, thereby keeping the Government's surveillance at a minimum.

(g) In addition, even after advance understandings for CITE costs have been negotiated, it is possible that excess costs, which were not considered in the agreement, could be incurred as the result of Government actions. For example, it is to the Government's advantage to broaden the competitive base and thus, contractors may be solicited to submit bid proposals requiring efforts that were not considered in the advance agreements. In these circumstances, the contractor may incur some CITE costs with the full realization that costs incurred in excess of the limitations established by the advance understanding will have to be absorbed by other than Government work. An alternative action which the contractor could choose, is to request the Government to issue a contract to cover the costs of this additional effort. If the award of a separate contract is requested, it would be the responsibility of the contractor to demonstrate that the estimated CITE costs included in the advance agreement, was insufficient for the amount of technical effort required to respond to the current invitation for bid.

e. Revise ASPR 15-107, "Advance Understandings on Particular Cost Items", to give effect to the aforementioned suggestions. The proposed revised paragraph is submitted as Appendix C with the additions or changes underlined.

2. SHORT RANGE

We recognize that the suggested action presented in paragraph 1 above may require extensive discussion and study before any decisions are reached. Accordingly, the ensuing paragraphs set forth short range suggested corrective action to be responsive to the needs of procurement officers in their day-to-day dealings with contractors in this area.

a. We suggest that the Assistant Secretary of the Army (I&L) establish a policy for procurement officers negotiating advance IR&D agreements which would require that:

(1) The brochures submitted by contractors in connection with advance agreements contain an additional section which would show a broad outline of the contractor's proposed other indirect technical efforts, including that portion previously assigned to bidding and proposal expense. In effect, the brochure would now contain the contractor's proposed utilization of the total indirect technical effort for the prospective period, by IR&D and Other Technical Efforts. A change to the existing Department of the Army Circular 715-2-28, dated 25 October 1963, is necessary to give effect to this suggestion.

(2) An audit evaluation be requested of the contractor's accounting and financial controls relative to IR&D and other independent technical effort costs for the most recent period available and a similar review of the contractor's current brochure with respect to (i) the reliability of the contractor's estimating and cost procedures; (ii) the methods used in identifying, segregating, and allocating all independent technical effort costs, (iii) the acceptability or non-acceptability of costs within the criteria of ASPR 15-205.35 and, (iv) any other observations to provide the cognizant negotiator with pertinent information relative to the IR&D advance understanding.

(3) For the purpose of obtaining consistency of contractor treatment, request the Department of Defense to establish a single set of procedures for the preparation, submission and evaluation of contractors' IR&D brochures. Toward this end, we suggest that the existing Army procedures, amplified by the suggestions contained in this paragraph, be adopted as a Department of Defense Directive and made applicable to all military services, including the Navy and Air Force.

(The above was submitted to ASA (I&L) on 9 December 1964 with a request for comments. After several follow-up inquiries, we were informed on 9 February 1965 that a written response would not be made since this matter is under consideration by the ASPR Committee and the Department of Defense Independent Research and Development Task Group.)

(As previously stated, we were aware of the considerations of the ASPR Committee and the DOD Task Group. However, because this matter is one of long-standing, and daily procurement decisions involving significant dollar amounts are being made, it is our opinion that the suggested corrective actions merit implementation.)

PART III

B. ALLOCATING INDIRECT COSTS TO THE IR&D EFFORT

SUMMARY OF CONDITION

Defense auditors and defense contractors differ in their interpretation of paragraph (f), ASPR 15-205.35 "Research and Development Costs" pertaining to the application of indirect and administrative costs to independent research and development (IR&D) efforts. Audit on the one hand, maintains that since IR&D projects generate the same indirect efforts as other contractor activity, it should bear an applicable portion of overhead expenses. Contractors, on the other hand, do not agree with this contention and generally do not apply burden to their IR&D costs. Procurement for the most part, in negotiating IR&D advance agreements, have not required contractors to burden IR&D costs. Accordingly, contracts may be absorbing more than their fair share of indirect expenses.

BACKGROUND INFORMATION

Prior to 2 November 1959, Section XV, Armed Services Procurement Regulation allowed research and development costs specifically applicable to the supplies or services covered by the contract, but disallowed general research costs, unless specifically provided for in the contract. However, as of the aforementioned date, Revision 50 to the ASPR was issued, and Paragraph 15-205.35, "Research and Development Costs," recognized IR&D as a necessary cost of doing business. This referenced paragraph (i) defined IR&D (15-205.35(d)); (ii) established IR&D as an allowable indirect cost subject to the test of reasonableness and set forth the basis for allocation (15-205.35(d) and (e)); and (iii) provided for the allocation of an appropriate share of indirect and administrative costs to be allocated to this effort, unless it was the consistent policy of the contractor to treat such costs otherwise (15-205.35(f)). It is in the interpretation of this latter clause where differences between auditors and contractors exist. Subsequent revisions to this cost principle set forth more specific guidance. However, the referenced phrase still remained and was not further clarified. This difference of interpretation concerns itself with burdening the IR&D effort with applicable indirect costs, including general and administrative expenses.

STATEMENT OF CONDITION

Within the three military services, it is audits' contention that acceptable cost accounting practices and procedures for all research and development dictates that these efforts should be burdened. This concept is stated in a number of texts written by recognized accounting authorities. However, for purposes of this discussion, reference is made to Accounting for Defense Contracts, by Dr. Howard W. Wright, published by Prentice-Hall Inc., 1962, Library of Congress

Catalog Card Number 62-15119. The author, a Professor of Accounting at the University of Maryland states:

> "For most supply contractors research costs are indirect costs of production. However, individual research projects are cost objectives, and those costs which are incurred for a single project are direct costs of the project. Indirect research costs, (e. g. supervision, supplies, depreciation) where incurred for the benefit of more than one research project, should be allocated to the projects as indirect expenses just as other types of work are allocated to the direct cost objectives of that work. Also, since the research activity is only one of several activities of the business, it should bear its allocable share of the general and administrative expenses incurred in the overall operation of the business."

In accordance with the above cited authority it is obvious that, for management purposes, the technical effort devoted to research and development, and the ancillary support functions generated by this effort, should be classified under one grouping to reflect the total costs. Further, since IR&D only differs from R&D by the fact that the latter category is sponsored by a contract, grant, or other arrangement (subparagraph (c), ASPR 15-205.35), it follows that the accounting practices applicable to research and development should be equally applicable to independent research and development efforts. This concept has been and still is audits' contention with respect to the burdening of IR&D, particularly when a contractor operates concurrently under sponsored programs and burdens this latter category.

Over the years we have found that generally, contractors do not burden the IR&D effort. The justifications for this accounting treatment include such arguments as (i) independent research and development effort is indirect in character, and accordingly, should not become part of the base on which additional burden is applied; and (ii) subparagraph (f), 15-205.35 of ASPR only requires burdening the independent research and development effort when it is consistent with the contractor's accounting system, and very few systems provide for the burdening of IR&D even when the provision is made for R&D.

(a) With respect to the contractor's argument in (i) above, Dr. Wright states as follows:

> "One sometimes hears the objection that to allocate general and administrative expenses to research projects results in loading overhead on overhead, since indirect research expenses will already have been allocated to the research projects. There is nothing incorrect in loading overhead

> on overhead, where circumstances require it. Administrative overhead is allocated to factory overhead whenever necessary."

In a case involving the application of burden to the IR&D effort, the Comptroller General issued Decision B-152462, dated 15 January 1964. The contractor, in rebuttal to this position, presented the argument set forth in (i) above. However, the opinion presented in Decision B-152462 stated that the contractor's position was not valid and that further comment was not warranted.

(b) In connection with the justification presented in (ii) above, contractors interpret the application of consistency to be limited to the area of independent research and development and not to the broader category of research and development. Audit, on the other hand, interprets "consistency of application" to include all research and development costs, including those which are not sponsored by a contract, grant, or other arrangement, more commonly referred to as independent research and development. Further, the title of paragraph 15-205.35 of ASPR is "Research and Development Costs," and its contents include discussions with respect to sponsored programs as well as unsponsored ones. Accordingly, it can be concluded that both cost categories are considered one and the same.

Audit has determined that when a contractor is operating under a specific research and development contract, grant, or other arrangement, the accounting system always provides for the burdening of this sponsored effort with applicable overhead and general and administrative expense. Yet for the independent effort, the contractor ignores these established procedures and states that burdening this effort is not required even though the same or similar personnel are employed and the same indirect expenses are being generated by this effort as that of sponsored research. Accordingly, it is our contention that when a contractor is operating under specific research and development contracts, grants, or other arrangements, and is also devoting an independent effort to research and development, the consistency of application clause as set forth in paragraph (f), ASPR 15-205.35 and generally accepted accounting concepts and practices require that both these efforts absorb an appropriate share of indirect and administrative costs. On 15 January 1964, the Comptroller General issued Decision B-152462 which supports this aforementioned audit contention. This decision states in part:

> "It is fundamental that the costs of any product or project include direct costs as well as indirect costs generated by that product or project, and there is nothing in Part 2, Section XV of ASPR, either prior or subsequent to Revision No. 50, which would even suggest a departure from this basic principle. On the contrary, this part requires in essence that allowable costs must meet the tests of reasonableness and the application of

generally accepted accounting principles and practices applicable to the particular circumstances. Manifestly, the various subprovisions of Part 2 must be interpreted in a manner consistent with the prescribed basic requirements. Applying the governing principles and tests to the circumstances of this case, it is wholly unreasonable, in our opinion, for the contractor to maintain that its costs for independent research and development projects do not include the overhead and indirect expenses generated by those projects."

For purposes of this statement of condition, the following presentation indicates the extent of the indirect expense which should have been distributed to the IR&D effort. In most instances the indirect cost category which was not allocated was general and administrative type expenses.

Contractor Business Designation	(000 omitted) Amount of IR&D Agreement	(000 omitted) Allocable Indirect Expense
Appliances, Electronics	$12,200	$ 800
Aircraft and Parts	2,528	1,951
*Electronic-Aerospace	789	651
*Aircraft and Parts	2,347	672
	$17,864	$4,074

*Note: The IR&D advance agreements for these contractors are negotiated by a service other than the Department of the Army.

It should be noted that for the contractors listed above the relationship of the allocable indirect expense to the total value of the IR&D advance agreements approximates 23 per cent. However, in a number of instances the allocable indirect costs attributable to the IR&D effort cannot be ascertained except by applying an arbitrary percentage. Accordingly, such indirect costs allocated to projects other than IR&D, including Government as well as the contractor's commercial efforts, are overstated.

We are aware that the problem involving allocation of overhead costs to independent research and development projects was presented to the ASPR Committee on 15 June 1964 and assigned Case No. 64-113. We are also aware of the position adopted by the Deputy Assistant Secretary of Defense (Comptroller), which sustains the position set forth in this Statement of Condition, and the objections to this position as set forth by the Director of Defense Research and Engineering. We are further aware of the proposed revision to ASPR 15-205.35, which was formulated by the Department of Defense Independent Research and Development Task Group and submitted to industry for

comment, which considered this problem by providing for the burdening of IR&D. Further, we understand that field surveys have been performed to ascertain specific information to resolve the differences between DASD Comptroller and DDR&E with respect to burdening the IR&D effort. Accordingly, the suggested corrective action presented in the ensuing paragraph gives consideration to these existing conditions.

SUGGESTED CORRECTIVE ACTION

We suggest that the Assistant Secretary of the Army (I&L) present to the ASPR Committee the financial significance of this question of allocation as disclosed herein, and together with other information gathered attempt to achieve an early resolution of this problem by a revision to ASPR 15-205.35 which clearly requires IR&D costs to bear their allocable share of indirect expenses. Further, pending the desired revision to the ASPR, we suggest that the ASA (I&L) issue a policy statement requiring the allocation of indirect costs to IR&D projects. This audit disclosed that in the absence of a policy statement, contracting officers, faced with the problem of making daily decisions in this area, are not treating contractors in a consistent manner.

(The comment received from the representative of the Assistant Secretary of the Army (I&L) Office stated that the Department of the Army could not implement the suggested corrective action because the problem is the Department of Defense responsibility.)

(In response to our statement of condition and suggested corrective action the Office, Chief Research and Development and the Office of the Assistant Secretary of the Army (I&L) nonconcurred in the suggested corrective action pending the completion of the study in process by the Department of Defense Independent Research and Development Task Group.)

(As indicated in the statement of condition we are fully aware of the existence of the study group at the DOD level. However, we are further aware that a Department of Defense Independent Research and Development Steering Group was formed in 1962 to study the problem, and a task group to implement the Steering Group was formed in July 1963 to aid in the resolution of the problem. Yet as of the date of this report there is no resolution. It appears to us that the problems faced by procurement officials in their daily decisions in this area require resolution, particularly in view of the Comptroller General's decision.)

PART IV

STATEMENT OF CONDITION AND SUGGESTED CORRECTIVE ACTION FOR THE COMMANDING GENERAL, U. S. ARMY MATERIEL COMMAND

A. ACTIONS OF ARMED SERVICES RESEARCH SPECIALISTS COMMITTEE

SUMMARY OF CONDITION

The Department of Defense has established procedures requiring the formation of a research specialists committee to provide contracting officers with technical evaluations of contractors proposed independent research and development efforts in connection with advance agreements. Inherent in the committee type of review is the exchange of thoughts, familiarization with the areas in which technical efforts are being expended by all major contractors, and the pooling of knowledge and experience, provided by a group, when evaluating the merits of those efforts in which the Government assumes the costs. However, we have determined that the designated representatives to this committee did not function in concept, and accordingly, the advantages of this type of endeavor are not being realized.

BACKGROUND INFORMATION

Department of Defense (DOD) Instruction 4105.52 (28 June 1960), which established the Armed Services Research Specialists Committee (ASRSC) indicates that a major purpose of ASRSC is to recommend to the negotiator of the sponsoring department, the extent to which the Government should support contractor's independent research and development (IR&D) programs. The ASRSC accomplishes its technical review of a proposed IR&D program by examining the contractor's brochure and at times, in conjunction therewith, by making visits to the contractor's plant. The end product of this effort is a report submitted to the requesting procurement office in which the ASRSC indicates, in terms of a rating, its evaluation of the proposed program. Within the Department of the Army, the Research Division, Director of Research and Development, Army Materiel Command, provides a representative to this committee.

STATEMENT OF CONDITION

Our review and discussion with the ASRSC representative from the U. S. Army Materiel Command (USAMC) disclosed that members representing the three services were performing evaluations independently and were not functioning as a committee as prescribed in the cited DOD instruction. Thus, the intent of bringing the full weight of available Government technical and scientific knowledge to bear on an evaluation of a proposed IR&D program, as submitted by a major Government contractor, is not being accomplished. This resulted in an inconsistency in the ratings submitted by individual members of the ASRSC. There were no guidelines to negotiators for the proper use of evaluation reports in establishing negotiation objectives. In addition, there was no

reference system which would (i) categorize IR&D programs by contractor and by type, and (ii) establish a ready record of those programs being supported in whole, or in part, by Government funds.

a. We examined some reports prepared by representatives of the ASRSC which reflected the results of technical reviews in terms of ratings. However, these ratings were not consistent. For example, one, was an adjective rating such as superior, good, average, fair, below average or high, normal, low; another was in an alphabetic form such as A, B, C or D. Some reports contained comments on specific projects involved in the review, while others did not. In some instances, the report contained only an overall contractor appraisal regarding its status of operations, reputation, competence, quality of scientific personnel, etc. We were informed that the ratings, comments or overall appraisal were supposed to represent, or be indicative of, the potential or degree of benefit of the programs to the Government. However, there was no information in these reports which would give guidance to the negotiator as to the relationship of the technical aspects of a program with the proposed costs, or of the relationship of the ASRSC ratings to the amounts requested. That is, the reports in no way indicated what percentage of the cost of a program should be supported if a rating was superior, good or poor. This, we were told, was left to the negotiator. However, there are no guidelines or instructions available to the negotiator which would aid him in translating the ASRSC ratings to a percentage or portion of the amounts requested by the contractor which should receive Government support. We noted that in the absence of such guidance from ASRSC, there were instances where the Government's sponsorship did not appear to be compatible with the ASRSC ratings. For example, in one case, the Government agreed to absorb 75 per cent ($300,000) of a program which was rated as "below average." In another case, approximately 80 per cent ($1.1 million) was accepted where of the 96 tasks reviewed by ASRSC, seven were rated "B", 82 were rated "C" and seven were rated "D". We believe that to furnish adequate guidance to the negotiator, ASRSC's comments or ratings should give some indication of the reasonableness of the amounts requested in relationship to the scientific value that the proposed program has to the Government.

Another problem is created when ASRSC renders a broad evaluation and the amount of support the Government can give to a contractor's IR&D program is limited. In the absence of guidance as to which are the more desirable programs to support, both from a technical and cost point of view, negotiators are required to make deductions "across the board." Thus, projects which have a more beneficial potential to the Government may be delayed or eliminated because of the lack of financial support.

b. Under current procedures, neither procurement nor ASRSC maintains a current record of IR&D effort by technical classification and by contractor. As a result of the absence of historical files by class of effort, neither activity has the means of avoiding underwriting

an IR&D program when another contractor effected a breakthrough and may be operating in the same area under a Government sponsored contract. It is also conceivable, under the present procedures, that unknowingly one of the military services is supporting a program which was previously supported by another service and abandoned. Since the results of the previous efforts are not categorized, the current endeavors would possibly encounter the same problems and pitfalls of the previous one, thereby dissipating the technical effort as well as Government funds. We recognize that in IR&D it may be advisable, and frequently necessary, for more than one contractor to be devoting effort on a given project. However, it can also be wasteful when such multiple endeavors are the result of chance or coincidence rather than the Government control of (i) those technical areas to which an independent effort is being applied, and (ii) the contractors involved. Further, if records were maintained of those contractors expending IR&D efforts on similar projects, a ready-record would exist of potential competitors when a breakthrough was accomplished and the Government wished to sponsor a contract in the area.

Our review and discussion with procurement personnel disclosed that they do not, as a regular practice, attempt to ascertain similarities in proposed programs by such means as communicating with other procurement agencies, higher echelons, etc., nor did they feel that they were technically proficient, or sufficiently knowledgeable of nation-wide research and development programs, to discern similarity of effort on their own. They further indicated that they depended on ASRSC to determine this when they reviewed contractors' brochures. However, our discussions with the AMC representative on the committee indicated that they do not have a medium such as a reference file or a data bank which would provide a means of screening programs for possible similarities. We were further informed that the only means available of detecting duplicate efforts was the personal knowledge of the individual ASRSC evaluator. Under this set of circumstances, it is not only possible that approvals were unintentionally given to programs which repeated current or previous efforts, but we were informed that it was also possible for an approval to be given to a project already under Government contract. In view of the significant dollar amounts involved in the Government's support of IR&D and in view of the current emphasis on cost reduction in the defense effort, we believe that there should be procedures for recording similar IR&D projects by contractor and by area to avoid unnecessary duplication.

c. Our discussions with the ASRSC representative at AMC disclosed that contrary to the intent of the cited DOD instructions, ASRSC is not functioning as a committee. As a result, the principal intent of the DOD directive to maximize the cross section of professional ability and experience which the military establishment could bring to bear on IR&D, was not being effectively accomplished. For example, ASRSC does not currently hold meetings. This negates the benefits normally obtained from an exchange of ideas. Communication is usually by written technical evaluations on a specific brochure, or by telephone.

But here too, there appears to be a lack of implementation of the committee concept and coordination among the services. We were informed the Navy no longer requests or receives brochure evaluations from the other services. Apparently the Navy relies solely on its own evaluations where it has negotiation cognizance. We were further informed that although USAMC sends the Navy copies of IR&D brochures under USAMC jurisdiction, comments have not always been received from the Navy. Under such circumstances, it can be concluded that although the DOD instruction intended evaluations of IR&D programs to be a joint or committee effort, this was never achieved.

In a similar vein, we also noted that contrary to the DOD Instruction 4105.52, paragraph IV B, an equitable division of work among the military departments does not exist and is not being pursued as an ultimate goal. For example, of the approximately 100 contractors on the ASPR Master List of concerns whose IR&D efforts fall within the jurisdiction of the tri-service evaluators, the Air Force is the assigned negotiating department in approximately 85 per cent of the cases, the Navy in approximately 9 per cent and the Army in approximately 6 per cent. In view of the delays we noted in the evaluation of contractors' brochures, it would seem that a more equitable division of work among the services would result in the timely or current review of the brochures. This, in turn, should improve timeliness in negotiating IR&D advance agreements.

SUGGESTED CORRECTIVE ACTION

We suggest that the Army representative on the Armed Services Research Specialist Committee propose the following for full consideration by the committee as a whole:

a. Establishing a uniform rating system for evaluating proposed IR&D programs together with instructions as to what these ratings mean in relationship to both the technical and cost aspects of a program.

b. Establishing a centralized file or data bank for all Government supported research and development whether (i) under an advance agreement, (ii) under a sponsored contract, or (iii) under an independent research and development effort which was wholly or partly underwritten by the Government, but subsequently abandoned. This file should be maintained currently by class or type of effort and by contractor (appropriately cross referenced) so that information relative to completed projects and those in progress would be readily available. Proposed IR&D programs should be screened against this file for similarity of effort and where applicable, a determination made as to whether it is advisable to underwrite the current project in whole or in part.

c. Implementing the intent of DOD Instruction 4105.52 requiring the ASRSC to function as a committee, with a complete interchange of evaluations and a more equitable distribution of workload among its members.

(In response to this statement of condition and suggested corrective action, the Staff Coordinator, Research and Development Directorate, Office of the Commanding General, Army Materiel Command submitted the following comments:

"(1) This Headquarters concurs with the intent and substance of the AAA recommendations with respect to the Armed Services Research Specialists Committee. Implementation of the recommendations is however difficult in the absence of definitive guidance from OSD and until such time as the scientific research specialists of the several services function as a closely coordinated group any parochial rating system developed independently, by one military service would not be binding on the other.

"(2) The recommendation to establish a centralized file or data bank for all Government supported research and development should more properly be directed to OSD for consideration rather than to this Headquarters. The Department of the Army and the Department of the Air Force, in an effort to coordinate the IR&D program customarily exchange copies of corporate brochures proposing to participate in the program. These brochures are also sent to each major subordinate command and laboratory having related mission interest for evaluation of the corporate program. It is considered necessary to maintain files of only the prior years brochures in order to permit review of proposals for continuity of effort and purpose, bearing in mind that this is an independent research and development program and not a contractual effort.

"(3) Again, it is to be noted that the research specialists of the three services including the DDR&E representative have not functioned as a group, and probably will not until a final determination is made of how to carry on IR&D within Government,")

(We are aware of the responsibilities of members of DOD committees. However, we are of the opinion that it is within the responsibilities and prerogatives of the Army representative to make whatever suggestions and recommendations he considers necessary or desirable to increase the efficiency of the Committee as a whole. The reply acknowledges that the research specialists have not, and probably will not, function as a group. In our view, this condition does not lead to maximum efficiency, nor is it in accord with the DOD instruction which established the Committee. We are of the opinion that this instruction contemplates that actions by members of the Committee would be collective rather than individual.)

(The views of the Office, Chief Research and Development regarding this statement of condition and recommendation were solicited. The reply indicated concurrence.)

PART IV

B. NEED FOR TIMELY NEGOTIATIONS OF IR&D ADVANCE AGREEMENTS AND COST SHARING ARRANGEMENTS

SUMMARY OF CONDITION

Our review disclosed a number of significant instances where advance agreements had not been consummated. In other instances, when advance agreements had been negotiated, the actions were not timely, thus losing the advantages inherent in such agreement. The ASPR considers advance agreements in this area particularly important.

BACKGROUND INFORMATION

Revision 50 to the ASPR, dated 2 November 1959, recognized IR&D efforts as normal costs incident to the conduct of doing business and therefore reimbursable provided the amounts were reasonable and allocable. The ASPR also recognized that the determination of reasonableness and allocability of IR&D costs, among others, after such costs have been incurred could be extremely difficult. Therefore, also included in the aforementioned ASPR revision, was paragraph 15-107, "Advance Understandings on Particular Cost Items", which encourages both the Government and contractors to enter into advance agreements. Further, paragraph 15-205.35(h), of the referenced ASPR change, sets forth the approaches to be used when implementing an IR&D advance agreement, including a cost-sharing arrangement. Paragraph 4-208, "Cost-Sharing Policy" (Revision 9, 15 April 1962), also indicates the desirability of cost-sharing arrangements in the research and development area. However, several years after the issuance of these ASPR changes, our audits revealed that in a number of instances, advance agreements (i) are not entered into, even though the circumstances warrant such agreements; (ii) do not contain cost-sharing arrangements, and accordingly, a contractor's motives for instituting prudent managerial controls are missing; and (iii) are entered into after-the-fact and accordingly, the very problems the agreements attempt to avoid are present during these negotiations.

STATEMENT OF CONDITION

We found among the major contractors included in this review, several instances where IR&D costs were rising at a steadily increasing rate. In addition, there were no advance agreements to establish maximum dollar limitations (ceilings), and/or cost-sharing arrangements where the Government would absorb only a portion of these costs. The absence of an advance agreement places the Government in the position of having to negotiate the reasonableness and allocability of IR&D costs after-the-fact. The absence of a cost-sharing arrangement also provides no incentive to the contractor for more efficient accomplishment. We noted that when there was a ceiling on IR&D, but no cost-sharing provisions, contractors worked up to the ceiling and did not exceed it.

We noted that where advance agreements were in effect, they were usually not negotiated on a timely basis. In fact, in most instances the agreements were consummated after-the-fact and in some cases, as much as a year or two after the incurrence of the costs. This has the further effect of delaying finalization of the contractor's Government contracts which are to bear a share of these IR&D costs through an overhead allocation. Additionally, when contractors incur IR&D costs over an extended period of time and there is no advance agreement, the Government is precluded from performing a technical review of the program or determining its desirability before the incurrence of costs. This condition points up the desirability of the technical review procedure inherent in advance agreements as detailed in APP 3-850.

a. At one contractor, IR&D costs rose from $145,000 a year in 1958, to approximately $1.8 million in 1963. Despite the significant increase, a substantial amount of these costs continued to be allocated to Government work without benefit of an advance agreement. Through 1963, the acceptability of IR&D costs was negotiated on a retroactive basis. This condition also caused many delays in the negotiation of overhead rates applicable to the contractor's Government work. The acceptability of many of the IR&D items involved could not be clearly established without a technical or scientific review and evaluation, which further delayed the settlement of the overhead rates. Thus, because of the absence of an advance agreement the Government was placed in the unfavorable position of (i) negotiating cost allowances after-the-fact, (ii) paying for effort it had no opportunity to review and evaluate before it was expended, and (iii) being unable to limit in advance, the Government's participation in the contractor's expenditures by establishing a ceiling thereon, or to establish an incentive to keep costs down through a cost-sharing arrangement.

b. At another major contractor, whose identified IR&D and other unidentified technical effort costs similar to IR&D, approximated $8 million a year, there were no advance agreements for the fiscal years ended 30 September 1961 through 30 September 1964. For fiscal years ended 30 September 1961 and 1962, the allocation of these costs was accepted by the Government in the absence of advance agreements. For fiscal years ended 30 September 1963 and 1964, negotiations commenced on 30 January 1964, but were not completed until May 1964. This latter year agreement also provided for a 75/25 cost sharing formula. However, during the interim period (January to May 1964), this contractor entered into contractual arrangements with a military service other than the one that was negotiating the advance IR&D agreement. Since there was no agreement, this contracting officer established cost-sharing ratios for IR&D at a 90/10 ratio which was considerably higher than the 75/25 ratio subsequently negotiated by the Tri-Service Committee. Additionally, during that portion of the fiscal year in which the advance agreement was not in effect (1 October 1963 to May 1964) the prices of all fixed-price contracts awarded this contractor, included a portion of the total IR&D costs, rather than the

proportionate share which was ultimately negotiated. Therefore, these fixed-price contracts were overpriced to the extent of the difference between what was included (10 per cent) and the 25 per cent of IR&D costs to be absorbed by the contractor.

c. The following IR&D ceilings were negotiated in advance with a contractor for the calendar years 1961 to 1964:

Year	Amount
1961	$1,532,000
1962	1,678,000
1963	1,150,000
1964	1,400,000

No cost-sharing arrangements were considered and none were provided for. Moreover, for each of the above calendar years, the ceilings were in the same amounts as those proposed by the contractor. For 1961 and 1962, actual costs incurred were approximately $213,000 (14 per cent) and $317,000 (19 per cent) under ceiling. The 1963 ceiling was negotiated during July 1963, at which time the contracting officer was apprised of the fact that, on the basis of costs incurred through 31 May 1963, yearly expenditures would total approximately $1,080,000. Despite this information and the fact that prior experience indicated that the contractor's expenditures were always below the ceilings, the ceiling was set at $1,150,000, exactly as proposed by the contractor. In effect, the Government by establishing high ceilings and by not including cost-sharing provisions, was accepting a significant allocation of IR&D costs to Government contracts without providing any incentive for efficient operations.

d. At another contractor, the ceiling imposed on its IR&D efforts was only slightly less than the proposal. For example, for 1962 and 1963 the contractor requested $7 million and $6 million, respectively, and was awarded $6.5 million and $5.7 million, respectively. Further, for the past six years since 1957, the contractor's IR&D expenditures never exceeded the ceiling and averaged 94 per cent of the authorized limits. Hence, the ceiling only served to provide the contractor with a limitation for cost incurrence without providing an incentive for efficient and economical performance inherent in a cost-sharing agreement.

Our review of the record of the negotiation of the advance agreement disclosed that the main reason why the Government did not include a cost-sharing provision, was that the contractor had a substantial volume of research and development which was financed by its commercial sales (currently in excess of $200 million a year). In our opinion this is not a valid reason for not having a cost-sharing agreement for Government financed IR&D. Research effort on commercial work is accomplished primarily to protect and/or improve a company's competitive standing in its field as well as protecting and/or improving its profit picture. Further, the contractor does obtain certain benefits

from Government sponsored research such as inventions, processes, know-how, etc. which has commercial as well as Government potential. The contractor receives other benefits from Government sponsored research, such as, valuable training and financial support for its staff, and the possibility that a research and development contract (with profit) will be awarded when the IR&D is successful. In summary, it is apparent that where advance agreements containing ceilings and cost-sharing arrangements are entered into between the Government and a contractor the costs to the Government were somewhat contained without impairing the necessary scientific effort. In fact, under this type of arrangement, there is reason to believe the contractor has a greater motivation to effectively utilize its technical staff. Further, and of equal importance, the limitations for this expense item are established thus eliminating a potential area of disagreement between the contracting parties involving the allowability of these costs. Conversely, when there is no advance understanding with accompanying ceilings and/or cost-sharing arrangements, or when one is entered into during the period in question, the final negotiations could involve a number of problems that could have been avoided had the intent of the ASPR been implemented.

SUGGESTED CORRECTIVE ACTION

We suggest that the U. S. Army Materiel Command direct contracting officers to fully implement the cited ASPR provisions. In keeping with these regulations and to motivate more efficient accomplishments, IR&D agreements should be entered into prior to start of the period to be covered. Further, the principles set forth in the proposed ASPR 3-1000, Contractor's Weighted Average Share in Backlog can be applied for determining cost ceilings as well as cost-sharing arrangements for IR&D.

(USAMC apparently agrees with the concept set forth in this statement of condition and suggested corrective action, however, it is stated that the process for entering into advance agreements is time consuming and only suitable for the larger contractors. We contend that only through the establishment of firm criteria under the Contractor's Weighted Average Share in Backlog can the Department of the Army determine which contractors should be subjected to advance agreements. Further, accepted management practices would generally require each contractor involved in IR&D projects to initiate a plan outlining general projects as part of the preparation of the budget. Therefore, there are no additional actions required by the contractor. As to the evaluation of the brochure by Government personnel, this action is performed to avoid even more lengthy and costly dispute procedures and to deter the incurrence of unreasonable costs.)

(The views of the Office, Chief of Research and Development regarding the statement of condition and suggested corrective action were solicited. The reply indicated concurrence.)

PART IV

C. PERFORMANCE UNDER IR&D ADVANCE AGREEMENTS

SUMMARY OF CONDITION

Our audits disclosed that contractors' performance under IR&D agreements did not follow proposed plans (brochures) in the areas of technical performance, cost, and the assignment of key personnel. As a result, the Government's objectives for entering into IR&D advance agreements with contractors were not fully attained.

BACKGROUND INFORMATION

Department of Defense Instruction No. 4105-52, dated 28 June 1960, established the Armed Services Research Specialists Committee (ASRSC) which will, upon request, review and assure that contractors' IR&D brochures make proper segregation of their prospective independent research and independent development programs. This instruction further provides that contractors doing business with more than one military department and seeking reimbursement for independent research and development expense may be required to submit copies of a brochure describing each research and development project and indicating the amount of money budgeted for each.

Within the Department of the Army, this instruction was implemented by paragraph 3-850 of the Army Procurement Procedure, and subsequently revised by Department of the Army Circular 715-2-28, dated 25 October 1963. This latter implementation provides that the detailed statements contained in the brochure should be divided into two sections, the first section should reflect the independent research program, and the second the independent development program. Further, each section should contain information on each project, i.e., the smallest administratively recognizable unit of task assignment in the reporting activity, and each project description will contain the following minimum information:

(a) title of the project;

(b) budgeted or actual annual expenditure;

(c) the length of time the project has been running, and the total expenditures to date;

(d) estimated date of completion of project;

(e) estimated total effort in terms of professional man-hours and the professional grade or classification of the various personnel to be utilized.

(f) summary of past technical achievements under this and related projects in the same field; and

(g) a concise statement of the project objectives and a narrative description of the technical approach.

These brochures are then submitted by each of the military services to the respective ASRSC representative for evaluation. Each individual project is reviewed, and in the Department of the Army, the ASRSC representative indicates in terms of a rating, the evaluation of the individual projects.

STATEMENT OF CONDITION

Based on the foregoing, it is evident that significant efforts go into the preparation and evaluation of the brochures submitted in connection with advance agreements. However, although the brochures are the basis for the negotiations, we found that upon executing advance agreements, the contracting officer established dollar ceilings on an overall basis without any corresponding limits for the major areas of effort shown in the brochures. Additionally, the agreements did not contain provisions which would commit the contractor to perform in accordance with the approved program, or to notify the Government of any significant deviations therefrom. Our audit revealed numerous situations where (i) the contractor deviated significantly, both in dollar estimates and in the technical performance from the proposed program as it was presented in the brochure; and (ii) the contractor reassigned key personnel whose assignment on a particular project may have been an important factor for the Army specialist's recommendation in accepting the project. However, the advance agreements only contain dollar limitations and do not require contractors to adhere to the details of the proposed program. As a result, the financial and technical controls obtained through the budgeted tasks shown in the brochures, and the evaluations by the Government, were not utilized. The following examples illustrate the conditions set forth above:

a. This situation illustrates the extent of changes made by a contractor to its approved 1963 IR&D program where the limitation contained in the advance agreement was a cost-sharing arrangement, and did not require advance notification of these changes to the Government.

Analyses of Program Changes

	IR	ID	Total
Budget - Per IR&D Brochure	$ 882,800	$718,000	$1,600,800
Additional funding allocated by Corporate Office (permitted by IR&D Agreement)	89,755	-	89,755
Revised IR&D Program	$ 972,555	$718,000	$1,690,555
Actual costs per contractor's records	1,054,624	764,343	1,818,967
Net program increase from amount budgeted and proposed	$ 82,069	$ 46,343	$ 128,412
Excess of actual costs over submitted brochure	$ 171,824	$ 46,343	$ 218,167

Reconciliation of Program Changes

	IR	ID	Total
Task additions	$144,856	$270,578	$415,434
Task deletions	(5,000)	(33,000)	(38,000)
Task under-runs:			
on completed projects	(12,923)	-	(12,923)
scope changes on existing projects	(71,443)	(229,238)	(300,681)
Task over-runs:			
on completed projects	7,918	16,830	24,748
scope changes on existing projects	108,416	21,173	129,589
Net Excess - Actual costs over costs submitted in brochure	$171,824	$ 46,343	$218,167
Less: Additional Corporate IR&D funding	89,755	-	89,755
Net Excess of - Actual costs over Revised IR&D program	$ 82,069	$ 46,343	$128,412

Although this contractor exceeded its revised budget by 7 per cent, of greater importance was the addition of over $400,000 of new programs which were not included in the original brochure presentation, or considered during the negotiation of the advance agreement. A listing of these new programs is presented below.

Additions to the IR&D Programs Not Included as part of the IR&D Brochure:
(TA represents Task Authorizations)

Applied Research	1963 Actual
TA 387, Pulse Communication Techniques	$ 69,051
TA 315, Instrumentation for the Very Far Infrared	31,313
TA 459, Thin Film Technology	36,389
TA 462, Associative Memory Investigation	8,176
Total Applied Research	$144,929

	1963 Actual
Brought forward	$144,929
Development	
TA 270, Digital FUIF Prototypes	$ 31,093
TA 281, SRAM Seeker Development	15,973
TA 287, Airborne Relay Program	22,996
TA 292, RACEP Troposcatter Atlantic Missile Range Test	7,250
TA 381, Discrete Address Pulse Communications - Long Range Optimization Program	69,406
TA 388, Random Access Basic Subscriber Units	52,715
TA 389, Pulse Communication System Simulators	32,991
TA 390, Data Adaptors for Pulse Communications Systems	3,657
TA 391, Pulse to Analog Communication Interface Unit	34,424
Total Development	$270,505
Total IR&D Additions	$415,434

Operations under the advance agreement did not prevent, and actually resulted in, significant cost under-runs because of subsequent changes in the scope of the planned and approved projects. For example, in the approved brochure, IR TA 414, Active Elements for Thin Film Circuits, was budgeted for $60,000 but expenditures were about $24,000. The contractor's explanation was that this task was cancelled and that the scope of work was completely reoriented. TA 380 and 383 developmental tasks were planned for $185,000 but related expenditures were approximately $56,000. The contractor stated that these tasks were reprogrammed and reorientated as new projects in order to stay within the approved ceilings. For the same reason, developmental Task Authorizations 277/227 were budgeted for $186,000 but expenditures were held to approximately $86,000.

This contractor also experienced significant overruns due to changes in scope. For example, IR TA 427, Charged Particle Inertial Reference Device, was budgeted for $35,000, while $118,000 was actually expended. The explanation for this overrun, according to the contractor, was the significant technical advances accomplished.

b. The example set forth below illustrates a situation where the negotiated advance agreement did not incorporate the provisions of the brochure and therefore did not provide financial controls over the contractor's IR&D program.

In accordance with paragraph 3-850, Army Procurement Procedures, the contractor submitted, annually, a brochure summarizing its expenditures and accomplishments during the preceding year, describing the work it proposed to perform during the coming year, and listing, by area of study (sub-case), its estimated expenditures for such proposed work. This brochure was reviewed by appropriate Government research specialists and, after approval, was referred to the Tri-Services Committee for negotiation of an advance agreement as to the

extent of Government participation in the proposed IR&D program. The advance agreements negotiated for 1962 and 1963, indicated amounts for the three major program areas (cases), but established a single overall ceiling consisting of the sum of the three program areas. Thus, for example, the 1963 advance agreement established a ceiling of $3,700,000 made up of three major program areas, none of which was subject to a ceiling, as follows:

Description	Amount Proposed by Contractor	Amount Negotiated
Case 27540 Applied Research on Military Systems	$1,044,100	$1,011,500
Case 27701 Applied Research on Military Components	1,505,900	1,527,400
Case 27702 Development of Military Components	1,415,700	1,161,100
IR&D Ceiling	$3,965,700	$3,700,000

However, the brochure submitted by the contractor, in support of its 1963 proposal, listed 12 sub-cases which comprised the three cases cited above, together with the estimated costs to be incurred for each sub-case, as shown below:

		(000 omitted) Amount Proposed by Contractor
	Case 27540	
(1)	Data Collection Systems	$ 232.9
(2)	Communications Systems	446.0
(3)	Guidance and Control Systems	88.0
(4)	Data Processing Systems	150.0
(5)	Systems Analysis	127.2
	Total for Case	$1,044.1
	Case 27701	
(1)	Microwave Tube Electronics	$ 269.1
(2)	Semiconductors	508.9
(3)	Solid State Components other than Semiconductors	410.5
(4)	Thin Film Technology	317.4
	Total for Case	$1,505.9
	Case 27702	
(1)	Microwave Tube Electronics	$ 198.4
(2)	Semiconductors	936.9
(3)	Classical Components	280.4
	Total for Case	$1,415.7
	Grand Total	$3,965.7

Our audits at this contractor revealed considerable over-runs and under-runs of budgeted sub-case amounts as reflected in the contractor's brochure. In one instance, the over-run was 85 per cent of the budgeted sub-case, while in another instance an under-run approximated 40 per cent of the budgeted amount. When the auditor attempted to obtain the details with respect to the specific causes of these over-runs and under-runs, the contractor's representative stated that the contractor was not required to furnish this data. The justification for this position was that the advance agreement established one overall ceiling, and since that amount was not exceeded, over-runs and under-runs did not exist.

c. The example cited below points up a condition where the contractors' IR&D efforts varied significantly from the tasks proposed in the brochure which were used in the negotiations for the advance IR&D agreement.

A contractor submitted a proposal for fiscal year 1963 of 10 IR&D projects totaling $470,850. The advance agreement negotiated between this contractor and the Government established a ceiling of $400,000. During the year this contractor effected major changes to all the projects with the result that there was no relationship between those projects contained in the brochure, and those which were actually performed. However, the total costs incurred did not exceed the ceiling limitation. For example, one project was increased by $65,997 to a total of $180,610 with corresponding decreases in the funding of other IR&D projects to offset this amount. Further, it was noted that on three projects, the principal technical personnel for whom citations and qualifications were included in the contractor's brochure, actually did not spend any time on these projects. While we could not determine whether the non-assignment of these personnel had a detrimental effect on the projects, it could negate the basis on which Government evaluation and approval of originally submitted projects was made. In another case, the contractor transferred the funds ($34,000) budgeted for a project to another project upon receiving an award of an R&D contract in the same area as that which was included in the IR&D effort.

d. Following, is an example in which more than 75 per cent of the projects presented in the brochure were either not attempted, or were replaced by other projects. Nevertheless, the costs were allocated to Government contracts because the advance agreement merely established a dollar limitation which was not exceeded.

A project by project review of the approved IR&D program for a contractor showed significant variations between the approved projects and the actual projects performed. In 1963, the contractor's IR&D brochure contained 29 projects with an estimated total cost of $2,650,000. Actual performance for the year indicated that nine proposed and approved projects for a total amount of $362,000 had almost no work performed, but 13 projects which were not in the approved program were performed for a total expenditure of $493,000. It should

be noted that the ASRSC rated this contractor's proposed IR&D program, as submitted in the brochure, "average". However, because the contractor unilaterally chose to revise a significant portion of this program, there was no assurance that these substitutions would warrant an "average" rating.

e. This example highlights a situation where a contractor's brochure contained resumes of the qualifications of the technical personnel who were to accomplish the IR&D program. The Army representative on the ASRSC stated that these personnel profiles were given significant weight in his evaluation of the program. In this situation, the contractor substituted inexperienced personnel for those listed.

The contractor's brochure contained a number of projects under IR&D, and in support, listed the resumes of 21 key engineering personnel whose efforts were to be expended on IR&D projects. On an after-the-fact basis, our auditors found that only 10 of these key people charged any time to IR&D. We found that these 10 engineers, and the other 11 who charged no time to IR&D, charged their time to bid proposal work, or to other indirect engineering effort. Further, of the 12 engineers assigned to the IR&D effort on a full time basis, all were recent hires. Six had no previous experience, while four were graduated as recently as 1962. Further, the non-assignment of those personnel listed in the brochure, and the substitution of new-hires, was accomplished without consultation with the Government negotiators of the advance agreement. Since the brochure was not made a part of the advance agreement, there was no prohibition against the contractor's substitution of key personnel performing on IR&D projects.

We recognize that the area under discussion deals with a contractor's independent research and development, and as such, the contractor should be sufficiently independent to choose those areas in which technical effort will be devoted. Having made the choice, and requesting the Government to underwrite all, or a portion of this effort, both the contracting officer and the contractor are, in our opinion, obligated to enter into an agreement which will assure a similarity between proposal and accomplishment.

SUGGESTED CORRECTIVE ACTIONS

It is recommended that contracting officers assigned to negotiate IR&D advance agreements be instructed to:

(1) Incorporate (directly or by reference) the contractor's approved brochure containing (i) the objectives of major programs and sub-programs, (ii) the estimated expenditures for these programs and (iii) where applicable, the key personnel assigned to the programs.

(2) Establish cost-sharing formulas and/or ceilings by major program and sub-programs as set forth in the contractor's brochure adjusted to give effect to the results of negotiations.

(3) Require the contractor to obtain Government approval of major deviation from the approved programs both as regards the technical aspects and expenditures. Examples of the actions requiring Government approval would be (i) the elimination of, or the substitution for, an approved major project, (ii) significant over-runs and/or under-runs of anticipated expenditures and (iii) the non-assignment of, or substitution for, key personnel.

(In connection with the foregoing statement of condition and suggested corrective action, the Staff Coordinator, Research and Development Directorate, Office of U. S. Army Materiel Command submitted the following comment:

"(1) Any compulsion to make the brochure covering the proposed IR&D program a part of the negotiation would destroy the rights of company and the investigator to reorient studies in the direction of greater fruitful output. Neither basic research, applied research nor exploratory development should be subjected to such a rigid control. We are dealing with independent research and development which industry conducts to further its potential posture and future competence. To achieve this goal, management must not only plan (and the brochure documents this) but be free to change for reasons best understood by the investigator and his director. Even with Army, Navy and Air Force in-house independent initiated research programs, such independent procedures in programming are considered sound practice and are as successful as the technical director's competence. It is the problem, the planning, the approach, the competence of the investigators and the prior accomplishments that IR&D evaluators are concerned with.

"(2) Cost sharing is widely practiced in the negotiation of IR&D allowances. It should not be assumed that a contractor's brochure would cover all of the independent research and development of a corporation. Where evidence exists that the IR&D only reflects a portion of the total effort, supporting 100% of the program is in consonance with ASPR. OSD has informally recommended total support rather than sharing if the overall ratio of IR&D to sales contracts are not excessive.

"(3) The recommendation that the contractor obtain Government approval when deviating from the planned program is undesirable inasmuch as the true significance of IR&D is independent and not under the control of Government or any other regulatory office.")

(In presenting these comments, it appears that 2 basic facts were overlooked. These are (i) the Government underwrites these IR&D efforts either completely or through a cost-sharing arrangement depending upon the ratio of Government business to commercial business, and the terms of the advance agreements; and (ii) the existing procedures (the imposition of the brochure requirement on the contractor, and the evaluation requirement by Government experts) provide for a Government evaluation to determine the extent of its participation in the program. In our opinion, these procedures are considered prudent business practices since the Government is paying for a significant portion of the program. Further, we do not feel that the incorporation of the brochure in the advance agreement would destroy the rights of the contractor to reorient his studies nor would it subject the contractor to rigid control. Since the brochure represents the contractor's proposed program and forms the basis for the approval of the program by the Government, we feel that the same underlying principles requiring the submission of the brochure should be extended to any significant changes to this program after its approval. In no way should this approval infringe upon the contractor's independent determination in reorienting his program. However, since the Government is sponsoring these revised programs by reimbursing the contractor all or a substantial portion of the costs of the program, it would appear proper for the contractor to keep the Government informed of the changes made.)

(The views of the Office, Chief of Research and Development regarding the statement of condition and suggested corrective action were solicited. The reply indicated concurrence.)

APPENDIX A

SCHEDULE OF CONTRACTOR ENTITIES INCLUDED IN STUDY

Name	Entity	Location
1. ACF Industries, Inc.	Electronics Div.	Paramus, N. J.
2. ACF Industries, Inc.	Electronics Div.	Riverdale, Md.
3. AVCO Corp.	Electronics Div.	Evandale, Ohio
4. AVCO Corp.	Ordnance Div.	Richmond, Ind.
5. Bendix Corp.	Eclipse-Pioneer Div.	Teterboro, N. J.
6. Bendix Corp.	Radio Division	Towson, Md.
7. Chrysler Corp.	Missile Division	Warren, Mich.
8. Chrysler Corp.	Defense Op'ns. Div.	Centerline, Mich.
9. Cadillac Motor Car Div., General Motors Corp.	Cleveland Army Tank - Automotive Plant	Cleveland, Ohio
10. Continental Motors Corp.	Market St. Plant	Muskegon, Mich.
11. Continental Motors Corp.	Detroit Division	Detroit, Mich.
12. Continental Aviation and Eng'g. Corp.	All Divisions	Detroit, Mich.
13. Douglas Aircraft Co., Inc.	Charlotte Division	Charlotte, N. C.
14. Fairchild-Stratos Corp.	Aircraft Missiles Div.	Hagerstown, Md.
15. Fairchild-Stratos Corp.	Stratos Division	Bay Shore, N. Y.
16. FMC Corp.	Ordnance Division	San Jose, Calif.
17. Martin-Marietta Corp.	Aerospace Division	Orlando, Florida
18. Motorola, Inc.	Military Electronics Division	Chicago, Illinois
19. Northrop Corp.	Nortronics Division	Anaheim, Calif.
20. Olin Mathieson Corp.	Winchester Division	New Haven, Conn.
21. Olin Mathieson Corp.	Western Arganics Div.	East Alton, Illinois
22. Philco Corp.	Aeronutronics Div.	Newport Beach, Calif.
23. Raytheon Co.	All Divisions	Lexington, Mass.
24. Sperry Rand Corp.	Sperry Farragut Div.	Bristol, Tenn.
25. Sperry Rand Corp.	Ford Instrument Co.	New York, N. Y.
26. Sperry Rand Corp.	Sperry Utah Co.	Salt Lake City, Utah
27. Thiokol Chemical Corp.	Alpha Division	Huntsville, Alabama
28. Western Electric Co., Inc.	Bell Telephone Labs.	New York, N. Y.

APPENDIX B

PROVISIONS OF ARMED SERVICES PROCUREMENT REGULATIONS (ASPR) PERTAINING TO TECHNICAL EFFORT COSTS

"15-205.3 Bidding Costs. Bidding costs are the costs of preparing bids or proposals on potential Government and non-Government contracts or projects, including the development of engineering data and cost data necessary to support the contractor's bids or proposals. Bidding costs of the current accounting period of both successful and unsuccessful bids and proposals normally will be treated as allowable indirect costs, in which event no bidding costs of past accounting periods shall be allowable in the current period to the Government contract. However, if the contractor's established practice is to treat bidding costs by some other method, the results obtained may be accepted only if found to be reasonable and equitable."

"15-205.21 Manufacturing and Production Engineering Costs. Costs of manufacturing and production engineering, including engineering activities in connection with the following, are allowable:

(i) current manufacturing processes such as motion and time study, method analysis, job analysis, and tool design and improvement; and

(ii) current production problems, such as materials analysis for production suitability and component design for purposes of simplifying" production.

"15-205.35 Research and Development Costs.

"(a) Basic research, for the purpose of this Part 2, is that type of research which is directed toward increase of knowledge in science. In such research, the primary aim of the investigator is a fuller knowledge or understanding of the subject under study, rather than any practical application thereof. Applied research, for the purpose of this Part 2, consists of that type of effort which (i) normally follows basic research, but may not be severable from the related basic research, (ii) attempts to determine and expand the potentialities of new scientific discoveries or improvements in technology, materials, processes, methods, devices, and techniques, and (iii) attempts to "advance the state of the art". Applied research does not include any such efforts when their principal aim is the design, development, or test of specific articles or services to be offered for sale, which are within the definition of the term development as hereinafter provided.

"(b) Development is the systematic use of scientific knowledge which is directed toward the production of, or improvements in, useful products to meet specific performance requirements, but exclusive of manufacturing and production engineering.

APPENDIX B

PROVISIONS OF ARMED SERVICES PROCUREMENT REGULATIONS (ASPR) PERTAINING TO TECHNICAL EFFORT COSTS

"(c) A contractor's independent research and development is that research and development which is not sponsored by a contract, grant, or other arrangement.

"(d) A contractor's costs of independent research as defined in (a) and (c) above shall be allowable as indirect costs (subject to paragraph (h) below), provided they are allocated to all work of the contractor.

"(e) Costs of contractor's independent development, as defined in (b) and (c) above (subject to (h) below), are allowable to the extent that such development is related to the product lines for which the Government has contracts, provided the costs are reasonable in amount and are allocated as indirect costs to all work of the contractor on such product lines. In cases where a contractor's normal course of business does not involve production work, the cost of independent development is allowable to the extent that such development is related and allocated as an indirect cost to the field of effort of Government research and development contracts.

"(f) Independent research and development costs shall include an amount for the absorption of their appropriate share of indirect and administrative costs, unless the contractor, in accordance with his accounting practices consistently applied, treats such costs otherwise.

"(g) Research and development costs (including amounts capitalized), regardless of their nature, which were incurred in accounting periods prior to the award of a particular contract, are unallowable except where allowable as precontract costs. (See 15-205.30).

"(h) The reasonableness of expenditures for independent research and development should be determined in light of all pertinent considerations such as previous contractor research and development activity, cost of past programs and changes in science and technology. Such expenditures should be pursuant to a broad planned program, which is reasonable in scope and well managed. Such expenditures (especially for development) should be scrutinized with great care in connection with contractors whose work is predominantly or substantially with the Government. Advance agreements as described in 15-107 are particularly important in this situation. In recognition that cost sharing of the contractor's independent research and development program may provide motivation for more efficient accomplishment of such program, it is desirable in some cases that the Government bear less than an allocable share of the total cost of the program. Under these circumstances, the following are among the approaches which may be used as the basis for agreement: (i) review of the contractor's proposed independent research

and development program and agreement to accept the allocable costs of specific projects; (ii) agreement on a maximum dollar limitation of costs, an allocable portion of which will be accepted by the Government; (iii) an agreement to accept the allocable share of a percentage of the contractor's planned research and development program."

APPENDIX C

REVISION TO ASPR 15-107 AS PROPOSED IN PART III A
(Changes to existing ASPR are indicated by underlining)

15-107 "Advance Understandings on Particular Cost Items." The extent of allowability of the selected items of cost covered in Parts 2 through 5 has been stated to apply broadly to many accounting systems in varying contract situations. Thus, as to any given contract, the reasonableness and allocability of certain items of cost may be difficult to determine, particularly in connection with firms or separate divisions thereof which may not be subject to effective competitive restraints. In order to avoid possible subsequent disallowance or dispute based on unreasonableness or nonallocability, it is required that prospective contractors, particularly those whose work is predominantly or substantially with the Government, obtain agreement with the Government in advance of the incurrence of special or unusual costs in categories where reasonableness or allocability are difficult to determine. Included in this category are those contractors who seek recovery of independent technical effort costs. Such agreement may also be initiated by contracting officers individually, or jointly, for all defense work of the contractor, as appropriate. See ASPR 3-1000 for the means of determining reasonableness by utilizing the concept of "Contractors' Weighted Average Share in Backlog". Any such agreement should be incorporated in cost-reimbursement type contracts, or made a part of the contract file in the case of negotiated fixed-price type contracts, and should govern the cost treatment covered thereby throughout the performance of the contract. With the exception of the contractor's independent technical effort, the absence of such an advance agreement on any other element of cost will not, in itself, serve to make that element either allowable or unallowable. Examples of costs on which advance agreements may be particularly important:

(i) Compensation for personal services;

(ii) use charge for fully depreciated assets;

(iii) deferred maintenance costs;

(iv) precontract costs;

(v) contractors' independent technical effort costs;

(vi) royalties;

(vii) selling and distribution costs; and

(viii) travel costs, as related to special or mass personnel movement.

APPENDIX IV

January 27, 1970

Honorable Melvin R. Laird
Secretary of Defense
Washington, D. C.

Dear Mr. Secretary:

I have reappointed the Ad Hoc Subcommittee on Research and Development, which again will be chaired by Senator McIntyre, to review and report on the DOD FY 1971 authorization request for the Research, Development, Test and Evaluation appropriations. In addition, I have requested the Subcommittee to conduct hearings and make a separate recommendation on S. 3003, relative to independent research and development, which, as you know, was the subject of considerable controversy on the floor of the Senate last year.

Answers to the following questions are needed to assist the Subcommittee in preparation for these hearings:

What specific implementing actions would be involved if the Congress established a specific dollar ceiling for independent research and development applicable to appropriations authorized for FY 1971 -- first on the assumption that such a ceiling would be established at the DOD level and not identified as to individual appropriation or military service; and, secondly, on the assumption that the ceiling were established as a single line item in each of the Procurement and RDT&E appropriations for each service?

In reply to these questions, it should be assumed that independent research and development includes bid and proposal costs and other technical efforts.

If there are preferable alternative methods of control other than a specific dollar ceiling, such proposals also should be submitted.

The information should be submitted by February 9, 1970, since it is anticipated that hearings will be scheduled shortly thereafter. It is assumed that substantial thought has been given to these questions already so that the Department should be able to respond by that date.

Sincerely yours,

John C. Stennis

HF:pab

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

INSTALLATIONS AND LOGISTICS

Honorable John C. Stennis
Chairman, Committee on Armed Services
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

The Secretary of Defense has requested me to reply to your letter of January 27, 1970 advising that the Ad Hoc Subcommittee chaired by Senator McIntyre will conduct hearings on Senate Bill S. 3003 relative to Independent Research and development (IR&D), Bid and Proposal (B&P) expense and Other Technical Effort (OTE). In your letter you asked us to supply answers to the following questions:

1. What specific implementing actions would be involved if the Congress established a specific dollar ceiling for IR&D, B&P and OTE applicable to appropriations authorized for FY 1971 on a DoD level and not identified as to individual appropriation or Military Service?

2. Same question as above except that the ceiling would be established as a single line item in each of the Procurement and RDT&E appropriations for each Service.

In addition to the two questions, you also asked us to submit any preferred alternative methods of control other than a specific dollar ceiling.

As you anticipated in your letter, we have given considerable thought to the approaches posed in your questions. Our conclusion is that such approaches pose administrative problems which preclude any effective or meaningful implementation. Although a DoD-wide limitation might provide more flexibility than individual ceilings applicable to each of the Military Services, the administrative problems discussed below are common to both approaches.

IR&D, B&P and OTE costs are not part of the direct effort called for in a contract. Instead, they are incurred as part of the cost of operating a company and keeping it technically competent and competitive. Such costs are part of the overhead expense and are recovered by allocating the total incurred over the direct effort incurred on all contracts. In any one of his fiscal years, a contractor may be performing both commercial and Government contracts. In addition, Government contracts will include a mixture of funds that have been appropriated in various fiscal years. This mixture of funds has been the cause of a serious problem in our attempt to implement Section 403 of the 1970 Military Procurement Authorization Act and would cause a similar problem in attempting to administer an amount established as a budget line item. Let me explain.

The limitation imposed on the appropriation for FY 1970 requires us to keep track of contracts that include those dollars so that we can make sure that the specific limitations on IR&D, B&P and OTE are complied with. Since we have different criteria for determining the amounts of IR&D, B&P and OTE that can be allowed on all other contract not subject to this limitation, we now have two administrative procedure. instead of one. If FY 1971 funds have still a different limitation, we would find ourselves with three sets of records to keep. Since some contracts run for a period of several years, it is apparent that in a short time we could have contracts subject to five or six different statutory limitations in any plant at one time. This could be further complicated by contracts which involve funds of various years. The additional administrative effort required to sort out all these funds and see that costs applicable to each was proper would be formidable.

Another major problem is that we don't know of any effective or equitable way to divide the fixed dollar figure among contractors. It should be recognized that IR&D, B&P and OTE costs are very different from line items presently appearing in the budget. At present, budget line items relate to specific items required by the DoD. As such, they become a line item on a contract with one or several contractors. On the other hand, a line item for IR&D, B&P and OTE costs might involve every contractor who does business with the DoD. That is, instead of placing the item on direct contract with one or two contractors, we would be faced with the task of trying to find some equitable, consistent procedure for spreading this item over all the contracts we write that include FY 1971 funds. Let me discuss the problems associated with this for a moment.

Depending upon the type of product produced, the contractor's position in industry as a designer/creator or a copier, the need for new business or the number and type of proposals the Government may request in any one year, contractors' needs for IR&D, B&P and OTE may vary considerably as between companies. Moreover, any particular contractor's requirements may vary appreciably from year to year. This is especially true of smaller contractors. With this in mind, consider the administrative actions that would be required.

At the time we receive a new appropriation the procurement line items are separated out and sent to various purchasing offices for procurement action. This can't be done with an IR&D, B&P, OTE line item. Instead, some portion of the funds established in the IR&D, B&P, OTE line item would have to be attached to each of the other procurement items. At this point, however, we would not have sent out requests for proposals and would seldom know which contractors we would be selecting for award and the amounts of IR&D, B&P and OTE involved. Thus, the distribution of IR&D, B&P and OTE costs would have to wait until contract negotiations were completed in order to know the actual amount of these costs that should be included. A further complicating factor is that all procurements are not placed at one time. In fact, contract changes may be negotiated months or years later. Thus, we would not be able to determine all the costs of IR&D, B&P and OTE that we would be requested to reimburse and compare them to the amount available from the line item authorization. Therefore, we would not be able to determine the percent of costs incurred that should be allowed each contractor. This means that some contractors would probably receive no reimbursement because the funds were exhausted. In the meantime, a new procedure would have to be established for processing contracting officer's requests for IR&D, B&P, OTE funds to complete contract negotiations.

Another related problem is the question of how to establish the amount needed for a line item. It would not be feasible to ask all contractors how much IR&D, B&P, OTE cost they proposed to charge against line items on a proposed new budget because at that time we would not know who the contractors for these future projects would be. The only way such an amount could be established would be to arbitrarily use a percent of the procurement budget. Such a computation, unsupported by any rationale based on industry needs or DoD benefits, is completely contrary to the major points of Congressional concern stated in the Senate Bill S. 3003, that there should be a relationship between the

DoD expenditures in this area and benefits received. In this respect, it would not be as effective as our current procedure.

You requested that preferred alternate methods of control be submitted. We believe there are basically two such approaches and we are happy to describe them to you. We have been in the process of evaluating each approach over a considerable period of time, and we believe that either approach would be an improvement over our present practices.

The first alternative that we believe merits consideration is the formula approach that was developed into a draft of a proposed policy and circulated to industry and other Government agencies some months ago. This method of controlling costs is based on each individual contractor's historical expenditures and results in a positive dollar ceiling for IR&D and B&P costs at the individual contractor level. OTE costs, which are R&D or B&P in nature, were included in the definition of IR&D and B&P and the term OTE was eliminated because it is not definable or appropriate.

The merits of the formula approach are that it has relationship to the specific experience of each individual contractor, it is objective and requires no subjective judgements by Government negotiators, it tends to keep the proportion of IR&D and B&P per dollar of contract price at a constant level, requires contractors to absorb increases until such amounts become part of the historical average and it can be easily adjusted to raise or lower the rates of contractor recovery of IR&D and B&P cost which, of course, will raise or lower the DoD costs for IR&D and B&P. Criticisms of the formula approach stem primarily from the fact that the formula does not provide a means whereby factors other than historical expenditures are considered in determining the IR&D and B&P costs to be allowed. In the proposed policy that we drafted, we included a feature to overcome this objection in the more flagrant cases. This feature consisted of an appeal and review procedure under which cases could be reviewed by Military Service Secretaries and revised limitations established where appropriate.

The second alternative that we would propose is an approach that we have been considering that would require mandatory advance agreements with all major contractors establishing the amount of IR&D and B&P costs that would be recognized. These agreements would cover all such costs allocated to any DoD contract regardless of whether the contract was funded with FY 71 money or an appropriation

from some other year. Agreements with these major contractors would be based on the contractor's fiscal year, and amounts recognized would be established after thorough technical review by DoD technical experts of each of their IR&D projects. Other tests of reasonableness would also be applied such as management of the program, type of DoD contracts in the plant, etc. Since it is not feasible to make technical reviews of B&P projects, they would be evaluated on the basis of other criteria to determine the limitations to be included in advance agreements. Factors to be considered would include such things as number and type of proposals requested by the Government, the contractor's need for new business, past pattern of expenditures, and the like. Negotiations would be conducted by a small specialized group in Washington under the direct supervision and guidance of top level management.

This proposed negotiation procedure is a substantial refinement of procedures that are presently in use because advance agreements would be made a condition for recovery of IR&D and B&P costs by contractors and uniform and more detail program review procedures would be established. Our study of this problem area over the past several years assures us that this approach is administratively feasible and would provide positive control over approximately 85% of DoD costs for IR&D and B&P. It would also provide full visibility as to the IR&D work being conducted by contractors and the costs reimbursed on negotiated DoD contracts. OTE type costs which are R&D or B&P in nature would be included in these agreements, but, again, the term OTE would be eliminated because it is not definable or appropriate.

For the many small contractors who are responsible for about 15% of the IR&D, B&P and OTE costs charged to DoD contracts, we would use the formula discussed earlier. While this would not provide the intimate detail afforded by the negotiation procedure, it would provide a means of dealing with the many small contractors or other contractors who have little Government business. Use of advance agreements would not be administratively feasible because of the large number of these contractors.

It should be noted that neither of the above two alternative approaches would require legislation. Both plans include carefully conceived procedures that are the result of a great deal of study of the IR&D/B&P problem over a long period of time. In this study, we have

received the benefit of comments from industry and many Government agencies including the General Accounting Office. The most recent comments from the GAO were critical of certain aspects of our proposed formula approach, primarily as it affects major contractors. We find these comments to be of great value to us and we are now restudying the problem areas pointed out by the GAO. At this time, however, we believe that one of the two above alternatives or a variation combining the two will provide the best solution to the IR&D/B&P problem.

We appreciate this opportunity to furnish our comments on this very complex problem. Members of the OSD staff are available to discuss this in more detail if you desire.

Sincerely,

Barry J. Shillito

BARRY J. SHILLITO
Assistant Secretary of Defense
(Installations and Logistics)

[illegible], 1970

Honorable Robert C. Seamans
Secretary of the Air Force
Washington, D. C.

Dear Mr. Secretary:

The Air Force aircraft procurement request for FY 1971 totals approximately $1.5 billion in the form of line items and excluding all below-the-line items. Of this sum, two aircraft items total $1,027,000,000 consisting of $483.0 million for the F-111 program and $544.4 million for the C-5 program.

The purpose of this letter is to request, with respect to the aircraft funds totaling $1.5 billion requested to be authorized and appropriated for FY 1971, that you provide the Committee with a definite estimate indicating, by company, the probable distribution of funds that would be authorized for the independent research and development program, including bid and proposal and other technical effort. Earlier information has indicated that there is a definite relationship between the allowable IR&D costs and the sales of a particular corporation to the military department. It would be expected, therefore, that out of the FY 1971 funds, with approximately two-thirds of the line item monies earmarked for two companies, approximately two-thirds of the IR&D funds could be anticipated to be paid to these same companies. To what extent is this correct?

Another issue on which we request precise information is the degree to which the IR&D effort will be recognized with respect to the $200 million in contingency funds being requested for the C-5A program. I am not concerned as to when these funds would be disbursed, but rather the manner in which they would be utilized with respect to this FY 1971 contingency aircraft appropriation. Please be precise with this response.

Although I am requesting this information directly, it will be turned over to Senator McIntyre's Subcommittee following your submission.

Sincerely yours,

signed/3-30-70

John C. Stennis

TEB:pab

DEPARTMENT OF THE AIR FORCE
WASHINGTON 20330

OFFICE OF THE SECRETARY

APR 13 1970

Dear Senator Stennis:

Your letter of March 24, 1970, asked that we provide your Committee with a definite estimate indicating the probable distribution of funds that would be authorized for Independent Research and Development (IR&D) including Bid and Proposal (B&P) and Other Technical Effort (OTE) for the aircraft contractors who will get FY 1971 procurement funds.

At the present time there are no advance agreements for these contractors for FY 1971. Until such agreements are negotiated any forecast of ceiling costs is highly speculative. Also, we do not know how much each contractor will actually expend up to the negotiated ceiling until an audit of the contract period has been performed. Therefore, accurate figures are not available until after work has been completed. However, in an effort to be responsive to your request, we have considered past trends, Section 403 of PL 91-121, and reduced budget posture. We have then projected a general estimate of what might be the IR&D and B&P of the C-5 and F-111 Contractor Divisions. The IR&D and B&P for the Division producing the F-111 for FY 1971 could be approximately $11 to $14 million and for the Division producing the C-5A these costs could be approximately $7 to $10 million.

In your letter you also indicated that it would be expected that out of the FY 1971 funds, with approximately two-thirds of the line item monies earmarked for two companies, approximately two-thirds of the IR&D funds could be anticipated to be paid to these same companies. In response to your request for our comment on the correctness of this statement, there are several factors and criteria used to establish our negotiation objective for advance agreements. Some of these criteria and factors, whose weights vary with contractors, have been provided to Senator McIntyre. It would not be a valid assumption to derive anticipated IR&D payments for these two programs as a percentage of total IR&D funds in a direct ratio to the aircraft procurement

request of these programs to the total. Also, as you know, the total IR&D funding is applied to the overall procurement base of which aircraft is only a portion. The amount of IR&D dollars actually reimbursed to a company is directly related to the ceiling amount established between the government and the contractor by advance agreement and also in relation to the base used for allocation of IR&D as between government and commercial work of the contractor.

For general comparison purposes we have derived the relationship of IR&D expenditures to sales for several companies from past audits. From the 1963 to 1969 period this has reflected an overall average of approximately one and one half to two percent. While these data are useful for general trend purposes, they are not used for determining the allocation of IR&D monies to contractors.

Other Technical Effort (OTE) is not a specific accounting category of costs and, therefore, we have no capability to make even a rough estimate of what costs contractors might include in this area. As you know, OTE is a general term which has been used by the DOD to refer to various technical costs which are incurred by a contractor in operating his plant but, for his own reasons, he does not classify as either IR&D or B&P. In order to understand the extent of this practice and the dollars that are charged to these types of accounts, the DOD auditors have collected these various accounts under one common heading of OTE. It is not a new cost pool. All effort now classified as OTE will be reclassified as IR&D and B&P or assigned to another overhead category that is more appropriate.

You also asked for precise information on the degree to which IR&D effort will be recognized with respect to the $200 million in contingency funds being requested for the C-5 program.

Actions are currently under way to resolve the C-5A contractual ambiguities through negotiation/litigation proceedings. This situation is further aggravated by Lockheed's cash flow problem which may require interim financing to insure

continued performance on the C-5 and other programs. Assuming an agreement is reached between the government and Lockheed as to financing and settlement of the issues in dispute, the $200 million would be utilized to finance the C-5 program during the remainder of FY 1971. The specific conditions on the utilization of these funds are currently being negotiated. Within the overall allowable contract costs, some amount of IR&D expenditures may be recognized; however, we are not able to define this expenditure until the negotiations are completed. We regret that we are unable to be more precise at this time. We will make this information available to you as soon as it has been definitized in the negotiation.

Sincerely,

Signed:
GRANT L. HANSEN
Assistant Secretary
Research and Development

Honorable John C. Stennis
Chairman, Senate Armed
Services Committee
United States Senate

April 16, 1970

Dear Senator Stennis:

This is a follow-up to our letter to you of April 13, 1970, wherein we responded to your questions on IR&D associated with the aircraft procurement account.

Specifically, we would like to provide further information on the question of IR&D and B&P effort relative to the requested $200 million contingency funds for the C-5A Program. Although we have not finalized an advance agreement with Lockheed covering FY 1971, there will be a reduction in the IR&D and B&P effort with this contractor from that of our previous agreement because of both Section 403 of P.L. 91-121 and Lockheed's current financial status. In conjunction with establishing a negotiating position for the new advance agreement, the Air Force can state that we contemplate no increase in our planned IR&D and B&P effort with Lockheed if the $200 million contingency request is fully approved and placed on contract.

Sincerely,

Signed

Grant L. Hansen
Assistant Secretary
Research & Development

Honorable John C. Stennis
Chairman, Senate Armed
Services Committee
United States Senate

March 24, 1970

Honorable Melvin R. Laird
Secretary of Defense
Washington, D. C.

Dear Mr. Secretary:

As you know, Section 203 of Public Law 91-121 contains a prohibition that none of the funds authorized to be appropriated by the Act may be used to carry out any research unless there is a direct and apparent relationship to a specific military function or operation with regard to the project or study being funded.

It has not been made clear to either the full Committee or Senator McIntyre's R&D Subcommittee as to whether the Department of Defense has applied Section 203 to that portion of FY 1970 appropriations which will involve independent research and development, bid and proposal, and technical development.

I am requesting that the Committee be provided with definite information on this matter.

Sincerely yours,

signed/3-26-70

John C. Stennis

TEB:pab

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

March 31, 1970

Honorable John C. Stennis
Chairman
Committee on Armed Services
United States Senate
Washington, D. C. 20515

Dear Mr. Chairman:

Secretary Laird has asked that I acknowledge receipt of your letter regarding the application of Section 203 to Independent Research and Development.

Your letter is receiving attention and you will be advised further as soon as possible.

Sincerely,

Richard G. Capen, Jr.
Assistant to the Secretary
for Legislative Affairs

DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D. C. 20301

Honorable John C. Stennis
Chairman
Committee on Armed Services
United States Senate
Washington, D. C. 20515

Dear Mr. Chairman:

You have asked for information as to whether the Department of Defense considers that section 203 of Public Law 91-121 approved November 19, 1969 is applicable to that portion of FY 1970 appropriations involving independent research and development, bid and proposal, and technical development.

Section 203 provides as follows:

> "SEC. 203. None of the funds authorized to be appropriated by this Act may be used to carry out any research project or study unless such project or study has a direct and apparent relationship to a specific military function or operation."

This section was added to the bill as a part of a floor amendment which also made certain dollar reductions in authorization for RDT&E appropriations. The entire debate focused solely upon research projects and studies entered into directly by the Department of Defense that were said to be irrelevant to the proper Defense functions. At one point in explaining the proposed dollar reductions, the proponent of the amendment stated:

> "The purpose is to make a modest cutback in the Department's funding of Federal Contract Research Centers--the so-called think tanks--other social and behavioral science research, foreign research, the Department's aid-to-education program, project Themis, and research on counter-insurgency matters." 115 Cong. Rec. S9612 (Daily Ed., Aug. 11, 1969).

Further, the proponent in explaining what is now section 203 indicated that it would help illustrate the intent of the proposed dollar reductions (115 Cong. Rec. S9725, Daily Ed., Aug. 12, 1969). The remainder of the debate dealt only with the dollar reductions proposed, focusing primarily upon the social and behavioral sciences. There was never any mention in the course of this debate of independent research and development, bid and proposal or other technical effort and no indication that section 203 was intended to impact any such programs.

The House Armed Services Committee included an identical section in the House bill and confirmed the view that section 203 affects only research conducted directly by the Department of Defense by its report stating:

> "The addition of this section reflects the views of the committee to insist that whenever research and development projects are entered into by the Department of Defense, there must be direct relationship between such projects and defense efforts." H. Rep. No. 91-522, at 106 (Sept. 26, 1969) [emphasis added].

The Department of Defense implementation of section 203, which was undertaken after full consultation with the General Accounting Office, reflects this interpretation.

It should be noted that Public Law 91-121 also includes section 403 that deals expressly with independent research and development costs and limits payments for such costs, as well as bid and proposal and other technical effort costs, to 93% of the amount budgeted for such purposes. Section 403 was originally added to the bill (as section 405) by a floor amendment in the Senate. In the course of the debate it was abundantly clear from the statements of the proponent of the amendment that independent research and development, bid and proposal and other technical effort programs were clearly distinguishable from a directly Government contracted R&D Program, and were to be separately limited by the amendment. It was also clearly understood that independent research would not necessarily have in all cases a direct and apparent relationship to military functions (115 Cong. Rec. S10654 et seq., Daily Ed., Sept. 16, 1969).

The Department of Defense implementation of section 403, which was also discussed with the GAO, reflects this interpretation.

In summary, it is the view of the Department of Defense that the provisions of section 203 have no application to the separately limited independent research and development, bid and proposal and other technical effort programs referred to in section 403.

/s/ John [illegible] Jr.

John S. Foster, Jr.