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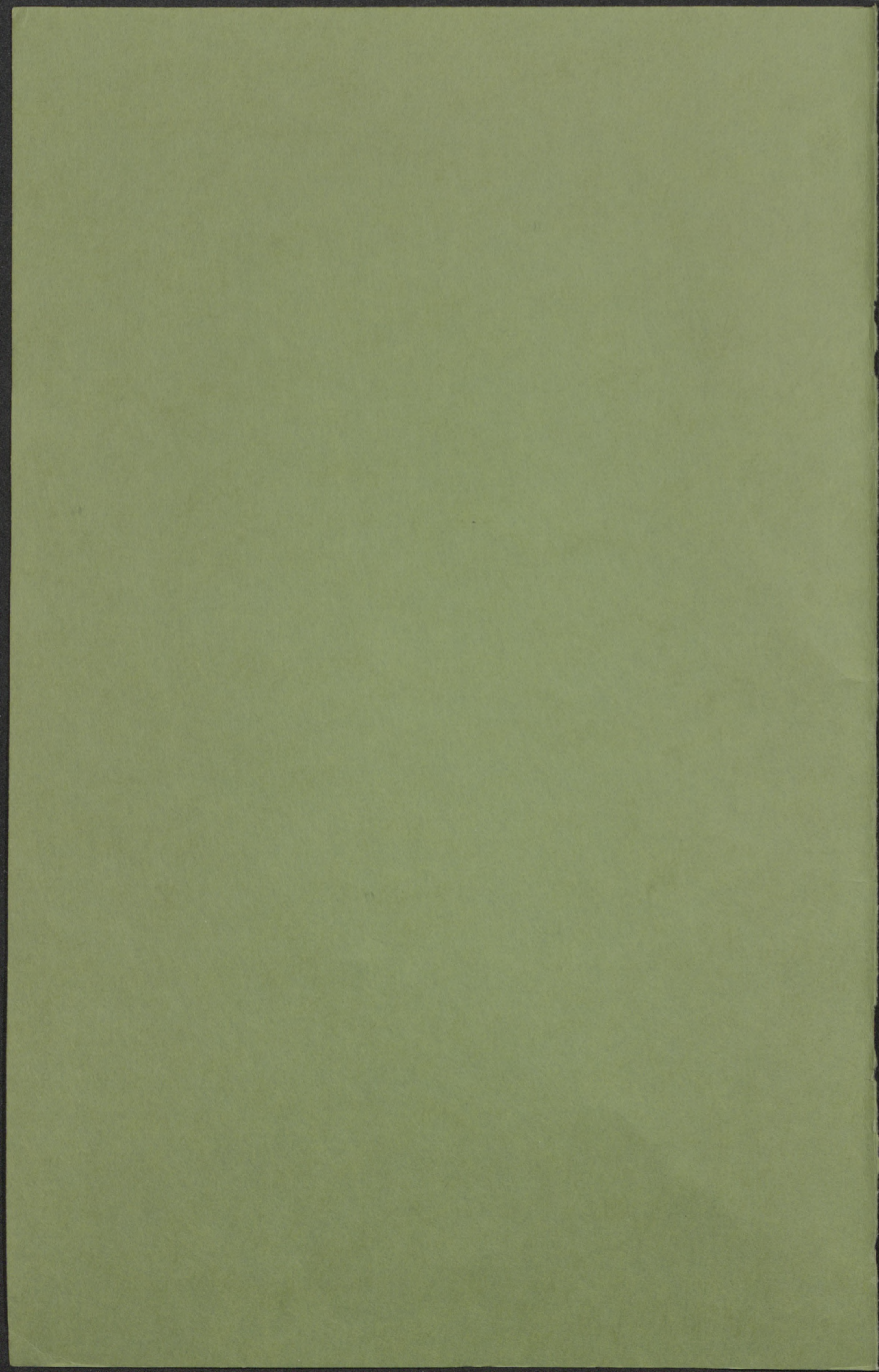
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ANNUAL REPORT  
 OF THE  
 TECHNICAL SERVICES STAFF  
 TO THE  
 CHAIRMAN OF THE  
 COMMITTEE ON  
 RULES AND ADMINISTRATION  
 UNITED STATES SENATE



DECEMBER 1980

Printed for the use of the Committee on Rules and Administration



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U.S. GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1980

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## GUIDELINES FOR INFORMATION PROCESSING AND COMPUTER SERVICE ACTIVITIES

The Committee on Rules and Administration shall have authority concerning policy, organization, initiation, implementation, operation and evaluation of all matters concerned with information processing and communications as they relate to mechanization, automation, computerization, or related functions.

All Senators, Committee Chairmen and Officers of the Senate shall address requests for such services to the Chairman of the Committee on Rules and Administration, with supporting documentation of the requirements.

At the direction of the Committee, its staff will consult with the requester, make any additions necessary to the documentation, and prepare a report for consideration by the Committee.

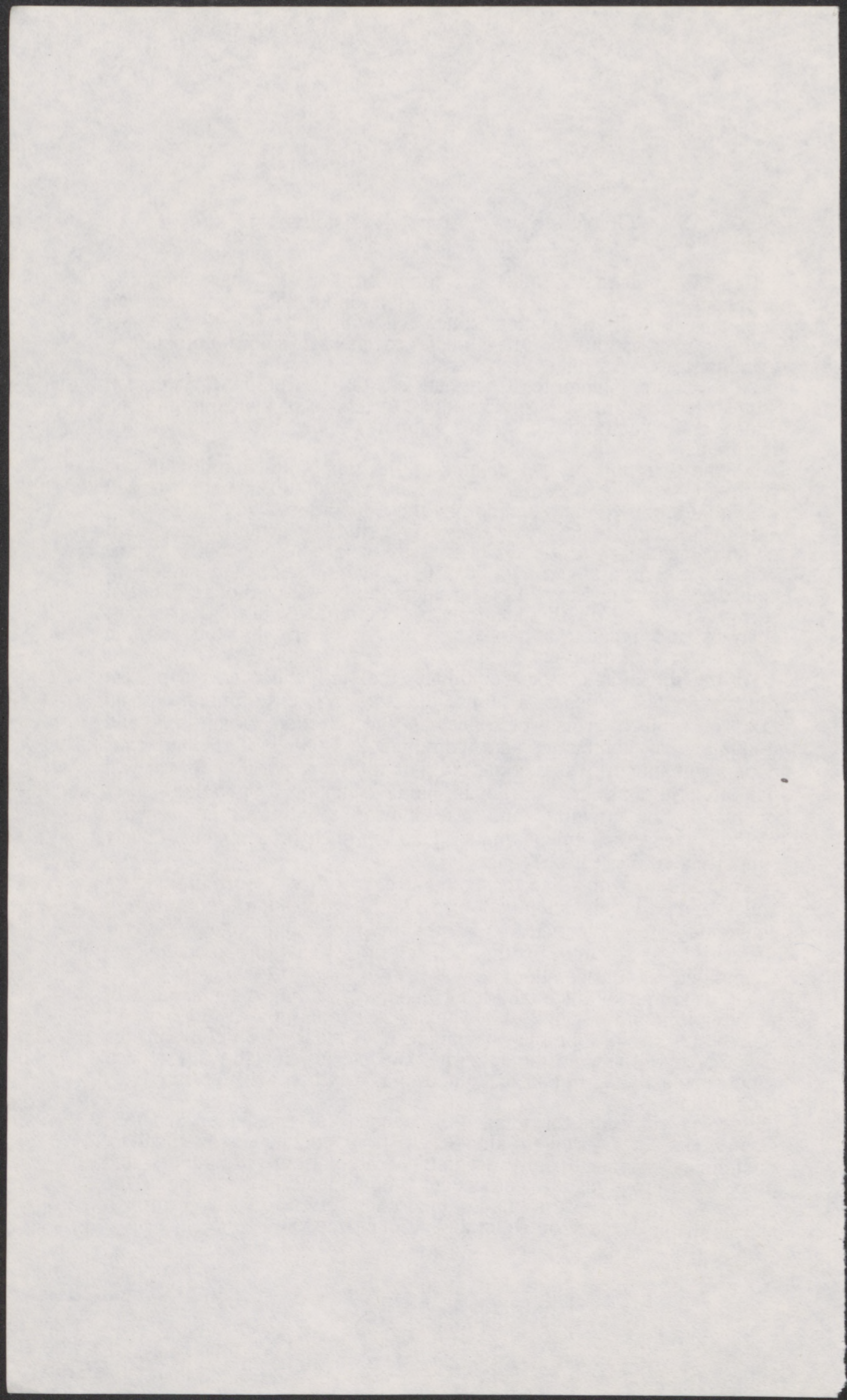
If the Committee favorably considers a study or action for initiation or implementation, it will direct its staff to take responsibility for the performance of the specified task in full consultation and agreement with the requester, who will be considered to be the user or recipient of such task or service. All statements of requirements, justifications, cost analyses and recommendations will be developed by the staff in conjunction with the users.

At the direction of the Committee, the staff will act as a project director (or will designate a project director) for the performance of all tasks or projects. This would include the selection, monitoring and evaluation of contractors and consultants, as well as Senate staff component support. In addition, the staff will be responsible for (or will delegate responsibility for) all implementation, operation, user orientation and training, and evaluation of any approved systems, including the procurement (or delegation of such procurement) of any supporting equipment or services.

At the request of a Senator, committee, or office, the Committee on Rules and Administration will provide for professional consultation concerning problems related to information processing, ongoing systems under the jurisdiction of the Senate, or systems proposed to the Committee for consideration.

The Committee will establish all policy concerning the operation of new services and systems, and will maintain the authority to have its staff be responsible for such operation, if so required. In addition, the Committee will assume the authority and responsibility for any related supporting activities not so stated above, as may become necessary from time to time.

Nothing in the foregoing is intended to preclude Senators, Committees, or Officers of the Senate from conducting independent preliminary studies or investigations of administrative practices and procedures, providing any consequent commitments in the name of the Senate with regard to information processing services be made through and by the Committee on Rules and Administration.



## SUMMARY

This report of the Technical Services staff describes the major activities of the past year. There has been a continued improvement in the quality and quantity of services provided to the Senate by the Sergeant at Arms Computer Center and by other organizations servicing the Senate.

The Senate Legis System, a comprehensive tracking and reporting system for all legislative and executive activities of the Senate, has continued to expand, and now encompasses committee scheduling information, the leadership's floor schedules, executive communications and Presidential Messages, petitions and memorials, and related official information about Senators, Committees, and actions of the Senate. During the 96th Congress, Legis has also been programmed to provide a variety of printed reports. These include reports to assist the Secretary of the Senate in his official recordkeeping activities, legislative activity reports for individual Senators, printed reports for Committees of the Senate, and an automatic tracking system to keep Senators and staff informed in a timely manner of all measures of critical interest. All nominations received by the Senate will be tracked in Legis beginning in January 1981, at the start of the 97th Congress.

The Program Review System, through which committees can store, analyze, and present information regarding programs within their jurisdiction, became fully operational during the 96th Congress, with the publication of the users guide and announcement of availability. During 1980 the system was enhanced with expanded analytical features and improved data entry and update features. The enhancements include: mass update of user codes; larger work areas for extended precision in calculations; exponentiation; and roll-up of account and program totals into function totals to facilitate comparison with function amounts. Additional committees were authorized use of the system. In addition to federal budget and program data bases, data bases have been established for analysis of the geographic distribution of federal funds; for development and test of geographic allocation formulas; for committee office expenses; and for analysis of detailed operating cost and production statistics on certain federal agency operations under a committee's jurisdiction.

The Federal Assistance Awards Analysis System is in the planning stage. Committee staff have worked with the Office of Management and Budget, executive branch agencies, and state and local government organizations in the development of a new executive branch system with information on recipients of grant and other assistance awards, the Federal Assistance Awards Data System (FAADS). The Office of Management and Budget will provide quarterly FAADS tapes

to the Senate and special reports will be prepared for Senators and committees on request.

The Geographic Reporting System provides special analyses on the distribution of federal grant and other funds to regions, states and counties. These analyses are prepared from computer tapes provided by the Community Services Administration (CSA) and supplement the materials published by CSA. Approximately 25 different analyses have been developed in response to requests from Senators and committees.

The Senate Sergeant at Arms conducts a continuing program to improve services and modernize facilities and equipment. Several competitive procurements were completed during the year which acquired more cost-effective and efficient equipment.

The Senate's data communications network continues to expand into state offices on a planned schedule.

A variety of improvements have been made in computer systems supporting text processing<sup>1</sup> and records management functions in the Senate. The Senate Journal was phototypeset in 1980 as a pilot test of automating the Senate portion of the Congressional Record in 1981. A task force completed a study of the uses of the Record as a basis for determining the potential for reducing costs of the Congressional Record program via microform production and distribution.

Enhancements were made to the Bill Drafting System in the Office of Legislative Counsel including an additional capability to print committee print bills on demand as an alternative to typesetting at GPO. The Secretary of the Senate was provided a computerized system to verify page counts of hearing transcripts based on a computer analysis of the magnetic tape. All committee legislative calendars were converted to a uniform typographic standard in 1980.

The Rules Committee approved development of detailed design specifications for a Senate records management and indexing system, slated for completion in 1981.

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<sup>1</sup> This report was prepared on the experimental office work station mentioned on page 15. Data was keyboarded on a visual display unit which provides both word processing and page composition capabilities on the same device. Typesetting commands are executed immediately upon being entered and the results are displayed for verification. Printing, or reproduction, is accomplished through the use of a high speed laser printing device.

## SENATE INFORMATION RETRIEVAL SYSTEMS (HARVEY)

Senators require independent, accurate, comprehensive, and timely information to assist them in legislative tasks, in the formulation of legislative issues, in the drafting of legislation, and in their representative functions. Information is needed on all legislative and investigative activities of Senate committees and conferences in a timely, accurate, and understandable manner. Senate Information Retrieval Systems provide Senators, committees, officers, and their staffs with responsive access to information that will assist them in their legislative tasks.

### SENATE LEGIS

The Senate's Legislative Information System (Legis) became fully operational during the first session of the 95th Congress. Official Senate information concerning the sponsorship, co-sponsorship, official title, statements of purpose, and comprehensive floor, committee, subcommittee and conference status, scheduling and reporting data for bills, resolutions, and amendments were entered and verified by staff of the Secretary of the Senate. With the completion of the Senate computer programming for the Senate's legislative measures, including floor amendments and their respective legislative status, together with the installation in the Senate Computer Center (Office of the Sergeant at Arms of the Senate) of the Library of Congress' Scorpio, Logic Library and Libra Software, several important goals of the Rules and Administration Committee were realized. These include:

(1) committee scheduling; time, date and location of committee meetings, hearings, and conferences available via terminals in every Senator's office;

(2) a nightly updated Legis/Scorpio data base for all Senate users using the same retrieval language as on-line data bases at the Library of Congress; 100 Senator's offices and 14 Committees became fully trained Legis users during the 96th Congress;

(3) on-line files of amendments pending on the Senate floor, the Majority Leader's Daily Schedule, the Assistant Majority Leader's Whip Notice, and News about Legis for all Senate users;

(4) on-line or overnight data exchange with the Library of Congress and House Information Systems and the incorporation of Library and House data not previously in the Senate Legis data base.

The Senate Legis System has been implemented as an on-line, interactive data base computer system possessing a flexible capability for expansion into all official areas of Senate activity. As an umbrella information system, Legis has now been extended to cover a wide variety of Senate official recordkeeping, printed reports, and on-line

retrieval functions. The system was further designed to facilitate the exchange of information in a real-time mode with the House of Representatives, the Library of Congress, and the Government Printing Office. Computer software has been designed and programmed for ease of modification as new procedures are adopted or modified, as new categories of information are added to the system, and as new report and computer terminal retrieval requirements are identified. Software costs have been shared by the Senate, the Library of Congress, and the House of Representatives. Where possible, software developed by one computer center has been transferred and installed in either of the other two computer centers.

#### ENHANCEMENTS TO LEGIS

During the 96th Congress, more summary and status information on bills, resolutions, and amendments were added to all Legis files. This includes statements of purpose for amendments, additional detailed status information for floor, committee, subcommittee, and conference actions, and cross reference information supplied by the Senate Daily Digest Office and the Bill Digest Section in the Congressional Research Service. This data is in addition to the digest, abstract, subject indexing and House of Representatives information already supplied to previous Bill Status and Bill Digest systems.

A number of additional Legis capabilities and related services were completed during 1978. Significant among these are:

—Presidential Messages, Executive Communications, and Petitions and Memorials. Data was supplied to the Legis System by the Executive and Legislative Journal Clerks beginning in January 1979;

—Programming has now been completed for the tracking of all nominations received by the Senate and the Executive Clerk will begin entering this information with the start of the 97th Congress;

—Installation of new Scorpio retrieval system features, including full text search capability in the Senate Legis file and the Libra software for generating batch reports from Scorpio files. These features were made available to all Senate users beginning in early 1979;

—Completion of an on-line programming task which provides the capability for designated Senate staff to add Senate subject terms to legislative and other items in the Legis system; and

—Completion by the Senate User Support Group of user documentation for Legis, the on-line and batch Legis capabilities, and data entry documentation for the Secretary of the Senate.

The Senate Computer Center also programmed reports for purposes of auditing official data bases and for providing editing and verification capabilities to Committee Clerks, the Bill Clerk, the Daily Digest Clerk, and staff in the Senate Library.

Additional Legis and Scorpio display formats were provided for all Senate Legis users. These include forward and reverse chronology for all status actions, the sorting of status by subcommittees within the same committee, "all" and "summary" options for information concerning a respective measure or amendment, and free text information regarding committee memberships, changes in committee

sizes, temporary committees and committee memberships, and relevant legislative and party caucus information regarding committees and committee membership.

Concurrent with the achievement of these goals, a number of Legis printed reports authorized by the Rules Committee were programmed during the 95th and 96th Congresses by staff of the Senate Computer Center. The most important of these were official reports for the Secretary of the Senate, Senate Committees, and each individual Senator. These reports contain comprehensive information of all Senate measures, Senate actions on House measures, and all final actions on measures which cleared both Houses. Important examples of these reports include:

—Official ledgers provided to the Senate Bill Clerk for bills, resolutions, printed amendments, unprinted amendments, and all Congressional status actions for these legislative measures. These reports replace the manual ledgers in the Secretary's Office;

—The Index and History of bills and resolutions which assisted the Senate Journal Clerk, in the preparation of the Senate Journal for 1978;

—Printed reports of bills, resolutions, and amendments for each Senate Committee calendar clerk. These reports contain all official information for measures acted upon by each respective committee;

—Legislative Activity Reports for each Senator. These reports are in six parts, organized by measures sponsored, measures co-sponsored, committee of referral for measures sponsored, committee of referral for measures co-sponsored, with a subject index to each of these legislative items at the back of the report;

—On-line and batch reports providing current information on actions which have occurred in the Senate for the same day, and meetings, hearings, and conferences scheduled that same day; and

—Auto-tracking reporting capability for Senators and Committees; this Legis Service was announced to the Senate in December 1979.

#### CAPABILITIES OF AUTO-TRACKING

The auto-tracking service assists Senators and staff in monitoring legislation of particular interest. Whenever a legislative action occurs, or a co-sponsor added, or an amendment submitted for one of the measures being monitored, the new information about the measure is included in auto-tracking reports for the next day.

With Senate auto-tracking, legislation can be monitored several ways:

1. Senator's sponsored measures and amendments.
2. Senator's co-sponsored measures and amendments.
3. All measures referred to a particular committee or subcommittee (Senate or House).
4. Individual measures by measure number.
5. All measures on a particular subject (using the indexing terms and phrases that are present in the Legis system).

In the daily auto-tracking report, measures are divided into the above five categories. No measure is printed more than once. If, for example, a Senator's sponsored measures and all measures referred to a committee are being monitored, and a co-sponsor is added to one of

the Senator's sponsored measures that was referred to the committee, the information about the new co-sponsor will appear in the "Sponsored Measures" section of the auto-tracking report, and will not appear in the "Committee Referral" section.

The auto-tracking reports are printed on pre-punched three-hole paper. Two options are available as to the form of the reports:

1. Legislative status information: either entire legislative history whenever a legislative action occurs, or only the new actions.

2. The report can be printed in "continuous print" list format, or it can be printed with each measure starting on a new page.

#### ADDITIONS IN 1980

During the Second Session of the 96th Congress, additional information and capabilities were added to Legis. These include:

Co-sponsors added or withdrawn for use in the daily issue of the Congressional Record and the Senate Journal;

Nominations received by the Senate and all confirmation actions taken;

Simplified techniques for using the Senate Scheduling System for all Senate users; and

House floor amendments added to Senate Legis data base.

Work was begun during 1980 on the inclusion in Legis of Senate publications and treaties received for the Senate's advice and consent.

#### COMMITTEE MEETING AND HEARING SCHEDULES

The Senate Committee Scheduling System, mandated for development by the Rules Committee in S. Res. 4, 95th Congress, has been implemented as part of Legis. Information about all Senate committee, subcommittee, and conference meetings, hearings, and mark-ups is presently being entered by the Secretary of the Senate as soon as this information is known. Once entered, daily schedules for all such activities can be viewed on computer terminals located throughout the Senate. In addition, an individual Senator's schedule can be retrieved, as well as those for specific committees and subcommittees. Staff directors can also view all meetings and hearings scheduled for the members of their committees.

New computer displays, which are much easier to use, have been developed for these and other timely Legis reports.

#### DATA BASES AT THE LIBRARY OF CONGRESS AND THE CONGRESSIONAL RESEARCH SERVICE

New Scorpio features, including the capability for retrieving documents and abstracts by searching text words, were applied to several data bases. One of these, the Capitol Information Services' abstract file for the 94th, 95th, and 96th Congress' daily issue of the Congressional Record was found to be much more effective as a research and reference file with the addition of a text retrieval capability.

Data files for three General Accounting Office directories of report abstract and index records were received by the Library's Information Systems Office. Two of these, GAO's directory of information sources and systems and its directory of recurring reports required of federal agencies were brought up as Scorpio data bases for use by all Congressional offices. A third, the GAO directory of federal program evaluations was made available during the first session of the 96th Congress.

In addition, the Library of Congress maintains an automated information system containing several data bases to which the Senate has access through computer terminals. These data bases include the Legislative Information File (beginning with the 93rd Congress), the Bibliographic Citation File, the Major Issues File, the Congressional Record Abstracts File, the National Referral Center Resources File, the Library of Congress Computerized Catalog, and the Machine Readable Catalog (MARC).

#### LEGAL INFORMATION RETRIEVAL AT THE SENATE (JURIS)

Juris, an acronym for Justice Retrieval and Inquiry System, is an information retrieval system containing case law, Modern Federal Practice Digest, Statutory Law, and over 4,000 briefs filed by the litigating divisions of Justice and selected by attorneys' offices. The data base is available on subscription and maintained by the Department of Justice. The Senate Legislative Counsel and the new office of the Senate Legal Counsel are both now using Juris. In addition, the Legislative Counsel is experimenting with the use of the pilot statutory retrieval system developed by House Information Systems as part of their integrated law revision and retrieval system for the House of Representatives Law Revision Counsel. Statutory data for the system is supplied from the publication developed by the Government Printing Office.

## POLICY ANALYSIS SUPPORT SYSTEMS (HICKS)

The objective of the policy analysis support systems is to provide computer data bases with analytical and reporting capabilities which Senators and committees may draw upon in the analysis of policy issues. There are six major components.

### PROGRAM REVIEW SYSTEM

The Program Review System is an on-line computer system operated on the Senate computer using visual display terminals in committee offices. The Program Review System supports Senate committees in the congressional budget process, the authorization process, and the program review and oversight processes. The system was developed initially for the Committee on Labor and Human Resources as a prototype for eventual use by other committees and is now used by six other committees.

Through use of the Program Review System committees can (1) establish and maintain computer data bases of information about the financial and performance aspects of programs within their jurisdiction, (2) perform comparative and statistical analyses of the data in order to discern relationships and to test hypotheses about the effects of alternate program levels, and (3) produce printed reports from the data base using on-line printers in committee offices or the high-speed printers in the central computer room.

The system provides the following capabilities:

1. Loading committees' files from other data sources such as OMB's Budget Preparation System, GAO's Legislative and Program Information System, and CBO's Projections System;
2. Addition, deletion, modification, and display of records using visual display terminals located in committee offices;
3. Printing reports on printers located in committee offices or on the high speed line printer or the Xerox 9700 high speed page printer in the computer center;
4. Specifying, through a record created at the visual display terminal, characteristics of individualized reports such as —
  - a. the records to be included or excluded, based on components of the record identification number, fund type, committee jurisdiction, user codes, and column values. (Records within or outside ranges of values can be selected or excluded.);
  - b. the sort sequence, using key fields of the record identification number, user codes and a column value;
  - c. subtotalling (up to 15 levels) using key fields of the record identification number and user codes;
  - d. selection of up to 40 columns from the 500 column data base;
  - e. page headings;

- f. rounding;
  - g. page number prefixes and beginning numbers;
  - h. printing subtotal and total lines only;
5. Creation of calculated columns based on mathematical operations involving columns or columns and constants. Calculations can be performed on all records in a data base or only on subsets of a data base. Subsets can be defined by components of the record identification number (for example, agency), committee jurisdiction codes, fund type, user codes, and column values. Records can be included in or excluded from the subset using equal, not equal, greater than, or less than conditions, singly or in combination; and
  6. Transfer of data between data bases.

In budget related applications central "read-only" data bases are established containing all budget accounts, and containing approximately 400 amount fields from the OMB tape. Re-estimates are added to the data bases when they are received in April and July. Committees copy the desired columns to their own data bases as needed. This simplifies committees' file management operations and frees up space in their data bases. Committees can also prepare individualized reports from the central data bases.

Work with GAO, committees, and agencies regarding compilation of a program inventory continues. Revisions based on interaction between committees and agencies are expected to continue for some time. The GAO data collection process has stabilized, although some agencies continue to have difficulty meeting the submission dates necessary for program data to reach committees in time for use in consideration of their March 15 reports. Loading program data received on computer tape from GAO to committees' PRS data bases has been routinized.

Future work includes addition of outlays from the Treasury Department; addition of CBO current status information; printing individualized reports at committee's on-line printers; initiation of batch print jobs from the display terminal; graphic output on committees' on-line display terminals and printers; and output of PRS data bases to the Statistical Analysis System (SAS) and the Decision Information Display System (DIDS).

#### BUDGET ANALYSIS SYSTEM

The reports in the Budget Analysis System are produced from the OMB Budget Preparation System tapes upon release of the President's budget recommendations in January, March, and July. Special runs are made as requested.

The purpose of the Budget Analysis System is to extract and resequence information on the Budget Preparation System tapes to display information about the budget recommendations and re-estimates not reflected in published budget documents. The BAS reports have been distributed to committees and legislative staff agencies for the past five years and to Senators' offices requesting them for two years.

Analysis reports can be prepared using such elements as:

1. organizational unit (agency or bureau);
2. object classification (personnel, rent, etc.);
3. function or subfunction;
4. fund type (trust funds, public enterprise funds, etc.);

5. new vs. existing programs;
6. receipt types (general fund, proprietary, etc.);
7. program and financing schedule resource measures;
8. outlays by source of budget authority (obligated balances, unobligated balances, etc);
9. controllable vs. uncontrollable spending; and
10. authorizing and spending committee jurisdiction.

A Directory of BAS Reports is available to requesting offices. The Directory includes a description and a sample page for each report.

The Program Review System is also used to prepare special reports requested by Senators and Committees, such as exploration of the effects of different percentage changes in selected object classes, functions, and accounts.

#### STATISTICAL ANALYSIS

The two principal uses of the statistical analysis capability are: (1) tabulation and analysis of constituent surveys by Senators, either multi-issue surveys or in-depth surveys on a single issue; and (2) analysis of results of surveys conducted by, or of other data acquired by committees. The latter are typically related to a particular commercial, industrial, consumer, or other group associated with a policy issue. Standard business graphs (bar charts, pie charts, scatter diagrams, curves) can be prepared in support of surveys and investigations.

Statistically reliable results are sought through the use of scientifically selected samples and follow-up of non-responses. The Planning and Survey Research Section of the CRS General Government Division, the staff of the Senate Computer Center's Statistical Analysis Section, and the Rules Committee's Technical Services staff work together in assisting committees' and Senators' offices in sample selection, design of survey instruments, and interpretation of results.

Standard procedures have been developed for handling survey questionnaires, follow-up letters, and responses. Copies are available on request.

#### POLICY ANALYSIS DATA BASES

Policy Analysis Data bases are special purpose files maintained and updated by committees. Some include facilities for adding experimental data or formulas in order to observe the probable results of alternate policies. Current policy analysis data bases include:

1. Manpower request analysis. For comparisons and trend analyses of military and civilian strengths submitted by the Department of Defense.
2. Countercycle revenue sharing. For testing the effects of alternate versions of revenue sharing formulas.
3. Corporate ownership and control. For exploring the nature and extent of interlocking directorates among major corporations.
4. Consulting contracts. An information file on contracts approved by the Rules Committee for studies conducted for committees.
5. Document abstracts. Specialized abstract indexing systems developed for committee use on specific projects when large

numbers of documents are under review. The systems provide keyword-in-context (kwic) capabilities, location of records using single or multiple coded or free-text data elements, and on-line entry, edit and report production.

6. Legislative history index. For storage, retrieval, and on-line update of voluminous legislative histories. The first legislative history index prepared using this system was of the Congressional Budget and Impoundment Control Act of 1974, prepared at the request of the Congressional Budget Office. The ten volumes of hearings, reports and other documents comprising the history are available on microfilm.

#### ECONOMETRIC MODELING

Three econometric modeling services are available on subscription to committees of the Senate: Chase Econometric Associates, Data Resources, Inc., and Wharton Econometric Forecasting Associates. These models provide the capability to test forecasts of U.S. economic conditions, elements of consumptive expenditure, investment, foreign trade, employment, and other items of national interest, and to study the possible economic effects of alternate government policies.

The principal users within the Senate are the Committee on the Budget and the Joint Economic Committee.

The Committee on Rules and Administration supports this activity through participation in the negotiation of the master (hill-wide) contracts under which services to Senate committees are provided, authorizing the installation of equipment needed to use the services, approval of sub-contracts for payment of computer expenses incurred with the commercial vendors, and providing technical assistance as needed.

#### GEOGRAPHIC REPORTING SYSTEM

The Geographic Reporting System (GRS) provides Senators and committees, on request, with special analyses of information regarding the distribution of federal funds, received annually from the Community Services Administration (CSA). The GRS reports supplement the books published by CSA with special extracts and calculations, and with different arrangements of the information. For example, through GRS, per capita grant amounts for a state can be compared with per capita grant amounts for another state, a group of selected states, or with the entire nation. Also, the distribution of program amounts among all or selected counties could be produced.

In response to requests from Senators and committees, 25 different reports for the analysis of single-year files, each with 13 variations, have been developed. In addition, multi-year reports at county level can be prepared. Selected demographic data from the Bureau of the Census or other sources can be included in the analysis of federal fund data.

## RELATED ACTIVITIES

Other related activities included:

On-going participation with the Committee on Labor and Human Resources, other committees, and the General Accounting Office in the development of an inventory of federal programs, and the procedures for collection of program level data from agencies.

On-going participation with the Office of Federal Statistical Policy and Standards and other agencies in the development of the Decision Information Display System (DIDS).

On-going participation with the Office of Management and Budget and organizations representing state and local governments in the improvement of information on federal assistance awards in response to P.L. 95-220. Quarterly data tapes from the new Federal Awards Assistance Data System (FAADS) will be supplied to the Senate. Use of this data by Senators and committees is now in the planning stage.

Regular discussions with staff of the Congressional Budget Office, House Information Systems, and the General Accounting Office to share information and capabilities and to coordinate efforts on ongoing and contemplated projects.

Assistance to the Committee on Rules and Administration in the consideration of requests for approval of contracts for commercial time-sharing services and monitoring of such services.

Assistance to the Committee on Rules and Administration in the preparation of reports required by the Congressional Budget and Impoundment Control Act of 1974.

Participation in seminars on budgetary and geographic information systems.

## OFFICE OF THE SERGEANT AT ARMS (SARMAN)

Equipment and services as authorized by the Committee on Rules and Administration are provided through the Office of the Sergeant at Arms. The Office consists of the Service, Parking, and Telecommunications Departments; the Capital Police; and the Computer Center.

### SERVICE DEPARTMENT

This department is responsible for supplying non-computer office equipment such as automatic typewriters and mailroom equipment to the Senate offices. The Computer Center has installed an on-line inventory system to assist the department in controlling the authorized equipment. The department also prepares, addresses, and mails newsletters for Senator's offices using labels produced by the Computer Center and enforces the franking rules as they pertain to newsletters.

### CAPITOL POLICE

The Capitol Police are governed by the three man Capitol Police Board, one of whose members is the Senate Sergeant at Arms. The Rules Committee has authorized the Sergeant at Arms to implement the information system support requirements for time and attendance, inventory control, etc., submitted by the Capitol Police and he has directed the Computer Center to prepare an implementation schedule.

### PARKING DEPARTMENT

This department was established to develop a method for efficient use of the available parking space and to administer the allocation of this space. To this end, the on-line Parking System was developed and is operational in the Computer Center.

### TELECOMMUNICATIONS DEPARTMENT

This department is responsible for the supply and management of telecommunications services to the Senate offices. The Computer Center has developed a system which processes the telephone company billing tapes to assist in auditing these voluminous records.

### SENATE COMPUTER CENTER

The Senate Computer Center (SCC) is located in a building separated from the main Senate office buildings but maintains a facility in the Dirksen Building. The facility was moved from G-116 to B-106 and expanded during the past year to make computer services and distribution of reports more accessible and convenient to Senate offices.

The SCC is equipped with two IBM 370/158-3 computers with associated processors operating under OS/MVS. Online processing support to Senators' Washington and state offices is provided through a

network of private cable, dial-up, and leased carrier facilities connected to either data switching equipment or to the COMTEN 3690 communications processors located at the SCC. The COMTEN units also provide data communications to the Library of Congress and other outside computer services.

All Senators and most committees are furnished computer terminals to access and add to various data bases. All data bases are initiated and maintained by responsible user offices via terminals in those offices. There is no data entry facility in the SCC.

#### PLANNING TASK FORCES

From time to time, joint studies are conducted by staff of the Sergeant at Arms and the Rules Committee to investigate new activities and consider changes to existing applications and equipment.

The Planning Group on Resource Requirements recommended the purchase of two associated processors and the addition of 2 megabytes of core to each computer system. An advertisement of our intention to purchase this equipment was published in the Commerce Business Daily and after evaluating many responses, IBM was selected to supply the equipment.

The Planning Group on Resource Requirements also recommended the purchase of the installed IBM 3350 disk sub systems and the procurement of an additional 5.08 billion bytes of 3350 equivalent disk storage. The Rules Committee approved the purchase of the installed IBM equipment and authorized a competitive procurement of additional disk storage. An advertisement was placed in the Commerce Business Daily soliciting bids for the 3350 equivalent equipment using the IBM equipment as trade-in. All responses were evaluated and the Control Data Corporation was chosen to supply the new equipment.

The Telecommunications Task Force recommended that the Senate exercise an option provided in the contract agreed to under RFP 75-1 to purchase the installed COMTEN 3690's. This was approved by the Rules Committee.

The Telecommunications Task Force developed specifications for replacement ASCII video display and teleprinter terminals. RFP 80-1 was issued on May 1, 1980, and replies were received on June 16, 1980. The CRT portion was subsequently cancelled and the teleprinter award was made to Anderson-Jacobsen, Inc., for their model AJ 833. Installation of these teleprinter terminals began in November and will continue in phased increments over the next year.

Senate RFP 79-6, issued on November 19, 1979, for optical character recognition equipment, was awarded to Scan-Optics, Inc., for their System 540. The equipment has undergone acceptance testing and is in operation. The equipment will be used to read returned newsletters to automatically delete the name and address records from the Newsletter mail files.

#### OFFICE SYSTEMS

Members of the United States Senate must be responsive to inquiries on specific legislative issues and requests for assistance from their constituents. Consequently, Senators must allocate a substantial portion of their staff to drafting and typing letters in response to constituent inquiries, filing correspondence, and in maintaining management control over the entire process. Our objective in this area is to provide

services and equipment to Senators in their Washington and state offices in an orderly, controlled, and cost effective manner to assist them in their legislative and constituent duties.

#### CORRESPONDENCE MANAGEMENT SYSTEM (CMS)

The correspondence management system was a new and innovative method of answering correspondence when first installed five years ago. The system has evolved and improved over these years by incorporating new functions identified and requested by offices. For instance, a correspondence tracking function is now being added. Other functions which have been identified and not incorporated because they could not be melded in the design of the present CMS system are being considered for the next generation of the office system.

Some features being considered for next generation service are:

- (1) giving the office a choice of:
  - local or remote processing
  - local or remote printing
  - local or remote storage
  - any combination of the above,
- (2) communications between state and Washington offices for word processing, facsimile transmission, electronic mail,
- (3) integration of word processing for drafting letters, speeches, reports, and scheduling.

Specifications for this service will be produced in 1981.

#### OFFICE WORK STATION

This project remains in pilot state. The Joint Committee on Printing is now evaluating the economies of the system.

## TEXT PROCESSING AND RECORDS MANAGEMENT SYSTEMS (AMENTA)

Text processing and records management systems provide Senators, committees, and administrative offices of the Senate timely, cost effective control over the growing volume and diversity of congressional documents. Senate offices allocate substantial staff resources to the production, collection, filing, and disposition of a wide variety of publications which they generate and receive. Effective management of these documents is crucial to providing information to Senators and committees for their legislative, investigative, and agency oversight activities.

The objectives for implementing computer assisted records management and text processing systems in the Senate are to reduce the cost of drafting and printing congressional documents, improve the timeliness and quality of legislative documents, and provide rapid and reliable access to office and committee information.

Developments in each of the major application areas are discussed below.

### ELECTRONIC COMPOSITION AND PRINTING

#### CONGRESSIONAL RECORD

The Congressional Record is the largest volume document produced by the Congress. Over 40,000 copies are printed daily and distributed as provided by law (44 U.S.C. 906). At the close of each session of Congress, about 2,500 copies of the daily proceedings are consolidated, indexed, printed, and bound as the official edition of the Record.

In January 1980, the Government Printing Office (GPO) began composing the House and Senate Journals electronically as a pilot test toward automation of the Congressional Record. The Journals were selected as the pilot project because of their similarity in format to the Record, and the fact that the Journal text can be composed and proofread over a period of several days in a production environment. In April, the GPO began electronic composition of the Extension of Remarks portion of the Record. All the required software has been tested and proven for electronic composition of the remaining portions of the Record in January 1981.

In conjunction with the long-range objective of reducing costs, waste, and duplication in the composition, printing, and distribution of congressional documents, the micrographics task force of the Joint Committee on Printing (JCP) surveyed the current uses of the Record with a view towards reducing costs of the Congressional Record program via microform production and distribution. In the coming year the task force will analyze the results of the survey and make recommendations to the JCP.

The objective for automating and standardizing the Congressional Record index is to provide informational content of the Congressional Record easily and rapidly to the Members of Congress as generators and users of the information. In the coming year the task force will continue to work toward automation of Congressional Record indexing procedures.

#### BILL DRAFTING

The computer aided bill preparation system provides a comprehensive capability to the Office of Legislative Counsel for drafting bills, amendments, simple and concurrent resolutions, treaties, and other documents required by the Senate.

In the past year the Legislative Counsel was provided an additional capability to print formatted committee print bills on demand with the Xerox 9700 page printer. Due to a limited number of Xerox fonts available, it was not possible to closely duplicate a GPO typeset bill. The remote site printing is used as a backup to the ATEX line printer and as an alternative to typesetting committee prints at GPO. Software enhancements were made to the bill preparation software to allow the Legislative Counsel to format and print two column tables compatible with composition at the GPO. In December, four additional computer terminals were installed in the Office of the Legislative Counsel for use by the attorneys.

Plans for the coming year include making enhancements to the system for improved productivity.

#### HEARING TRANSCRIPTS

On April 12, 1978, the Rules Committee approved the preparation of hearing transcripts on magnetic tape by commercial reporting firms in a format compatible with electronic composition at the Government Printing Office. Application of computer technology to the preparation of hearing transcripts enable the Senate to reduce the cost of printing hearings by the elimination of duplicative keyboarding, and to increase the timeliness of printed hearings for the Senate. As a result of Rules Committee approval of regulations, nearly 85% of all transcripts of hearings are supplied to Senate committees and subcommittees in this form. With this high degree of committee acceptance of the new technology, the cost of printing committee hearings has been reduced substantially.

In January 1980, the Secretary of the Senate, in cooperation with the Committee on Rules and Administration, began providing a verification of page counts based on computer analysis of the magnetic tape to accompany vouchers for payment.

#### COMMITTEE LEGISLATIVE CALENDARS

Committee staff use the Advanced Text Management System (ATMS) to prepare their Legislative Calendar for electronic composition at GPO, and the Senate Computer Center's generalized programs to extract key data from the calendar data base, and to create indexes of the calendar for publication. Ten committees are currently

using this system to maintain and print their calendar four to six times a year.

All committee calendars have been converted to the uniform typographic standard adopted by the Joint Committee on Printing to reduce the cost and to improve the timeliness of these congressional documents.

#### AUTOMATED RECORDS MANAGEMENT SYSTEMS

##### COMPREHENSIVE RECORDS MANAGEMENT SYSTEM

A Comprehensive Records Management System is being developed to enhance the rapid and reliable retrieval of information from computerized committee data bases and micrographic information storage and retrieval systems for legislative, investigative, and oversight activities.

In February, the Rules Committee approved development of detailed design specifications for a Senate wide records management system. The design effort for the new indexing facility is in progress. The system is expected to provide improved services to the various offices of the Senate by providing on-line records management, indexing, reporting capabilities and retrieval through a modified SCORPIO data base management system. The system will be generalized to support the unique needs of the various offices and the ad hoc needs of the Senate committees by allowing each office to tailor the configuration to its individual needs. Stage one of the project will provide the user with records and report definitions, on-line data entry, term indexing, and on-line batch reporting. The Stage one facilities, once implemented, will be used to gauge user acceptance by selected pilot offices to assist in determining ways of upgrading the system. Stage two will provide additional reporting capabilities and the conversion of existing automated indexing system files and interfaces, such as the Correspondence Management System and the Newsletter Mailing System.

Plans for the coming year include review of the detailed design specifications for consideration, and if approved, initiate implementation of the system.

##### SPECIALIZED SYSTEMS

The Senate has developed several specialized systems for individual offices to create indexes to documents and/or document abstracts, cross-referencing, searches, sorts, and printed reports.

Plans for the coming year include an evaluation of all specialized indexing systems for possible upgrade or replacement and review of a proposed design of an automated records management system for the Senate Printing Clerk.

## EQUIPMENT INVENTORY RECORDS MANAGEMENT SYSTEM

The Equipment Inventory Records Management System provides the Sergeant at Arms with an automated method for maintaining accurate up-to-date status of equipment inventory, and for generating detailed and summary information from the data base in a timely manner.

The Sergeant at Arms submitted a requirements analysis for upgrade of the Equipment Inventory System into a comprehensive Accounting System for the Sergeant at Arms, and a recommendation to proceed with the development of a detailed design of the system. A proposed design has been submitted to the Rules Committee for approval and is now under review.

## COMPUTER OUTPUT MICROFILM (COM)

COM is the process of direct recording of output from a computer onto film in microimage without the intervening medium of paper copy. COM is also the term used to describe the film resulting from the process, in either roll or fiche form. Microfilm provides offices and committees with ready access to office files, reduces storage space occupied by the same records on paper, and eliminates time spent in sorting and filing paper records.

As a result of the pilot test completed in February, the COM equipment will remain on lease to serve the Senate. A variety of capabilities and production improvements will be tested in the coming year.

## APPENDIX

### APPLICATION SERVICES TO SENATORS AND COMMITTEES

The Committee on Rules and Administration and the Sergeant at Arms provide a variety of computerized support services for the cost-effective operation of the Senate. These services are available to Senators and their committees in three general categories. The Senate's Information Retrieval Systems provide Senators and their staffs with responsive access to information that will assist them in their legislative tasks. The Senate's Policy Analysis Support Systems provide the computer capability and technical support needed to effectively assist the Senate in the analysis of policy issues. The Senate's Office Automation Systems respond to Senators needs for orderly, controlled and cost-effective operation of their offices.

These systems are listed in alphabetical order beginning on the next page (p.#21).

### TRAINING AND ASSISTANCE

Training and user assistance is provided by the Sergeant at Arms. The Senate's Educational Services staff will answer general questions relating to terminal use, and provide assistance in accessing the computer. Training courses for Legis, Scorpio, and ATMS include personal instruction, training manuals, and practice in using the systems via terminals (phone 224-1517).

CMS training is provided to offices by the CMS-Senate User Representative staff (phone 224-5912).

Questions concerning policy on computer usage should be directed to the Committee on Rules and Administration (phone 224-9078).

## ADVANCED TEXT MANAGEMENT SYSTEM (ATMS)

ATMS is a generalized text processing system widely used in the Senate for the preparation of committee calendars, committee reports, internal papers, and memoranda via interactive terminals. It provides the ability to edit, revise, rearrange text; and print finished documents on various computer printers and electronic composition devices at GPO. The Senate Computer Center employs a general purpose program to process documents prepared on ATMS by committee staff, and to produce complex indexes to such documents. The program permits committee staff to generate and maintain multiple indexes automatically, such as Committee Legislative Calendar indexes.

## AUTOMATED INDEX

The Automated Index System provides a simple and flexible cross-indexing service for the organization of office documents. Cross-indexing is a useful tool for reliable retrieval of documents stored on microfilm, assembling a Senator's legislative history, cross-indexing relevant printed and internal material, and tracking selected projects.

## BILL DRAFTING

The computer assisted bill drafting system for the Legislative Counsel provides the ability to draft, edit, revise, and type legislative measures rapidly for use by Senators and committees. Legislative measures and committee prints prepared on the ATEX system are created in a format compatible for electronic composition by the Government Printing Office. The system reduces the cost of printing by eliminating duplication in keyboarding introduced measures; enhances the timeliness of legislative drafts and printed documents; provides greater control over the production and quality of legislative drafts; and facilitates the transfer of legislative measures between the Senate, House, and GPO.

## BUDGET ANALYSIS

The budget analysis system prepares special reports from the computer tape provided by the Office of Management and Budget containing the President's budget recommendations. The reports provide users with specific information not contained in any of the published budget documents. Examples of such analyses are accounts requiring additional authorizing legislation and a comparative list of two budget releases or two fiscal years within the same release indicating the amount and percent of change in each account. Over twenty standard reports are available on request. A directory containing a description and sample page of each report is also available.

## CAMPAIGN INDEXING SYSTEM

The Campaign Indexing System was created in 1972 to help the Office of Public Records meet the requirements of the Federal Election Campaign Act of 1971. This system provides for the indexing of

documents submitted by candidates and committees supporting candidates, and the cross-referencing of these documents to provide faster access to specific data on microfilm.

#### COMMITTEE ASSIGNMENT

This system analyzes committee assignments within the Senate's present rules and evaluates the impact of actual or proposed changes on a specific committee's overall structure and on individual Senators.

#### COMPUTER OUTPUT MICROFILM (COM)

COM is the process of direct recording of computer output onto film in microimage without the intervening medium of paper copy. COM is also the term used to describe the film resulting from the process, in either roll or fiche form. CMS indexes can be printed on microfilm via COM to reduce the storage and increase access to these information aids.

#### CORRESPONDENCE MANAGEMENT SYSTEM

The Correspondence Management System, referred to as CMS, aids Senators in answering constituent letters promptly, accurately, and in a personalized manner. CMS is a complete office management system offering a unified approach to constituent support functions. CMS facilitates control over office management (management reports), allows follow-up with constituents interested in specific legislative issues (newsletter address file), and creates an historic record of all office activity for subsequent use by the Senator and his staff (index).

#### ECONOMETRIC MODELING

Three econometric modeling services are available on subscription to committees of the Senate: Chase Econometric Associates, Data Resources, Inc., and Wharton Econometric Forecasting Associates. These models provide the capability to test forecasts of U.S. economic conditions, elements of consumptive expenditure, investment, foreign trade, employment, and other items of national interest.

#### ELECTRONIC PRINTING

Various techniques for electronically composing documents generated by and for committees are available. Committee staff use ATMS to create committee calendars, committee reports, and other documents for electronic composition at GPO. Committees can order hearing transcripts from commercial reporting firms on magnetic tape in a format compatible for electronic composition by the Government Printing Office.

#### EQUIPMENT INVENTORY

Equipment Inventory Records Management System (EIRMS) provides online information to the Sergeant at Arms in support of the Senate's equipment inventory system.

## GEOGRAPHIC REPORTING SYSTEM

The Geographic Reporting System (GRS) processes the Geographic Distribution of Federal Funds data received from the Community Services Administration (CSA). The CSA file contains data on expenditures for each Federal program within counties and cities over 25,000. Through GRS, reports are prepared which supplement the material published by CSA. For example, the distribution by county of funds for a specific program can be produced; to extract such information from published sources would require looking up the program under each county in each state book. A directory of GRS reports is available on request.

## GRAPHICS

Standard business graphs (bar charts, pie charts, scatter diagrams, curves, etc.) can be prepared in support of member and committee surveys, issue analyses, and investigations.

## JURIS

Juris is an acronym for Justice Retrieval and Inquiry System. Juris is an information retrieval system containing case law, Modern Federal Practice Digest, Statutory Law, and over 4,000 briefs filed by the litigating divisions of Justice and selected by attorneys' offices. The data base is maintained by the Department of Justice and is available on subscription.

## LEGAL COUNSEL INDEXING SYSTEM

The Senate Legal Counsel Indexing System provides entry, storage, cross-referencing, and retrieval of document abstracts relating to litigation files under the jurisdiction of the Senate Legal Counsel. In addition to creation and access of indexes to their files via interactive terminals, the system supports edits upon entry, updating capabilities, comparative and relational searches, and selective sorts. Limited output can be displayed online or extensive output can be displayed via batch processing.

## LEGISLATIVE INFORMATION SYSTEM (LEGIS)

The Legis system is an automated legislative information service which provides a current digest of the contents and status of legislation in both Houses of Congress. This information is especially useful for finding legislative histories of bills and resolutions beginning with the 93rd Congress, lists of bills on a given subject, bills sponsored by a particular Senator or Representative, and statistical data on the quantity of legislation in various categories.

Under the direction of the Secretary of the Senate, the Senate Library provides information retrieval services for offices that do not have direct access to Legis. Requests for information may be made in person or by phone (224-2971).

## LIBRARY OF CONGRESS DATA BASES

The Library of Congress maintains an automated information system containing several data bases to which Senators may have access through a computer terminal. These data bases include the Legislative Information File (beginning with the 93rd Congress), the Bibliographic Citation File, the Major Issues File, the Congressional Record Abstracts File, and National Referral Center Resources File, the Library of Congress Computerized Catalog, and the Machine Readable Catalog (MARC). All of these files are accessed using the retrieval language (Scorpio) developed by the staff of the Library's Information Systems Office.

The Senate Library provides information retrieval services for offices that do not have direct access to Library of Congress data base information. Requests may be made in person or by phone (224-7106).

## MICROFILMING

Microfilming office records provides a storage and retrieval system for the management office files. Microfilm reduces the storage space occupied by the same records on paper, eliminates valuable man-hours spent in sorting and filing paper records, and prevents misfiling, alteration, and loss.

## MICROGRAPHICS PUBLICATIONS

The Senate Library has an extensive collection of congressional publications, executive agency documents, newspapers, magazines, and other materials on microfiche and microfilm. Users of the microfilm collection may either read the materials on a reader in the Library's Micrographics Center or borrow a portable reader from the Library to use in his/her office. The microfilm materials can be reproduced on reader/printers located in the Senate Library. The Library uses automated reference services, such as the New York Times Information Bank and Nexis, to locate specific information for Senators and their staffs. Requests for information may be made in person or by phone (224-7106).

## NEWSLETTER ADDRESS FILE

The Newsletter Address File permits Senators to store and update constituent names and addresses. Upon request, selected names and addresses are printed on mailing labels to be attached to newsletters.

## POLICE SYSTEMS/PARKING PERMIT

This system provides the Senate Parking Office with an online query capability for parking information and a variety of monitoring and statistical reports.

## POLICY ANALYSIS DATA BASES

Several specialized data bases have been established for committees, such as a manpower request analysis file, a countercyclical revenue sharing file, an investigative document indexing system, a legislative history indexing system, and a file of interlocking directorates among major United States Corporations.

## POLICY COMMITTEE INFORMATION SYSTEM

An automated system provides statistical analyses of attendance, vote times, and voting patterns on a recurring basis.

## PROGRAM REVIEW

The Senate Program Review System is an interactive system for the preparation and revision of data in tabular form to support such aspects of Congressional decision making as the authorization, oversight and the budget resolution processes. The rows of the tables present the various programs and activities under consideration, and the columns present historical funding information, various current funding requests and decisions, and the committee alternatives. Comparison columns allow the effects of alternative recommendations to be seen readily.

## PROJECT MANAGEMENT SYSTEM

The Sergeant at Arms uses an automated project management system to monitor all work performed by the Senate Computer Center.

## QUESTIONNAIRE TABULATION

Computer programs are available that provide simple tabulations, cross tabulations, and frequency distributions of survey data.

## STATISTICAL ANALYSIS

Statistical analysis services provide frequency distribution, correlation, and regression analyses and other statistical tests of tendency and relationships within sets of data compiled by users in the investigation of matters under their jurisdiction. The Statistical Package for the Social Sciences (SPSS) and the Statistical Analysis System (SAS) are the primary systems and are supplemented by special programs written by the Computer Center staff.

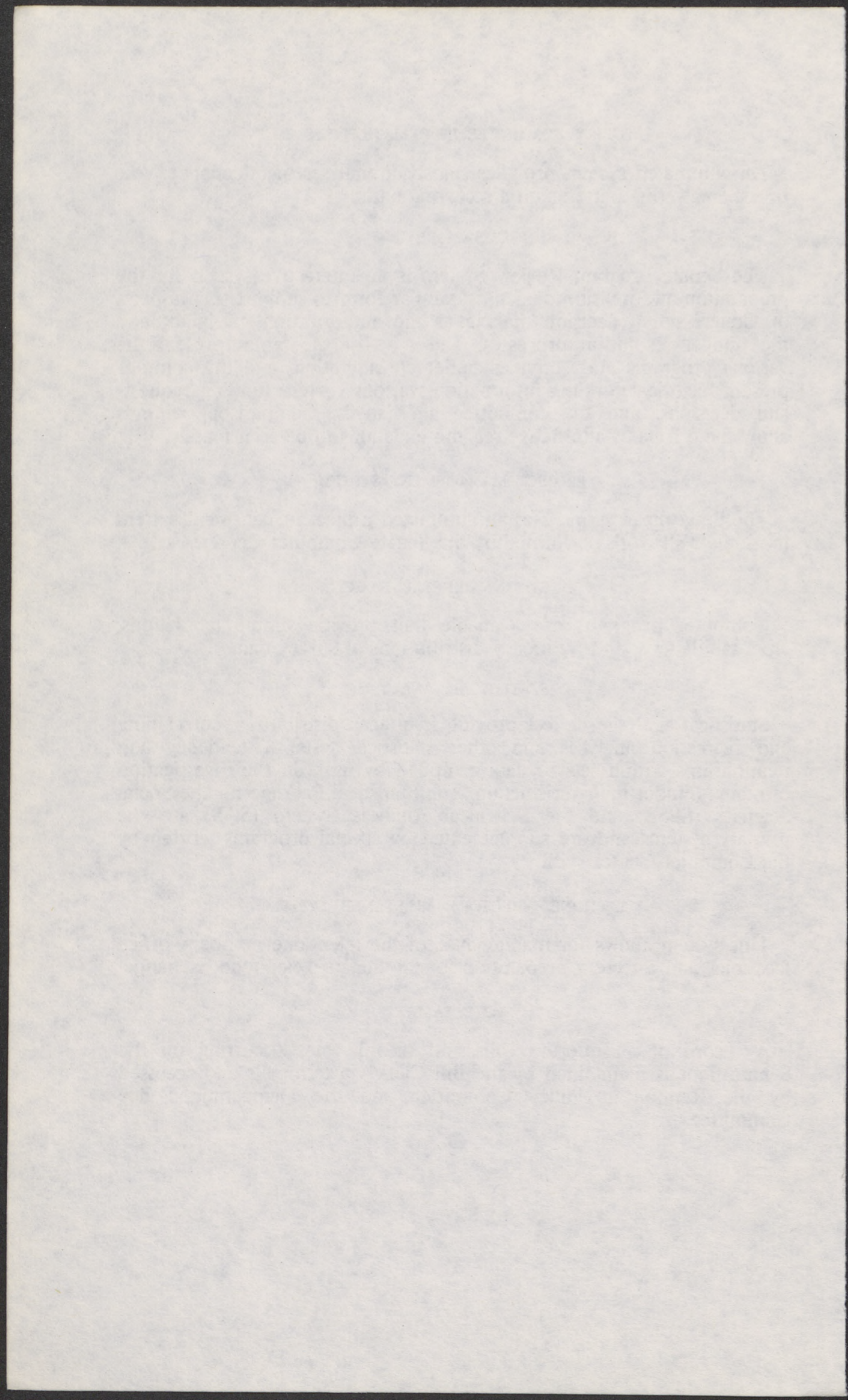
## TELEPHONE DIRECTORY ASSISTANCE SYSTEM

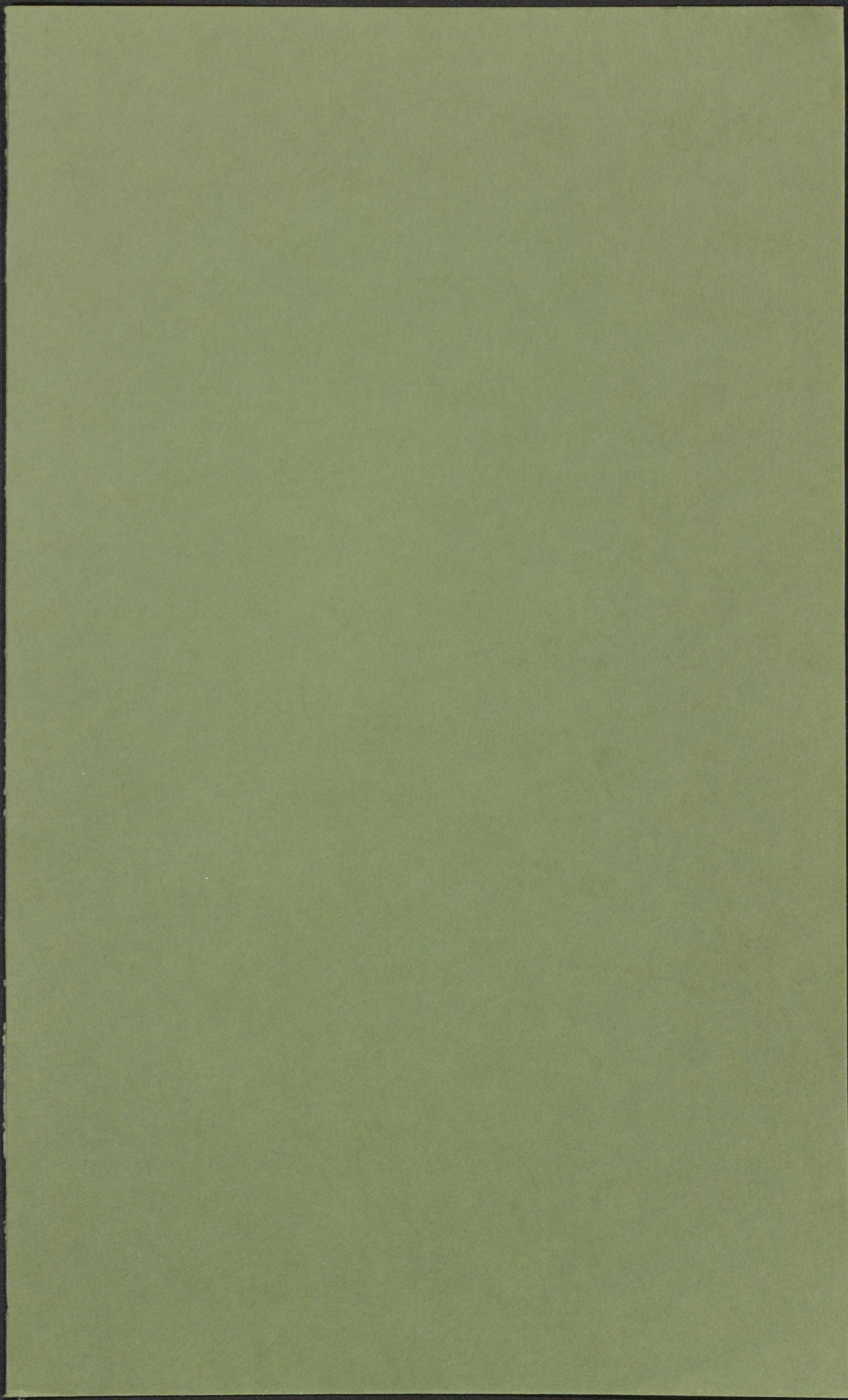
This system allows for maintenance of the telephone numbers, office locations, and directory preparation for the Senate Telephone Exchange.

## VOTE TALLY

A record of all quorum calls and record votes occurring on the Senate floor is maintained by the Bill Clerk via terminals and accessed by the Republican Policy Committee and the Democratic Policy Committee.









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