91ST CONGRESS } HOUSE OF REPRESENTATIVES { REPORT
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USE OF COMPUTERS IN THE LEGISLATIVE PROCESS

MAY 20, 1969.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. DAWSON, from the Committee on Government Operations, submitted the following

REPORT

together with

SUPPLEMENTAL VIEWS

[To accompany H.R. 10791]

The Committee on Government Operations, to whom was referred the bill (H.R. 10791) to amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems, and for other purposes, having considered the same, report favorably thereon without amendment and recommend that the bill do pass. This proposal provides:

That section 312 of the Budget and Accounting Act, 1921 (31 U.S.C. 53), be amended by adding at the end thereof the following new subsection:

"(f) The Comptroller General shall—

"(1) cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system (including uniform classifications of programs, activities, receipts, costs, and expenditures, as well as other necessary standards) for budgetary and fiscal data for use of the Federal Government;

"(2) coordinate the development, establishment, maintenance, and operation of data processing systems necessary for the effective and efficient fulfillment of the substantive responsibilities of the Congress. Other units of the Congress utilizing data processing techniques to carry out the responsibilities Congress has delegated to them shall adhere to the guidelines the Comptroller General may establish to assure optimum effectiveness and efficiency in the overall acquisition and use of computers by the Congress;

"(3) enter into contracts with organizations or individuals, or employ individual experts and consultants, to assist in the development and establishment of such systems, at rates not in excess of those prevailing at the time for comparable services in private industry, but otherwise in conformity with section 3109 of title 5 of the United States Code, and acquire data processing capacity to carry out the responsibilities delegated him under this part; and

"(4) submit recommendations at such times as he deems appropriate to the Congress as to the most effective and efficient manner by which the data processing and systems design requirements of the Congress can be fulfilled."

HEARINGS

On April 23, 1969, the committee, through its Government Activities Subcommittee, held a hearing on H.R. 404, introduced by Congressman Jack Brooks, and H.R. 5522, introduced by Congressman Dante B. Fascell. Following subcommittee consideration of these proposals, H.R. 10791 was introduced reflecting the amendments agreed upon by the subcommittee.

PURPOSE OF THE BILL

The purpose of H.R. 10791 is to provide for the efficient and effective utilization of modern data processing techniques to give committees and individual Members of Congress better information for decision-making.

This proposal does not alter the jurisdiction or authority of any committee. Nor is the authority or jurisdiction of any of the subordinate units of either the House or the Senate, or the Congress as a whole, affected to any significant extent.

The bill delegates authority to the Comptroller General of the United States to provide for and coordinate electronic data processing usage in the Congress. Three closely related, but distinct, responsibilities are delegated to him:

First is the responsibility to cooperate with the Director of the Bureau of the Budget in the development of a compatible data system to support the budget and appropriations cycle. Under this authority, the Comptroller General would see that the system and the data base under development in the executive branch of the Government have those inherent characteristics necessary to meet the needs of the Congress.

Second, the Comptroller General is delegated the coordinating authority necessary to extend these basic concepts of compatibility to all other data processing systems to be developed in the Congress to process substantive data pertinent to the legislative process.

Third, the Comptroller General is given responsibility to coordinate the general management of computers in the legislative branch, irrespective of their application or use, to assure effective and efficient exploitation of these techniques in the Congress.

Under this approach, Congress can work toward the development of an optimum level of computer capability without unnecessary duplication in computer capacity.

DISCUSSION

There is a growing need for the use of computer techniques in the Congress

This legislation reflects the awareness and concern Members have over the increasingly difficult information problem that confronts Congress in carrying out the legislative process. Committees and individual Members need better, more up-to-date information on which to consider and decide the issues coming before the Congress.

The United States is now a nation of more than 200 million people with increasingly complex commitments at home and throughout

the world. As the Nation has developed, the workload of the Congress has increased. Our first House of Representatives was composed of 65 Members with an average constituency of less than 50,000 persons. In contrast, each of the present 435 Members of the House represents an average of some 450,000 constituents. Most Senators have constituencies mounting into the millions.

Each session, literally thousands of individual proposals and many complex problems are given active consideration by the Congress. In contrast with the First Congress which enacted in its entirety some 100 public and private bills, more than 25,000 individual measures were introduced in the House of Representatives during the 2-year span of a recent Congress. Of these, 1,284 were enacted into law. The First Congress in the years from 1789 to 1791 appropriated or otherwise expended approximately $4.269 million. For fiscal year 1968, Congress approved expenditures of $190 billion.

The proper evaluation of the Federal budget, the consideration of the vast array of bills that are introduced, and, in the most fundamental terms, the enactment of the laws necessary to the defense and welfare of the Nation, require a broad flow of pertinent, authoritative, reliable, up-to-date information into the legislative process. Under present methods, utilizing primarily the traditional approaches in the acquisition and processing of data, the flow of information is fast becoming inadquate to meet the growing needs of the Congress.

Of critical importance to the Congress is fiscal data relating to the budget and appropriation process. At present, Congress must rely principally upon the budget and budget appendix documents. This data source, or, more precisely, this means of communicating budget information to the Congress, has become increasingly unresponsive and unwieldly. The source of this information is entirely controlled by the executive branch through the Bureau of the Budget. Because of rapidly changing conditions, the information in these documents often becomes outdated and unreliable soon after submission to the Congress early each spring. Crucial elements in the budget of particular interest to committees and individual Members are often buried in a multitude of other data and are extremely difficult to extract on any authoritative basis within reasonable periods of time.

The support data that accompanies the actual budget figures is limited in amount, difficult to identify, almost impossible to assess, and is not conducive to any broad spectrum of evaluation based upon the differing criteria reflecting the varying interests of the committees and individual Members of the Congress.

In areas of substantive legislation—in carrying out "oversight" or audit responsibilities—in the framing and evaluation of revenue bills—the squeeze for a better flow of information is equally pronounced. Throughout all aspects of the substantive legislative process, the traditional methods of handling data and the means of communicating this data so as to provide pertinent, material, reliable, and up-to-date information to support the legislative process, are fast becoming outdated and ineffective.

As the testimony on this proposal suggests, the time is already here when the Bureau of the Budget could not prepare the budget without the use of the computer. The problems inherent in legislative analysis of the budget, at the very least, are equal in magnitude to the problems of budget preparation. In the absence of prompt and effective

action to provide the Congress with computer capacity, the problem will not simply be the maintenance of effectiveness and efficiency in the legislative operation, but whether Congress will be able to perform its responsibilities in any meaningful sense.

Modern systems design and data processing techniques have broad potential use in Congress

The state of the art in data processing and information handling has reached the point of development that these techniques can be of material assistance to the Congress in coping with the constantly increasing complexity and volume of data inherent in the legislative process.

The time has come to make full use of these capabilities. In many of the departments and agencies in the executive branch, data processing systems are either in use or under development at Government expense to meet priority needs lower than those of the Congress. In the departments and agencies of Government, there are approximately 4,300 data processing systems now in use with applications running from the routine administrative tasks, such as reconciling the Federal Government's checkbook, to control of space capsules in orbit around the earth and the moon.

In the Defense Department, "command and control" systems are under development at considerable expense to process data of military significance. These systems are designed to cope with the vast flow of data inherent in tactical and strategic planning allowing our military leaders to make quicker and more responsive military decisions.

In business and industry, there is no large corporation in America (and probably very few medium or even small ones) that can survive in the competitive world of today without extensive data processing capacity to provide information needed in making management decisions.

Much of the information requirement essential to the legislative process could be effectively and efficiently obtained through data processing, offering Congress a significant advantage over present information handling techniques.

Requirements involving recurring data that can be described in general terms in advance, such as the items in an appropriations bill where the actual dollar amounts change but nevertheless the item recurs under stated categories in programs year after year—data of this type is particularly susceptible to storage, processing, and evaluation through electronic data processing techniques.

Other datum, such as is found in the average reference book in a library, that is nonrecurring in nature, that expresses judgments, opinions, and precedents, can be made more readily available through computerized index systems of various kinds. Although applications of this type are not as advanced as in the case of recurring data, computer retrieval systems are slowly becoming more adaptable to user needs. With broader capability, they allow the user to select on a more random basis the particular data he requires for some specific purpose.

In the area where application of data processing is most effectively applied, the Bureau of the Budget is developing a system that will give officials in the executive branch of Government the data needed

in the preparation and evaluation of the budget.[1] In very general terms, this effort centers on improving the identification of the basic "building blocks" of budget requests as they relate and can be identified under varying formats and classifications needed for different purposes and for various evaluation techniques. The system then extends to structuring the capability to handle support data pertinent to the basic budget elements, the development of the data bases within the departments and agencies to serve as a source of the data flow for use in these systems, and, lastly, improvement of the overall budget evaluation capability.

Inherent in these developments is the effort to ultimately attain the capacity to make comprehensive correlations between input and output—between Federal expenditures and the nature and extent of the benefits these expenditures produce. The ability to make broad comparisons of the purposes or objectives of programs and their costs would make it possible for Congress to devise better programs to meet the Nation's needs. In addition, it is of vital importance that both the executive and legislative branches of the Government have the ability to alter the budget within short periods of time without resort to arbitrary "across the board" cuts affecting many Federal operations irrespective of need or priority.

Through data processing, highly selective alterations could be made in the Budget almost overnight, reflecting changes in revenues, unexpected changes in the Nation's economy, or for whatever reason the President and the Congress may deem advisable. Such changes, based upon predetermined priorities, would, in the most practical sense, give the President and the Congress more effective control over Federal expenditures throughout the Budget process.

Through a countless variety of special applications, Federal expenditures could also be more closely monitored in a manner and to an extent hopelessly beyond present capabilities. It would be well within computer capability, for example, to monitor contract price overruns and provide data on them at least as soon as they were reflected in the obligations or expenditures of the various Federal departments and agencies. By this means, both the executive and legislative branches of Government would be able to anticipate problems of this kind in the procurement area rather than react to them. Decisions could be made on costly defense systems when they began to exceed original cost estimates rather than after additional millions, or even billions, in tax funds were obligated.

The work in the Bureau of the Budget can lead to an ever-increasing capacity to evaluate and improve the budget and to make Government more effective, efficient, and responsive to the needs of the public. These improvements offer the opportunity to save countless billions in public funds. Even an improvement of only a minor percentage in the efficiency of the budget and appropriations cycle could mean savings mounting into the billions annually.

Congress must keep pace with this work in the executive branch and, in addition, supplement this capacity with systems geared to make whatever additional studies, comparisons, or evaluations that

[1] The testimony of the Deputy Director of the Bureau of the Budget, together with an outline of a preliminary report submitted to the Bureau of the Budget of a consulting firm working on improvements in the overall budget process, are included in the Appendix for the convenience of those desiring a more detailed explanation of the work now under way in the Bureau of the Budget.

might be of unique assistance to Members and committees in making the most informed decisions.

Futhermore, the compatible computer capability that Congress obtains through the computerization of the budget and appropriations cycle must be extended into all other aspects of the legislative process. Computers must be applied to the extent practical and feasible to the work of the Legislative Reference Service and the other support units of the Congress. The vast store of historical data housed in the Library of Congress—and particularly those areas of specific interest and value to the Congress in the decisionmaking process—must be made the subject of more effective retrieval.

Data processing development and use in the Congress must be coordinated

Any effort to apply data processing techniques to the legislative branch is immediately confronted by two considerations: First, the need for a unified and compatible approach to system development and, second, the need to avoid any unnecessary duplications in computer system capability. If systems are developed that are incompatible with those of the Bureau of the Budget or other units in the Congress, then the usefulness of all of the systems will be compromised. If systems are developed independently, there will be voids or duplications which will also limit system effectiveness and waste public funds.

Yet, obviously, the Bureau of the Budget, the House and Senate, as well as the various support units in the legislative branch, do not operate under any single authority despite a broad commonality in the need for information. Nor at the present time is there any one office or official that has the responsibility to coordinate computer design and management functions for the Congress as a whole.

The development of a compatible system to support the legislative branch without duplications or voids in system capacity, therefore, requires coordination among those units having common information needs. On closer examination, there are three levels or degrees of coordination that must be established and maintained.

First, there is the coordination between the Congress and the executive branch. Congress must rely upon the executive for the actual budget and budget support data. In addition, Congress would be benefited by the use of the executive branch's budget evaluation capability. To acquire this computer capability requires coordination with the Bureau of the Budget and, in addition, development in the legislative branch of a supplemental computer system that is compatible with that in the Bureau of the Budget. Only by this means can we preclude the very real possibility of the development of duplicative requirements of computer capacity that are costly, delay accomplishment, and introduce crippling confusion through overlapping and inconsistent terms, definitions, and system standards.

The achievement of this compatibility requires that coordinative authority be delegated to some specific office in the legislative to interact with the executive branch. This authority would be used to assure recognition of the needs of Congress in the development of the basic system in the Bureau of the Budget and in the formulation of the data that will flow through this system. It would then be possible to develop a supplemental system in the Congress needed to evaluate this data in the legislative process.

Second, there is the need for coordination between the House and Senate and the support units in the legislative branch regarding those

computer systems processing data pertinent to the substantive legislative process, or, in other words, data that is needed by Members and committees to reach decisions concerning revenues, appropriations, legislation, and legislative oversight. To achieve a uniform compatible system within the confines of the legislative branch means that the Senate and the House and the support units of the Congress must act in unison to develop and maintain informational systems. This requires delegation of coordinating authority to some one office or official in the legislative branch to extend the concept of compatibility that has been established in concert with the Bureau of the Budget to all systems that support the legislative process in substantive terms.

Third, a lesser degree of coordinating authority to cover the management aspects of all computers in the Congress must be established.

There are a number of units or offices in the Congress requiring data processing capacity which has no substantive link and is not pertinent to the legislative process. Many of the "housekeeping" functions of the House and Senate, the internal management requirements of various offices and units in the Congress, the external operations of the Library of Congress—activities such as these may not directly interface with the legislative process. Therefore, there is no affirmative and demanding requirement of system compatibility in these areas.

However, to the extent that any unit of the legislative branch utilizes data processing capacity for any purpose, sound, business-like management requires that the acquisition and use of this capacity be coordinated on an organizational basis, or, in other words, in concert with the overall computer requirements of the Congress. Extensive investigations of this committee over many years into the management and use of computers in the executive branch of government demonstrate that a coordinated approach to computer management—coordinating those aspects of management which must be coordinated on an organizationwide basis—is essential to efficiency and economy.

There is no basis for Congress being an exception to this well-established policy. Accordingly, the office or official in the legislative branch having coordinating authority over other aspects of computer development should also coordinate in general terms the procurement and use of computer capacity for Congress as a whole.

The Comptroller General should be delegated basic responsibilities to coordinate the various levels of computer usage in the Congress

The selection of the Comptroller General as the official to coordinate computer usage in the Congress meets with no meaningful or obvious alternatives once the various factors controlling the selection are considered.

The data classifications and the systems standards that become a part of the budget and appropriation system under development in the Bureau of the Budget must extend to all systems in the Congress that relate to the substantive legislative process. Otherwise incompatibility and unnecessary voids and duplications will result. Although the system under development in the Bureau will process a broad spectrum of data, in the most fundamental sense all the data in the system will be oriented to meet the fiscal requirements of the Government.

The Comptroller General's primary responsibilities lie in the fiscal area. And, even were the additional responsibilities outlined in this bill not delegated to him, the General Accounting Office would have to develop to a considerable extent the computer capability to analyze budget and appropriation data to carry out the responsibilities that are inherent in the office of Comptroller General. We cannot separate the General Accounting Office from computer capability that must become an inherent part of its operations. Nor can we permit a costly and unnecessary duplication of this computer capability through assignment of these coordinating and systems development responsibilities to some other unit in the Congress.

The Comptroller General, therefore, is the logical choice for delegation of the responsibility to cooperate with the Bureau of the Budget in the development of a standard fiscal system, to extend these basic concepts of compatibility to all other data systems Congress may need to support the substantive legislative process, and to provide that lower level of management coordination necessary to assure efficient and effective use of computers in the Congress.

There are other considerations supporting this selection. The General Accounting Office, under the Comptroller General, is constantly delving into the operations of the executive branch of the Government identifying problem areas and seeking to determine more efficient and effective means to perform the Government's business. The optimum exploitation of the General Accounting Office's activities requires a broad flow of budgetary and fiscal data concerning government operations at the very earliest point in time when such data can be made available. The General Accounting Office, with an annual appropriation of $60 million and more than 4,000 auditors, investigators, and other employees, is considered the "watchdog" of the Congress. Extension of these overall coordinating responsibilities to the Comptroller General, particularly as they relate to systems design and development in the Bureau of the Budget, will increase the effectiveness of the GAO audit staff—a matter of vital importance to efficient and effective government.

A further consideration is that day-to-day contact with all the departments and agencies of the executive affords the General Accounting Office the opportunity to verify data base. Simply because data flows through a computer does not make the data accurate and reliable. The General Accounting Office, on a routine basis, audits the activities of the Federal departments and agencies. The General Accounting Office also establishes the accounting principles that Congress has determined executive agencies should follow in maintaining control over appropriated funds. At such time as the executive branch ever develops an effective computerized data base to support the budget and appropriation cycle it will be of vital importance that Congress verify the data obtained from the executive branch and used in legislative deliberations. In future years, the ability to check the reliability of such data may well become one of the most important facets of the legislative computer operation.

The Comptroller General would consult with the committees of Congress and the appropriate offices and officials in the legislative branch

This legislation is drawn in very general terms. Essentially, this proposal is in the nature of a directive to agents of the Congress. The interests of third parties are not involved. Accordingly, it is appropriate that the responsibilities and the authority be clearly set forth as well as the overall objective. However, it is also appropriate that broad latitude be left to the Comptroller General as to how he reaches those objectives. Only by this means can the Comptroller General and the other offices and officials in the legislative branch develop and maintain a plan of operation conducive to the highest level of efficiency and economy.

Generally, however, the approach this committee anticipates would be for the Comptroller General to consult with the various committees of the House and Senate to determine their data requirements. In turn, he would advise them of the nature and extent the data which he believes would be of value to them can be acquired through data processing capability.

Through consultations of this type, the Comptroller General can determine the net requirements of the Congress and in cooperation with the Bureau of the Budget structure to the extent that it is technically feasible to do so the computer capability to provide data coming within the categories the committees require.

Meanwhile, through consultations with the Legislative Reference Service in the Library of Congress, as well as the other support units in the legislative branch, the requirements coming within the substantive jurisdiction of other support units can be ascertained to some reasonable degree, broad outlines as to standards and other compatibility criteria can be agreed upon, and various options relative to the size and scope of computer systems to serve various functions can be determined.

CONCLUSION

It will not be possible to develop immediately a comprehensive overall system to meet all legislative needs. Rapid advancements in the state of the art and continuing changes in requirements generally rule out the "grandiose" approach to computer design in a single development cycle. However, as the computer requirements of Congress are identified, it is essential that all options be exploited at the earliest reasonable date that are either essential or desirable to the ultimate development of the most useful computer capability for Congress that the state of the art allows.

The development of these systems will be a difficult and time-consuming task, and will involve significant expenditures in public funds. But, if these systems are properly designed and oriented effectively to meet the legislative needs, for every dollar of investment in computers and systems design, literally thousands of dollars can be saved.

This legislation offers Congress an effective means to begin the exploitation of computer techniques so as to give individual Members and committees better, more up-to-date information on which to make the crucial decisions coming within their responsibilities. The approach is a cautious one. This caution comes from years of investigating horror stories of computer misapplication in the executive branch of the Government and knowledge of similar instances in business and industry. The misapplication of computer techniques, the misapprehension that the computer can replace the decisionmaker, the extension of these techniques to applications that can best be maintained through traditional data processing procedures, the lack of effective planning, in-

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adequate organizational coordination to assure compatibility—these and other deficiencies in the use of computers can lead to more problems than a computer can solve.

By the nature of the authority delegated to the Comptroller General under this proposal, this committee believes that Congress can obtain optimum use of computers, yet avoid many of these problems. And, it is for this reason that the committee urges prompt approval of this proposal.

SECTION-BY-SECTION ANALYSIS

Subsection (f)(1)

The primary delegation in this bill is to the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development of a compatible data system to support the budget and appropriation cycle. The cycle begins in the executive branch some 9 or 10 months before the budget is ultimately submitted to Congress soon after the beginning of each annual session. The Bureau at this time is developing a comprehensive system to make the necessary evaluations and to otherwise support the preparation of the budget. Long-range studies are underway aimed at constantly improving the budget process, particularly as it relates to data processing capability.

The Budget Bureau has "captured" the hard core budget data as well as select support data in a data system operational at this time. However, this system is inadequate compared to the need, as well as in comparison to the potential offered by data processing techniques. Computers cannot only be used more extensively in the improvement of routine aspects of budget preparation, but to assist in determining priorities, making input versus output comparisons relating to various Federal programs, and, in the ultimate sense, the many evaluations of a budgetary and economic sense that are inherent in budget formulation.

Under this section, the Bureau would retain full responsibility for continuing the development of this modern comprehensive system for the preparation and evaluation of the budget. As indicated in the testimony of the Deputy Director of the Bureau, legislation is not necessary for continuation of this work purely within the executive branch of the Government. At this time, this may well be true. However, this subsection deals primarily with the "other side of the coin." This section would authorize and direct the Comptroller General, as the representative of the legislative branch in its entirety, to "cooperate" or otherwise coordinate, oversee, or monitor the systems development work in the Bureau to assure the inclusion in this system of those design characteristics and capability necessary to meet, or be a suitable interface for the development of, the unique and additional requirements Congress will have.

The data processing and information system the Comptroller General develops under the authority of this subsection would not duplicate system capability presently being developed within the Bureau of the Budget. The objective would be to develop a supplementary system to serve the particular needs of the Congress, yet compatible with the system of the Bureau so as to allow full interchange of data and evaluating capabilities.

Subsection (f)(2)

Authority extended the Comptroller General to coordinate the development, establishment, maintenance, and operation of data systems necessary for the effective and efficient fulfillment of the substantive responsibilities of Congress does not disturb the substantive responsibilities of the Legislative Reference Service, the Government Printing Office, or any other units in the legislative branch, except to the extent that these and any other support units of the Congress must coordinate systems development and operation under the overall authority of the Comptroller General.

Under subsection (f)(2), the Comptroller General would see that the concept of compatibility initiated as a result of his coordination with the Director of the Bureau of the Budget relating to the budget and appropriation cycle extends to data processing systems of all units of the Congress that would contain substantive data pertinent to the legislative process.

The purpose of this coordination would be to avoid duplications, incompatibilities, inconsistencies, and voids in systems development and use of computers to support the legislative process. In the exercise of this coordinating authority, the Comptroller General would maintain a close liaison with the heads of all support units in the legislative branch regarding systems development plans and problems coming within this general category. It would be expected that broad consultations would take place concerning any criteria that the Comptroller General was considering, and it is expected that all officials in the legislative branch would work in unison, without regard to the jurisdictional limitations of their particular office, to see that the most effective computer system could be developed for congressional use.

The third responsibility, to provide guidelines for the efficient and effective acquisition and use of computers in the Congress, as expressed in the second sentence of subsection (f)(2), is the most general in scope and at the same time the most limited in nature of these delegations of authority. The purpose of this responsibility is to assure a modern businesslike approach to computer usage in the legislative branch. The Comptroller General would coordinate, through the issuance of guidelines and other appropriate actions, those aspects of data processing acquisition and use which must be coordinated on an organizational basis to achieve optimum efficiency and use of computer techniques. Under this authority, all computers used in the legislative branch would be subject to the GAO's general management guidelines. But, this overall management responsibility would not routinely extend to systems design, the selection, or the use of any system that some other unit of Congress may require.

Under this provision, the Comptroller General would be concerned with the issuance of the same type of general criteria and policy directives as flow from the Bureau of the Budget and the General Services Administration under authority of Public Law 89–306. Under this authority, it would be appropriate for the Comptroller General to require, as examples, the development of effective feasibility studies, the pros and cons of lease versus purchase, the need for new capacity, as well as such matters as the possibility of joint use or sharing of computer capacity with other organizations in the Congress or the executive.

The Comptroller General would tie in congressional computer acquisition with the management system established in the executive branch under Public Law 89–306 to assure the best possible terms of purchase or lease, as well as the other advantages the management system in the executive branch may offer, and use such system to the extent he considered it advantageous to do so.

Subsection (f)(3)

Under authority of this subsection, the Comptroller General can employ experts and consultants to assist him in carrying out the responsibilities delegated to him under this proposal, at rates not in excess of those prevailing at the time for comparable services in private industry. This unique authority is extended him in recognition of the extremely difficult and complex problems that must be resolved if Congress is to have data processing systems of optimum capability and the most efficient design.

Subsection (f)(4)

Incident to the operations outlined in this measure, it will be appropriate for the Comptroller General to submit reports from time to time outlining his plans and recommendations for the implementation of computer usage in the Congress. By this means, Congress will be kept advised of the prospective plans for data processing and systems design under the authority of this legislation and thereby have the opportunity to revise these plans on a comprehensive basis in advance to the extent Congress may consider modifications necessary.

REPORTS OF AGENCIES

Reports on H.R. 404 and H.R. 5522 have been received from the General Accounting Office, the Bureau of the Budget, and the General Services Administration. These agency reports are set forth as follows:

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington D.C., February 20, 1969.

B–165958.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives.

DEAR MR. CHAIRMAN: Reference is made to your letter of January 14, 1969, requesting our comments on H.R. 404, entitled "A bill to amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems, and for other purposes."

In introducing H.R. 404 on January 3, 1969, Congressman Brooks said that in substance the provisions of the bill correspond to title II, entitled "Fiscal Controls" of the proposed Legislative Reorganization Act of 1968, with two exceptions. First, rather than set forth explicit descriptions of the data to be submitted to the Congress as provided in that proposed reorganization bill, this had been made a matter within the discretion of the President pro tempore of the Senate and the Speaker of the House. Second, certain provisions are not included which relate principally to committee procedures.

The purpose of the bill, as stated by Congressman Brooks, is to provide for coordination with the exectuvie branch in the development of one basic compatible data processing and information system to serve both the legislative and executive branches of the Government in providing budgetary and appropriation information. The Bureau of the Budget is in the initial stages of developing such a system. For a part of that compatible system, the bill would have the Comptroller General develop, establish, and maintain data processing and information systems necessary for the effective and efficient fulfillment of the substantive responsibilities of the Congress as determined by the President pro tempore of the Senate and the Speaker of the House. With reference to the other part of that system, the bill would have the Comptroller General cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system for budgetary and fiscal data for use of the Federal Government.

Congressman Brooks believes that there is a need, separate and apart for the maintenance of an information system to support the budgetary and appropriation cycle, for a legislative capability in advanced cost analysis techniques so that the legislative branch can make its own cost evaluations and have the capability to analyze those of the executive branch.

He also believes that there are other areas in which the Congress can effectively and efficiently utilize modern information handling and data processing techniques to provide congressional committees and individual Members and their staffs with immediate information on the status of legislation. The system used could be extended to keep an index of the Congressional Record constantly and immediately available, and for the storage of the entire United States Code, the Statutes at Large, and other similar data.

We are in full agreement with the purposes of the bill. It has been generally recognized that the Congress has a real need for data processing and information systems of its own in order to fulfill its responsibilities. As we understand the provisions of H.R. 404, the data processing and information systems to be developed for the Congress would not duplicate the system presently being developed by the Bureau of the Budget. The objective would be to develop a supplementary system to serve the particular needs of Congress, yet compatible with the system being developed by the Bureau for budgetary and fiscal data.

With respect to section "(f)(1)" of the bill, which would direct the Comptroller General to develop, establish, and maintain data processing and information systems for the Congress, we have some question as to whether the Comptroller General should be given these responsibilities. It may be that the development, establishment, and maintenance of the system should be the responsibility of the Congress itself in order that it could have complete control over the system and thus be assured that its needs will be fully served. However, if the Congress should decide that this task should be performed by the Comptroller General we will, of course, make every effort to carry out the responsibilities assigned.

It should be understood that the development of the systems contemplated, whether performed by the Comptroller General or by Congress itself, will require considerable time. The development of the needs of Congress and its committees and the systems necessary to serve those needs will be a difficult task. Also, it should be recognized that the costs will be significant. Considerable additional funds

over and above our present funding levels will be required if the General Accounting Office is to do the job.

Subsection "(f)(2)" of the bill requires the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system including uniform classifications of programs, activities, receipts, costs, and expenditures, as well as other necessary standards for budgetary and fiscal data for the use of the Federal Government. We construe section 2 to mean that the primary responsibility under the section is with the Director of the Budget but that the Comptroller General will cooperate with the Director in an effort to see that the needs of the Congress are met.

With regard to subsection "(f)(3)" we wish to call your attention to progress already made toward establishing the capability in the General Accounting Office to conduct and to analyze cost effectiveness studies. A systems analysis group was established in 1967 in our Office of Policy and Special Studies with the responsibility to provide such capability and to provide leadership and policy guidance in developing appropriate levels of this capability among our professional staff.

The Systems Analysis Group has performed a substantial part of our review under title II, section 201(2), of the Economic Opportunity Amendments of 1967 to determine the "extent to which such programs and activities achieve the objectives set forth in the relevant part or title of the Economic Opportunity Act of 1964 authorizing such programs or activities."

We believe the actions already taken and the experience gained in actual studies have prepared the General Accounting Office to provide an orderly growth of this capability.

We recommend the deletion of subsection "(g)." We believe that the Comptroller General should retain the discretion and the flexibility to organize the General Accounting Office in such a manner as he considers necessary to carry out the duties which the legislation places upon him.

As previously stated we favor the purposes of this bill and we will make every effort to fulfill such responsibilities as Congress may give us in this area.

Sincerely yours,

ELMER B. STAATS,
Comptroller General of the United States.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., April 2, 1969.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your requests for comments on H.R. 404 and H.R. 5522, the purpose of which is to amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems, and for other purposes.

Both bills would amend the Budget and Accounting Act, 1921, by requiring the Comptroller General to provide the Congress with data processing and information systems to meet the substantive responsibilities of the Congress. They would also require him to have available in the General Accounting Office employees qualified to conduct and analyze cost effectiveness studies at the request of committees of the Congress.

To the extent that these activities involve the collection and compilation of factual data, as distinguished from the performing of analyses they would seem to unnecessarily duplicate work which is being performed in the executive branch. We understand the bills are intended to relate basically to activities of the Legislative Branch, and that they are not intended to impose new rules or procedures upon the executive branch. Whether the Congress needs to formalize arrangements to provide such support and assistance is a matter for each House to decide for itself, and one on which we do not believe it would be appropriate for us to comment.

Section 312(f)(2) would require the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system for budgetary and fiscal data for use of the Federal Government. We have customarily received the full cooperation of the Comptroller General in respect of our work on such matters and we would expect such cooperation to continue without the necessity for enactment of such a provision. Further, we have considerable doubt as to the wisdom of a provision which might inject the Comptroller General—an official of the legislative branch—directly into the budgetary processes of the executive branch. Subject to the normal qualifications regarding information in support of budget requests which are still under consideration by the President, information in the possession of the executive branch generally is available to the Congress, or to the Comptroller General on its behalf, without the necessity for any specific provision of the nature proposed in section 312(f)(2).

If we can supply further information with respect to these measures, please do not hesitate to call on us.

Sincerely yours,

WILFRED H. ROMMEL,
Assistant Director for Legislative Reference.

GENERAL SERVICES ADMINISTRATION,
Washington, D.C., April 4, 1969.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Your letter of February 11, 1969, requested the views of the General Services Administration on H.R. 5522, 91st Congress, a bill to amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems, and for other purposes.

The automatic data processing and information systems to be developed and established by the Comptroller General under H.R.

5522 would be used for the purpose of providing the Congress with data and information necessary for the effective and efficient fulfillment of its substantive responsibilities as may be determined by the President pro tempore of the Senate and Speaker of the House. Additionally, the bill would require the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system for budgetary and fiscal data for use by the Federal Government.

GSA is responsible under section 111 of the Federal Property and Administrative Services Act of 1949, as amended, to coordinate and provide for the economic and efficient purchase, lease, and maintenance of automatic data processing equipment (ADPE) by Federal agencies. The General Accounting Office is a Federal agency as defined in section 3(b) of the Property Act. We do not believe that H.R. 5522 is intended to provide independent authority to GAO to acquire ADPE or otherwise except GAO from the requirements of section 111 of the act. However, the language of the bill is not clear in this respect. For example, the language of proposed new subsection (f)(5) of section 312 of the Budget and Accounting Act on line 23, page 2 of the bill authorizes the Comptroller General to "acquire data processing capacity." The apparent purpose of subsection (f)(5) is to provide authority to the Comptroller General to contract for assistance to develop and establish information systems rather than to provide specific authority to acquire ADPE. For purposes of clarafication, therefore, we recommend that a new subsection "(h)" be added at the end of the proposed bill to state that:

"(h) Nothing in this section is to be construed as superseding section 111 of the Federal Property and Administrative Services Act of 1949, 79 Stat. 1127."

If H.R. 5522 is enacted with the amendment suggested, GSA would be pleased to make available to the GAO automatic data processing equipment in the same manner as such equipment is now made available to other Federal agencies.

Subject to the foregoing, GSA does not object to enactment of H.R. 5522.

The Bureau of the Budget has advised that, from the standpoint of the administration's program, there is no objection to the submission of this report to your committee.

Sincerely,

ROBERT L. KUNZIG, *Administrator.*

CHANGES IN TEXT OF EXISTING STATUTES

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, the text of the section of the existing Federal statute which the bill, as reported, would amend is printed below, with the proposed change shown by printing the new matter in italic type and by printing in roman type those provisions in which no change is to be made.

Section 312 of the Budget and Accounting Act, 1921 (31 U.S.C. 53)

SEC. 312. (a) The Comptroller General shall investigate, at the seat of government or elsewhere, all matters relating to the receipt, disbursement, and application of public funds, and shall make to the President when requested by him, and to Congress at the beginning of each regular session, a report in writing of the work of the General Accounting Office, containing recommendations concerning the legislation he may deem necessary to facilitate the prompt and accurate rendition and settlement of accounts and concerning such other matters relating to the receipt, disbursement, and application of public funds as he may think advisable. In such regular report, or in special reports at any time when Congress is in session, he shall make recommendations looking to greater economy or efficiency in public expenditures.

(b) He shall make such investigations and reports as shall be ordered by either House of Congress or by any committee of either House having jurisdiction over revenue, appropriations, or expenditures. The Comptroller General shall also, at the request of any such committee, direct assistants from his office to furnish the committee such aid and information as it may request.

(c) The Comptroller General shall specially report to Congress every expenditure or contract made by any department or establishment in any year in violation of law.

(d) He shall submit to Congress reports upon the adequacy and effectiveness of the administrative examination of accounts and claims in the respective departments and establishments and upon the adequacy and effectiveness of departmental inspection of the offices and accounts of fiscal officers.

(e) He shall furnish such information relating to expenditures and accounting to the Bureau of the Budget as it may request from time to time.

(f) The Comptroller General shall—

(1) cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system (including uniform classifications of programs, activities, receipts, costs, and expenditures, as well as other necessary standards) for budgetary and fiscal data for use of the Federal Government;

(2) coordinate the development, establishment, maintenance, and operation of data processing systems necessary for the effective and efficient fulfillment of the substantive responsibilities of the Congress. Other units of the Congress utilizing data processing techniques to carry out the responsibilities Congress has delegated to them shall adhere to the guidelines the Comptroller General may establish to assure optimum effectiveness and efficiency in the overall acquisition and use of computers by the Congress;

(3) enter into contracts with organizations or individuals, or employ individual experts and consultants, to assist in the development and establishment of such systems, at rates not in excess of those prevailing at the time for comparable services in private industry, but otherwise in conformity with section 3109 of title 5 of the United States Code, and acquire data processing capacity to carry out the responsibilities delegated him under this part; and

(4) submit recommendations at such times as he deems appropriate to the Congress as to the most effective and efficient manner by which the data processing and systems design requirements of the Congress can be fulfilled.

SUPPLEMENTARY VIEWS OF HON. WILLIAM S. MOORHEAD

The chairman of the Government Activities Subcommittee of the House Committee on Government Operations, the Honorable Jack Brooks, has wisely called for a coordinated, businesslike approach to the introduction and use of computers in the Congress. He has further emphasized the need for proper coordination between the executive and legislative branches of Government in order to avoid costly and wasteful duplication in the design of compatible data systems to serve elements of both branches. In both of these matters I fully concur.

Coordination on Capitol Hill is not the easiest of tasks. You start with a bicameral legislature with one House having 435 Members and the other 100 Members, and there is no single leader of both Houses.

In addition, there are semiautonomous bodies such as the Library of Congress, the Public Printer, the General Accounting Office, and the Legislative Counsels of both Houses.

To bring order out of this chaos there must be a very strong coordinator. H.R. 10791 assigns the duty of coordination to the GAO.

The reason I believe that H.R. 10791 is only a step in the right direction is because I believe that the General Accounting Office, which is the servant of Congress, cannot successfully carry out an assignment of being the master of Congress.

The Comptroller General of the United States, Elmer B. Staats, in testimony before our subcommittee, reflected this sentiment when he said:

> It may be that the development, establishment, and maintenance of the system should be the responsibility of the Congress itself in order that it could have complete control over the system and thus be assured that its needs will be fully served.

However advantageous at this time, assigning the responsibility for coordinating all computer support of the Congress to the General Accounting Office should therefore be considered a stopgap measure.

Certainly the handling of budgetary and fiscal data through the use of automatic data processing is an absolute prerequisite as the size and complexity of the Federal budget increases. This function for Congress should be assigned to GAO. However, the use of computers in other applications, such as the indexing, storing, and retrieval of topical research information on issues under legislative consideration properly belongs with the Legislative Reference Service of the Library of Congress. Similarly, the Office of the Clerk of the House of Representatives should continue to perform those housekeeping tasks using ADP which fall within that aegis.

The effort now underway by the House Committee on House Administration will do much to establish a plan of action for developing a

computer support capability for the Congress. Its determination of long-range needs, as well as immediate requirements for computer services, will create a framework within which the GAO can chart its course as it assumes the basic responsibility for insuring that ADP render all possible support to the Congress in its decisionmaking role.

However, I am convinced that the Congress will ultimately conclude that the Congress itself should be the coordinator of computer capability on Capitol Hill.

H.R. 7012 which I have introduced would do this and ultimately I think Congress must pass legislation along the lines of H.R. 7012.

To achieve strong congressional coordination, H.R. 7012 would create an independent computer center, manned by a highly professional staff. The purpose of the center, as set forth in the bill is to assist the two Houses of Congress, their officers, committees, joint committees, Members, and supporting services in the performance of their respective functions by making available to them automatic data processing services.

Under this bill, coordination between the Senate and the House will be achieved through a Joint Committee on Legislative Data Processing made up of five representatives from each body, with House Members appointed by the Speaker, Senators by the President pro tempore of the Senate, with party representation as it prevails in the respective bodies.

The Computer Center itself would be supervised by a Director appointed by the Speaker of the House and President pro tempore of the Senate, after consultation with the Joint Committee.

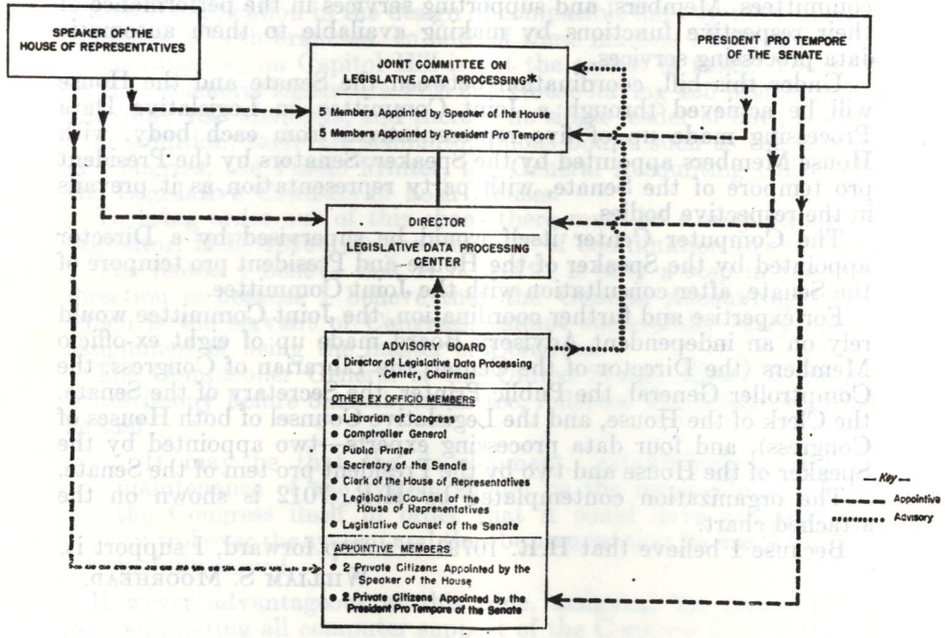
For expertise and further coordination, the Joint Committee would rely on an independent Advisory Board made up of eight ex-officio Members (the Director of the Center, the Librarian of Congress, the Comptroller General, the Public Printer, the Secretary of the Senate, the Clerk of the House, and the Legislative Counsel of both Houses of Congress), and four data processing experts—two appointed by the Speaker of the House and two by the President pro tem of the Senate.

The organization contemplated by H.R. 7012 is shown on the attached chart.

Because I believe that H.R. 10791 is a step forward, I support it.

WILLIAM S. MOORHEAD.

LEGISLATIVE DATA PROCESSING CENTER FOR THE U.S. CONGRESS



SUPPLEMENTARY VIEWS OF HON. JOHN E. MOSS

With reference to the above views expressed by my colleague, the Honorable William S. Moorhead, I subscribe entirely to both the content of his remarks and the intent of his purposes and the legislation which he introduced, H.R. 7012.

JOHN E. MOSS.

APPENDIX

Statement of Elmer B. Staats, Comptroller General of the United States

Mr. Chairman and members of the subcommittee, I appreciate this opportunity to appear before you to discuss H.R. 404, 91st Congress, which would amend section 312 of the Budget and Accounting Act, 1921, 31 U.S.C. 53, by adding the following new subsections:

"(f) The Comptroller General shall—

"(1) develop, establish, and maintain data processing and information systems necessary for the effective and efficient fulfillment of the substantive responsibilities of the Congress as may be determined by the President pro tempore of the Senate and the Speaker of the House;

"(2) cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system (including uniform classifications of programs, activities, receipts, costs, and expenditures, as well as other necessary standards) for budgetary and fiscal data for use of the Federal Government;

"(3) have available in the General Accounting Office employees qualified to conduct and to analyze cost effectiveness studies at the request of committees of the House or Senate;

"(4) to the extent feasible, provide committees of the House or Senate with data and information from such systems or with data otherwise available to the General Accounting Office;

"(5) enter into contracts with organizations or individuals or employ individual experts and consultants in accordance with section 3109 of title 5 of the United States Code, to assist in the development and establishment of such systems, at rates not in excess of those prevailing at the time for comparable services in private industry, and acquire data processing capacity to carry out the responsibilities delegated him under this part and to meet any additional requirements for data processing capacity the President protempore of the Senate or the Speaker of the House may determine is required; and

"(6) submit recommendations at such times as he deems appropriate to the President pro tempore of the Senate and the Speaker of the House as to the most effective and efficient manner by which the data processing and systems design requirements of the Congress can be fulfilled.

"(g) to assist in the performance of the duties and functions extended the Comptroller General under this part, there is hereby established in the General Accounting Office a Division for Budget Information and Analysis. The Division shall be headed by a Director who shall be appointed by the Comptroller General and shall receive

compensation at the rate provided for GS–18 under the classified civil service."

As we understand it the purpose of the bill is to provide for coordination with the executive branch in the development of one basic compatible data processing and information system to serve both the legislative and executive branches of the Government in providing budgetary and appropriation information. The Bureau of the Budget is in the initial stages of developing such a system. For a part of that compatible system the bill would have the Comptroller General develop, establish, and maintain data processing and information systems necessary for the effective and efficient fulfillment of the substantive responsibilities of the Congress as determined by the President pro tempore of the Senate and the Speaker of the House. With reference to the other part of that system, the bill would have the Comptroller General cooperate with the Director of the Bureau of the Budget in the development, establishment and maintenance of a standard data processing and information system for budgetary and fiscal data for use of the Federal Government.

It is understood that you, Mr. Chairman, are of the view that there is a need, separate and apart from the maintenance of an information system to assist the Congress in its review of appropriation requests for a legislative capability in advanced cost analysis techniques so that the legislative branch can make its own cost evaluations and have the capability to analyze those made by the executive branch. You have also indicated possible further areas in which the Congress could effectively utilize modern information handling and data processing techniques. For example, the system could be used to provide the congressional committees and individual members and their staffs with immediate information as to the status of legislation. It might also be extended to keep an index of the Congressional Record constantly and immediately available, and for the storage of the entire United States Code, the statutes at large and other similar data.

As you know there are several specific computer operations already underway which could play an important part in the system to be developed for Congress. One of these is Project LITE (Legal Information Through Electronics). This project for computerized storage and retrieval of legal information is operated by the Air Force Accounting and Finance Center, Denver, Colo.

Included in the LITE data base at the present time are the published Decisions of the Comptroller General, the United States Code, the Armed Service Procurement Regulations, the Defense Contract Audit Manual, unclassified Air Force Regulations and certain other items of particular interest to the Department of Defense.

We have recently received the first computer generated key word index to the published Decisions of the Comptroller General of the United States from July 1, 1921, to June 30, 1967 (vols. 1 through 46). This was a cooperative effort between the Department of Defense and the General Accounting Office and utilized the GPO Linotron printing process.

Another system which might be utilized is the one being developed by the Library of Congress to provide information on the status of bills. The Library is now using an IBM 360 model 40 computer with 14 remote terminals. In addition to providing current status information, the system provides a biweekly report containing synoptic and identifying information on bills. It also provides a monthly status report on 200 major pieces of legislation with a bibliography on the subject matter of the legislation.

We are in full agreement with the purposes of the bill. It has been generally recognized that the Congress has a growing need for data processing and information systems of its own in order to fulfill its responsibilities. As we understand the provisions of H.R. 404, the data processing and information systems to be developed for the Congress would not duplicate the system presently being developed by the Bureau of the Budget. The objective would be to develop a supplementary system to serve the particular needs of Congress, yet compatible with the system being developed by the Bureau for budgetary and fiscal data.

With respect to subsection "(f)(1)" of the bill, which would direct the Comptroller General to develop, establish, and maintain data processing and information systems for the Congress, we have some question as to whether the Comptroller General should be given these responsibilities. It may be that the development, establishment, and maintenance of the system should be the responsibility of the Congress itself in order that it could have complete control over the system and thus be assured that its needs will be fully served. However, if the Congress should decide that this task should be performed by the Comptroller General we will, of course, make every effort to carry out the responsibilities assigned.

It should be understood that the development of the systems contemplated, whether performed by the Comptroller General or by the Congress itself, will require considerable time. Ascertainment of the specific needs of Congress and its committees and the systems necessary to serve those needs will be a difficult task. Also, it should be recognized that the costs will be significant. Considerable additional funds over and above our present funding levels will be required if the General Accounting Office is to do the job contemplated in the bill.

Subsection "(f)(2)" of the bill requires the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system including uniform classifications of programs, activities, receipts, costs, and expenditures, as well as other necessary standards for budgetary and fiscal data for the use of the Federal Government. We construe this subsection to mean that the primary responsibility under the subsection is with the Director of the Budget but that the Comptroller General will cooperate with the Director in an effort to see that the needs of the Congress are met.

With regard to subsection "(f)(3)" we wish to call your attention to progress already made toward establishing the capability in the General Accounting Office to conduct and to analyze cost effectiveness studies. A systems analysis group was established in 1967 in our Office of Policy and Special Studies with the responsibility to provide such capability and to provide leadership and policy guidance in developing appropriate levels of this capability among our professional staff.

The Systems Analysis Group has for example, played an important part in our review under title II, section 201(2), of the Economic Opportunity Amendments of 1967 to determine the "extent to which such programs and activities achieve the objectives set forth in the

relevant part or title of the Economic Opportunity Act of 1964 authorizing such programs or activities." It developed last year a comprehensive report on the need for improved policies in the discounting of costs and benefits in cost-effectiveness studies and is currently developing a report to Congress on the status and problems in the Planning Programing and Budgeting System (PPBS).

We believe the actions already taken and the experience gained in actual studies have prepared the General Accounting Office to provide an orderly growth of this capability.

We recommend the deletion of subsection "(g)." We believe that the Comptroller General should retain the discretion and the flexibility to organize the General Accounting Office in such a manner as he considers necessary to carry out the duties which the legislation places upon him.

The General Accounting Office would not need new authority to seek funds to carry out the purposes of this bill. Also new authority would not be required for departments and agencies to obtain funds to comply with direct requests made upon them for information in support of appropriations under the Budget and Accounting Act. However, there may be sizable necessary recurring requirements to furnish information which the departments and agencies might not need for their own use. Therefore the committee may wish to include language in the bill which would authorize appropriations for this purpose.

As previously stated we favor the purposes of this bill and we will make every effort to fulfill such responsibilities as Congress may give us in this area.

Mr. Chairman, this concludes my statement and I will be glad to discuss any of these matters in further detail or answer any questions the subcommittee may have.

STATEMENT OF PHILLIP S. HUGHES, DEPUTY DIRECTOR OF THE BUREAU OF THE BUDGET

Mr. Chairman and members of the subcommittee, I appreciate this opportunity to discuss with you H.R. 404, a bill to amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems, and for other purposes.

The Bureau of the Budget shares the committee's concern over the need to make more effective use of automatic data processing and information handling techniques to help cope with the constantly increasing volume and complexity of information pertaining to both the executive and legislative processes.

Certainly we agree that modern information systems and computers play a vital role in insuring effective handling and analysis of information, not only within the respective branches of government, but in the continuous communication and dialog which takes place between them at all levels. Actions which the Bureau has taken in carrying out its responsibilities under Public Law 89–306 demonstrate our purpose to assure that the variables of the technology will not prevent our ability to interchange and intercommunicate data among the various levels of the executive branch. We do not have all of the answers to this information problem, but we have taken a number of significant steps, and are planning to take additional steps, to deal with it. Likewise, as the

committee knows, much progress has been achieved within individual agencies in tailoring their information systems and their use of data processing and information science techniques to the management and operational characteristics of their particular programs or agencies. In this respect the Government's situation is very similar to that in industry where much has been done by individual corporations to their own information systems to improve responses to their markets, but progress on either a specific industry-wide basis (i.e., railroad, air transportation, etc.) or interindustry basis has been limited.

The problem is a chronic and complex one and is not susceptible to quick solutions or panaceas. Our own assessment is that substantially upgrading of agency and Government-wide information systems and information management practices will require several years of intensive work by both the Bureau and the agencies. This estimate reflects consideration of wide divergence in agency needs, goals and technological capabilities, and from the inherent difficulty of correlating data elements and codes across agency lines for the purpose of developing standard, Government-wide systems.

This does not mean that significant results have not already been achieved or cannot continue to be achieved in the interim period, on an incremental basis: rather it means that the ultimate goal of developing fully comprehensive, integrated reliable management information systems to support legislative and executive processes and decisionmaking, cannot be achieved, realistically, much before the middle 1970's. Furthermore, we feel it would be a mistake to embark now upon any "grand design" because experience thus far clearly points to an evolutionary—learn by doing—approach as the more prudent course of action, given the substantial complexities involved.

Accordingly, we are moving ahead concurrently on both long- and short-range fronts. I would like to take this opportunity to briefly identify for the subcommittee the most significant efforts already underway and planned by the Bureau of the Budget. All of these efforts are aimed, broadly speaking, at improving the usefulness of Federal program and budget information, information systems and information management concepts.

First, efforts to unify the Federal budget.—Former President Johnson's Commission on Budget Concepts placed great emphasis on the need for unifying budgetary and fiscal information by using commonly defined and understood concepts and terms that would replace competing concepts and definitions that in the past have been confusing both to the public and the Congress. As you know, that report was published in October 1967. The Bureau immediately undertook to implement 10 of its key recommendations, including a unified budget statement presentation to the Congress, bringing the form of the budget closer to serving also as a broad financial plan, making a loan and expenditure distinction, and others.

Other recommendations, such as the reporting of budget expenditures and receipts on an accrual basis instead of a cash basis, are more difficult and change cannot be effected immediately. Nevertheless, President Nixon has given personal impetus to concerted action now being taken by the Bureau and agencies to move forward on the remaining recommendations. The work of both the Congress and the executive branch will be greatly facilitated by the adoption

of budget concepts in which all the different major purposes of the budget come into focus in a comprehensive, unified framework.

Second, efforts to improve the usefulness of Federal budgetary information.—For some time the Bureau has been concerned about the growing size and complexity of the task of examining and evaluating both agency budgets and the Federal budget as a whole and the need for more comprehensive and detailed information for these purposes. In a survey completed last year, we identified some 22 different classification schemes used in the formulation and execution of the Federal budget. These schemes vary from presentational and explanatory purposes to resource allocation and decisionmaking purposes. Authority for their use stems directly, in many cases, from specific legislation such as the Budget and Accounting Act of 1921, the Government Corporation Control Act of 1945, and the Budget and Accounting Procedures Act of 1950. In other cases they stem from more recent endeavors such as recommendations made by the Budget Concepts Commission.

While all of these categories of information serve a useful purpose, one result of their separate development has been unnecessary overlap and duplication. Certainly some overlap and redundancy is both inevitable and even desirable, since not all classifications can or should be constructed on a mutually exclusive basis. But substantial room for streamlining and simplification is apparent.

Beyond the problem of multiple classifications, the tabulation of the detailed data needed to prepare the 200-odd summary and special tables that go into the budget and its related documents has been primarily a manual job over the years. As the Federal Government and therefore the Federal budget has become larger and more complex, the Bureau has begun to develop an integrated, computeriaed budget preparation system. When completed, this system will allow us to quickly revise and up date our initial agency budget figures that flow into the Bureau between September and December (during the period of budget preparation). Progress last year enabled us to generate directly from the computer over 40 tables in the printed budget documents and to "automatically" reconcile actual year data reported by agencies to the Treasury with corresponding data reported to the Bureau in budget submissions through use of automation techniques. We plan to make further substantial improvements and refinements in computer support to the budget preparation process as further experience is gained.

We are also exploring the development of a year-round "rolling budget" system to support Bureau decisionmaking needs. This system would combine: (1) Recording congressional action on appropriation bills for the President's budget year request under consideration by the Congress; (2) apportionment control on spending for the current year and comparison of actual with planned financial performance; (3) planning for the upcoming budget year, beginning with the agency and crosscutting program reviews we hold in the spring; and finally (4) providing for checking the consistency of budget authority, receipts and outlays between successive budgets.

Third, efforts to improve the meaningfulness and consistency of Federal program information to support the budget process.—The Budget Concepts Commission recognized a crucial prerequisite to the continued evolution of program budgeting when it recommended that—

"Flowing from the definition of a budget as a basic part of a comprehensive financial plan, the budget should include all programs of the Federal Government and its agencies."

When the Bureau examines agency budgets on a Government-wide basis in order to recommend a balanced overall Federal program to the President, it must conduct certain of its reviews horizontally, across agency lines in order to evaluate the relative effectiveness of similar programs with similar objectives; in "vertical," functional terms to assess the relative efficiency and effectiveness of individual agency programs one to another; and in broad dollar terms to make the necessary fiscal and financing decisions. Since the basic information building block for review and decisionmaking may be different in each of these three areas, decisions made in the context of one type of review may be difficult to translate into those of another.

Our major longer range effort to deal with this problem is a study we initiated last September, using an outside management consultant firm to help us identify ways to strengthen the planning, programing and budgeting processes in the Bureau and in the executive branch as a whole. The key objectives of this study are: (1) to identify ways of more effectively integrating established appropriation budgeting process with budgeting and analytical processes based on other systems; (2) to recommend an integrated classification scheme; and (3) to conceptualize an underlying information system that would be flexible enough and comprehensive enough to support such an improved integrated process. We view this study as a major step in the evolution of program budgeting. The study is now at the three quarter mark of its first phase. Specific recommendations are being reviewed by the Bureau, départments, and major independent agencies.

In addition to the longer range consultant study, however, we are pursuing a number of shorter range efforts, some of which are already operational:

(1) Issuance in March 1969 of the latest updated "Catalog of Federal Domestic Assistance" pursuant to BOB Circular A–89. This catalog explains the nature and purposes of Federal domestic assistance programs, specifies major eligibility requirements, tells catalog users and potential beneficiaries of Federal aid where to apply, and lists printed materials available. The catalog contains information on 581 domestic assistance programs administered by 47 departments and agencies. It superseded the "Catalog of Federal Assistance Programs," dated June 1, 1967, published by the Office of Economic Opportunity, and similar documents of a more limited scope previously published by various executive departments and agencies. We are currently exploring the feasibility of automating some of this data to make it more readily accessible and to facilitate substantive analysis for the purpose of producing special-purpose catalogs such as a compilation of Federal programs that may assist minority entrepreneurs.

(2) Issuance in January 1969 of two related publications—"Federal Outlays in States" and "Federal Outlays in Cities"—pursuant to BOB Circular A–89. These complementary documents provide Federal outlay data for more than 980 programs, activity or appropriation items summarized by agency, program and appropriation for States broken out by counties and for cities with a population of 25,000 or more. The purpose of this report is to provide a guide to the

general nature and order of magnitude of the Federal impact on the States and U.S. territories as well as 700 of the Nation's largest cities. Substantial effort is being devoted to improving the accuracy and reliability of the basic source data reported by agencies. The information is on a computer and is processed by the so-called Federal information exchange system which is operated by the Office of Economic Opportunity pursuant to title VI of the Economic Opportunity Act of 1964. This legislation authorizes the Director of OEO to collect, analyze, correlate, and distribute information concerning Federal social and economic programs.

Fourth, efforts to improve the coordination and management of executive branch information systems and establishment of an intergovernmental information interchange.—We have recently taken a number of important steps in this area:

(1) Issuance in September 1968 of BOB Circular A–90, "Cooperating With State and Local Governments To Coordinate and Improve Information Systems." This circular furnishes guidance to Federal agencies for cooperating with and assisting State and local governments in the coordinated development and operation of information systems. A major thrust of the circular is to establish an orderly mechanism for the consideration by Federal agencies of requests for financial assistance to State and local governments to develop and operate information systems.

(2) Undertaking a comprehensive inventory of executive branch information systems to service users at all governmental levels. The Bureau views the undertaking of an inventory of executive branch information systems as an essential prerequisite to the creation of a Federal information systems exchange program, and it views the latter as a logical building block leading to the eventual establishment of an intergovernmental information systems clearinghouse. Such a clearinghouse was recommended in the report by the intergovernmental task force on information systems in April 1968.

(3) Development of additional Bureau of the Budget guidance aimed squarely at the problem of improving the coordination and management of executive branch information management practices. While the precise form of this guidance has not yet been determined, we anticipate issuance sometime this summer.

We are, of course, coordinating our efforts in this area closely with the newly established Office of Intergovernmental Relations in the Vice President's Office.

Improvement in the use of computers and automated techniques in the development and maintenance of data processing and information systems.—From the time computers first came upon the scene, the Federal Government has aggressively sought ways in which this new technology could be used to improve governmental operations. The first computer produced commercially was acquired by the Bureau of the Census in 1951 to assist in processing census returns. Since then, the inventory of computers used by Federal agencies has grown to about 4,300. Extensive use of computer-based systems will be found, for example, in such programs as military logistics, tax administration, satellite tracking, scientific and engineering laboratories, social security, and veterans' benefits administration, military base operations, air traffic control, and Federal supply activities.

The accumulation of data processing experience, coupled with advancements in computer technology and new information system concepts, provide a continuous spur to improve these computer applications and extend the use of computers to other areas. Increasingly, computer systems are becoming interrelated, in the sense that data is exchanged from one to another in machine-processable form, with substantial savings in time and cost. To facilitate such interchange, considerable effort is being devoted by the Federal Government to establishing standards to eliminate the incompatibilities among data and computers which at the present time are severely handicapping the efficient exchange of data among systems.

However, computer systems are only as good as the data fed into them. This means, of course, that we can neither produce from the computer information that didn't get introduced into the computer in the first place; nor except information of a different character or quality than the basic source data. These considerations are the ones that have led us to emphasize the improvement of management information.

Undergirding the efforts to improve the effectiveness of our computer systems are a number of other Government-wide ADP management programs devoted to achieving greater economies in the management procurement, utilization, and redistribution of computers. These programs have been undertaken pursuant to Public Law 89–306, sponsored by the chairman.

The common goal of all of these efforts is, we believe, consistent with the objectives of H.R. 404. Moreover, we believe the organization, methodological, and technological experiences we are gaining in all of these efforts is essential to the ultimate development of truly modern and effective agency and Government-wide information systems which will, be believe, meet many of the objectives and needs of the Congress as well as the executive branch.

In summary, the Bureau of the Budget favors the objectives of H.R. 404 and will assist the Congress in any way possible in the development of information systems necessary to support its legislative functions. We believe we are making significant progress in tasks fundamental to these objectives and do not believe that specific legislation is necessary to continue or even accelerate this progress. If specific legislation of the type contemplated fy H.R. 404 is deemed desirable, however, we will be pleased to work with the committee and its staff on such legislation.

In this statement I have outlined the activity underway within the Bureau so that the committee may be aware not only of what we are doing, but also of the fact that to a considerable extent the information developed within the executive branch to conduct its executive functions should to the maximum degree possible serve the needs of both the President and the Congress. With this recognition and with careful systems design we may preclude the very real possibility of the development of noncoordinated or duplicative requirements which are costly, delay accomplishment, and introduce crippling confusion through overlapping and inconsistent terms, definitions, and system methodologies.

In closing, let me assure you, Mr. Chairman, that we are keenly aware of the need to improve the accuracy, reliability, and timeliness of both budget and program information for Federal decisionmaking.

Therefore, the system concepts, design criteria, and implementation plans we are developing are and will continue to take into careful account the needs of the Congress in furtherance of its substantive decisionmaking responsibilities and functions.

Strengthening Planning, Programing, and Budgeting in the Bureau of the Budget, a Study Briefing

(A synopsis of the McKinsey & Co., study effort)

To better fulfill its role as a principal staff arm of the President, and to set the tone for analytic and information support to decisionmaking throughout the Federal Government, BOB over the years has fostered the development of improved management tools—appropriation budgeting, program budgeting and, most recently, program planning.

Typically, these new tools have supplemented, but have not replaced one another. Thus, while individually needed for effective decisionmaking, together they have produced a complex, cumbersome, and weakly integrated process.

This study, which is another step in the evolution toward improved decisionmaking in the Federal Government, is aimed largely at welding existing tools into a more responsive, effectively functioning whole.

The purpose of this meeting is to present the results of our work to date, covering in turn:

1. The background and status of the study.
2. Our frame of reference.
3. Study recommendations.
4. Implication of those recommendations for the road ahead.

STUDY BACKGROUND AND STATUS

BOB conceived of this study in two broad phases—concept development and system design—covering in total a 20-month period. We are now at the 75-percent mark of the first phase. To date, we have—

(1) conducted several hundred factfinding and followup interviews;

(2) performed in depth analyses and preliminary tests of our concepts in nine selected bureaus; and

(3) submitted two major progress reports:

(*a*) In December, outlining high-leverage improvement opportunities and, in light of these, future study direction—which was generally endorsed.

(*b*) In February, blocking out the basic approach we recommend to solving the problems identified.

At the present time, we are—

(1) reviewing our recommendations within BOB and among the agencies;

(2) resolving key issues raised by these reviews; and

(3) developing plans for the upcoming design phase, including a rough cut estimate of its timing and costs.

STUDY FRAME OF REFERENCE

In undertaking this study, we all recognized that—

(1) we would be grappling with hard problems of long standing, but problems which must be met in light of mounting national needs and increasingly limited resources; and

(2) our recommendations would only be a start down a long, tough road.

To keep this study on target, dealing as it does with an impressive array of problems and issues, we have consistently moved towards two basic goals:

(1) Improve the quality of BOB support to the total Presidential decisionmaking process.

(2) Produce workable results, not only in theory but, more importantly, in practice.

Supporting BOB's role

It goes without saying that the total Presidential decisionmaking process is immensely important and incredibly complex, and that BOB is only one element in this process.

However, BOB is a very significant element, for it—

(1) assists in estimating available resources (beyond study scope);

(2) provides analytic support to establishing goals, setting priorities, and resolving major policy issues;

(3) helps guide agency program planning and development;

(4) is the central staff for balancing agency plans and programs within Presidential priorities and economic constraints;

(5) examines agency programs both individually and across agency lines to spot program gaps and redundancies; and

(6) monitors program funding and execution, adjusting programs and funding where necessary.

In this study our focus has been on these key BOB functions in the total decisionmaking process, and our purpose has been to develop an approach for performing these functions more effectively.

In time this approach must be "fit" with the other elements in the process (the White House and Congress). To date, however, we have restricted our work to BOB and the several agencies.

Producing practical results

In formulating our recommendations, we have aimed at following five basic guidelines:

(1) Build on sound prior developments, avoiding still another "new" system.

(2) Root recommendations in the real world. For example, our proposed approach to resolving the "crosswalk" problem is to return to the touchstone of the individual operating program responsibly managed by a single agency.

(3) Avoid doctrinaire answers. Thus, we have retreated for now from a Government-wide program structure or a frontal assault on the appropriation structure.

(4) Recognize there are a few general answers, but mainly specific remedies; thus, our approach to levying information requirements is a case-by-case one.

(5) While recognizing that presidential decisionmaking cannot and never should be routine, develop an approach that will adequately orchestrate the many process steps, the different analytic cuts, the many management disciplines, and the several parties at interest.

RECOMMENDATIONS FOR MEETING BOB DECISIONMAKING NEEDS

Our goal in this study has been to assist BOB in performing more effectively its principal functions—listed above—as a key staff arm of the President. To perform these functions well in the demanding and complex Federal environment, we believe BOB must build a process that—

(1) is capable of guiding program planning and budgeting through a series of successive approximations—from the earliest issue analysis to the final expenditure;

(2) maintains a cross-agency, goal-oriented view of the total program and budget in order to (*a*) help define and apply presidential goals and priorities and (*b*) pinpoint program gaps and duplication;

(3) views the total program and budget in several frames of reference—each responsive to the legitimate needs of the many parties at interest;

(4) can move readily among these different frames of reference, and always back to the individual agency operating program;

(5) has quickly available the relevant data for decisionmaking; and

(6) is practical to operate and maintain.

To meet these needs, we have targeted on six major opportunities for improving BoB's ability to play its role effectively.

(1) Although the overall process contains all the essential steps, more substance can be given to some key steps and the whole process better integrated;

(2) BoB's ability to aggregate and analyze the total program and budget across agency lines can be strengthened;

(3) Major structural gaps, overlaps, and confusion, which exists because the varied—but valid—bases for review are not meshed, should be cleared up;

(4) A program for obtaining essential information should be undertaken;

(5) BoB should build the capability to manipulate available data efficiently and quickly; and

(6) The whole system, once pulled together, can be simplified.

In the following sections, we briefly discuss each improvement opportunity.

Strengthening and linking individual steps

The basic mechanism for planning, programing, budgeting, and execution exists today.

(1) Priorities are set.

(2) Major issues are identified, analyzed, and finally resolved.

(3) The budget begins to take shape in the spring.

(4) Programs are reviewed and a budget is produced.

(5) Funds are appropriated and apportioned, and programs are monitored.

Notwithstanding, key early steps lack the real substance needed to formulate goals and begin to shape the total program.

(1) There are too many issues, often of marginal interest, typically poorly analyzed, and often submitted too late to be of practical value.

(2) The key spring preview step (*a*) lacks solid input, beyond late and inadequate issue analysis (e.g., agency plans), (*b*) does not systematically take a cross-agency view of the program, and (*c*) produces only spotty programmatic guidance to set up subsequent budget formulation.

Furthermore, the individual steps lack the integration and follow-through needed to carry initial planning through succeeding steps.

(1) The issue process is not disciplined to insure that (*a*) timely, high-quality results are obtained; and (*b*) continuing relevance of individual issues is maintained.

(2) The capability is limited to carry forward major decisions in cross-agency terms from spring preview to Director's review, and beyond.

(3) There is only a limited capability to keep the program and budget updated as decisions are made, legislation is enacted, changes occur, and programs are executed.

To meet these needs, we have proposed a significant strengthening of key early process steps.

(1) The issue process should be made more relevant to Presidential decisionmaking needs by: (*a*) building the Director more intimately into the issue identification process to insure all key issues—but only key issues—are captured; (*b*) working with the agencies more closely to agree on analytic approaches, required results, and practical timetables; and (*c*) starting the process sooner, targeting it on spring preview.

(2) Spring preview should be upgraded into a more substantive program decision point (*a*) to the extent possible, get resolution of major policy issues; (*b*) review present and proposed programs across agency lines; and (*c*) produce better programmatic guidance.

To better link together the whole process, we recommend that BOB—

(1) install an issue-tracking system to ensure not only that analyses are performed in time but also that the issues are updated as external conditions change;

(2) use spring preview to make the transition from planning to guidance for budget formulation, setting the stage for Director's review; and

(3) support the entire process with a "rolling" information system capturing decisions and changes as they are made, and reflecting program execution as it proceeds.

Positioning the total program

At each step of the process, BOB requires a cross agency, goal-oriented overview of the total program and budget to aid the Director and his top staff in—

(1) formulating feasible goals and reasonable priorities at early planning stages;

(2) developing long-run policies aimed at reshaping the program over time;

(3) pinpointing options for redirecting outlays and authority in line with Presidential desires, both for budget formulation and subsequent reexaminations; and

(4) to highlight program gaps and duplication throughout.

To get this analytic overview of the whole, BOB requires—

(1) the ability to aggregate individual programs in functional and other goal-oriented ways;

(2) Information on program status, constraints, and outyear trends;

(3) visibility into the performance of the individual operating programs that comprise the functional and other aggregates; and

(4) adequate analytic support.

Although progress toward developing this capability is being made, BOB's present capacity for achieving this overview is limited.

(1) Only part of the budget is now presented in aggregate terms, and analysis is incomplete;

(2) The ability to aggregate program data is severely restricted;

(3) Program data is partly out of phase with need (e.g., commitment projections on PFP), or missing entirely.

To build this capability, we have recommended that—

(1) BOB start viewing the budget in functional aggregates, recognizing this structure will evolve with use;

(2) BOB's staff analytic capability be aimed toward providing more complete support;

(3) Information sources (e.g., PFP) be restructured to collect more useful data on financial status, statutory status, and selective outyear trends; and

(4) Build the information processing capability—as information becomes available—to aggregate the budget in other ways that will aid in applying Presidential priorities and constraints.

The use of a functional structure in BOB is widely misinterpreted.

(1) Some view it as another structure to be imposed on agencies—which it is not;

(2) But others view it as backing away from a governmentwide program structure that should be imposed on the agencies; we do in fact recommend against this move for the foreseeable future.

Meeting multiple review requirements

The existing inability to move smoothly among the varied, but valid, views of the budget has produced an intolerable situation.

(1) Gaps, overlaps, and confusion permeate attempts to relate these structures (e.g., PPB, appropriation functional).

(2) Not only is it costly in terms of waste motion but this confusion, also, erodes the ability of individual examiners to focus on the quality of individual programs, and of the Director to obtain meaningful aggregate data.

The missing link that relates these structures is the individual agency operating program.

(1) Operating (or "entity") programs are the real world of the Federal budget—the only things that actually consume resources, produce results, and embody work activities under responsible agency management control.

(2) Trying to solve the "crosswalk" problem without starting from this touchstone is to move from structure to structure without ever passing through the real world.

This concept is not foreign to BOB or agency operations today; our examination of nine agencies shows that—

(1) examiners in fact target on operating programs, largely informally, in seven of the nine agencies; and

(2) most agency information systems start at the program level.

Although the operating program is a natural starting point for building aggregations, the fact is that neither agency PPB nor appropriation structures embody these programs explicitly.

(1) Only one agency defined more than half of its entity programs in its PPB structure.

(2) Only five defined more than half of its programs in their appropriation structures.

We recommend BOB undertake a positive program to bring order to this situation.

(1) Identify the entity programs.

(2) Embed them in agency PPB structures.

(3) Take the lead in simplifying needlessly complex funding arrangements.

(4) Base its own information system on these building blocks.

Reconciling these structural problems is not an insurmountable task; our recommended approach—

(1) is straightforward, based on the real world of operating programs;

(2) is not costly in terms of the benefits to be reaped, we estimate a BOB investment of 84 man-months to cover the entire Government; and

(3) offers a balanced, fact-founded approach to Congress for modifying appropriation structures.

Closing the information gap

There is a generally recognized need for better information at BOB, especially on program outputs and benefits, recipient characteristics, and even some work activity measures.

But the job of closing this gap—a job independent of any system BOB adopts—is the task of many years. Thus, what is needed now is a reasonable structure for identifying data needs and for meeting them at minimum cost.

We believe that our recommendations provide this framework; within it, BOB can—

(1) pin down specific needs for specific programs—avoiding the pitfall of a general call for data;

(2) apply uniform requirements to satisfy BOB aggregates; and

(3) apply sensible cost-value judgments to individual data requirements.

Building an information processing capability

As BOB acquires the data and information building blocks it needs, an internal information processing capability, probably computer-based, must be built.

At this stage of the study, we have outlined the concept of a system aimed at—

(1) maintaining "rolling" files;
(2) aggregating program data for the Director and his staff; and
(3) cutting the clerical load, especially during budget preparation.

We see this capability being built from sound work started last year by the MIS staff.

(1) Refining last year's system.
(2) Building a rolling appropriation file this year.
(3) Designing the balance of the system as experience is gained.

Simplifying the *present system*

Over time, system has been grafted to system to produce excessive complexity.

In addition to buttressing the basic decision process and information system, our recommendations aim at simplifying them. For example:

(1) Substantial simplification will be attained by clearing up the "crosswalk" problem.
(2) The A–11 and 68–9 procedures will be consolidated.
(3) The PFP will be simplified and restructured to provide less, but more useful data.
(4) The number of issue analyses will be reduced to cover only key issues.
(5) Some special analysis submissions will be dropped.
(6) Computer support will be provided to free up BOB personnel from clerical duties.

THE ROAD AHEAD

We recognize that the recommended approach is not a quick answer to the long accumulation of problems. It will require a long-term, sustained executive commitment to—

(1) discipline process, particularly in its early pacesetting steps;
(2) evolve new analytic dimensions (e.g., functional analyses);
(3) take the lead in defining entity programs and modifying PPB and appropriation structures;
(4) define and satisfy information requirements; and
(5) marshal the resources required to carry out the program.

To make this commitment move ahead along the path we have proposed, based on comments we have received, these questions must still be answered:

(1) Is the process really responsive to BOB's role in support of Presidential decisionmaking particularly in the earlier "pacesetting" steps?
(2) Can BOB move readily from functional analyses to agency guidance, given the existing time pressures?
(3) Can spring preview be sufficiently disciplined to produce the necessary decisions and guidance?
(4) Will entity programs constitute just another structure and require another crosswalk?
(5) Can the entity program concept be implemented at a reasonable cost?

(6) Can information requirements be met at a reasonable cost?

In the next weeks, we will focus on—

(1) developing responses to these questions;
(2) blocking out the plan for the second phase effort; and
(3) preparing our first phase final report.

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EFFECTIVE AND EFFICIENT USE OF COMPUTERS IN CONGRESS

HEARING

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON GOVERNMENT OPERATIONS HOUSE OF REPRESENTATIVES

NINETY-FIRST CONGRESS

FIRST SESSION

ON

H.R. 404 and H.R. 5522

TO AMEND THE BUDGET AND ACCOUNTING ACT, 1921, TO DIRECT THE COMPTROLLER GENERAL TO ESTABLISH INFORMATION AND DATA PROCESSING SYSTEMS, AND FOR OTHER PURPOSES

APRIL 23, 1969

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EFFECTIVE AND EFFICIENT USE OF COMPUTERS IN CONGRESS

WEDNESDAY, APRIL 23, 1969

HOUSE OF REPRESENTATIVES,
GOVERNMENT ACTIVITIES SUBCOMMITTEE
OF THE COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room 2247, Rayburn House Office Building, Hon. Jack B. Brooks presiding.

Present: Representatives Brooks, Moorhead, Hicks, Reid, and Buchanan.

Also present: Ernest C. Baynard, staff administrator; C. Don Stephens, research analyst; Irma Reel, clerk; Lynne Higginbotham, clerk; Druenette Fleischmann, clerk; William Copenhaver, minority staff; and James Lanigan, majority counsel.

Mr. BROOKS. Gentlemen, the Government Activities Subcommittee having been duly organized under the rules of the House of Representatives, and a quorum being present for the purpose of taking testimony and receiving evidence, the meeting is hereby called to order.

The time has come to use advanced electronic data processing techniques in the legislative processes of the Congress. The state of the art in data processing and information handling has reached the point of development that these techniques can be of material assistance to Congress in coping with constantly increasing complexity and volume of data inherent in the legislative process.

Based upon sound experience in business, industry, and Government, a significant increase in operational efficiency can be expected through the efficient and effective use of electronic data processing techniques. It is clearly evident that application of these techniques to the budget and appropriation process as well as other aspects of our legislative responsibility can mean billions in savings annually to the taxpayers. Use of computers in Congress will bring increased efficiency and effectiveness to all operations and give the American people better service and more responsive government.

Optimum exploitation of computer techniques in the Congress will not be an easy task. It will be time consuming and will involve a considerable outlay of public funds. However, the potential savings far outweigh the cost of such a system; and, in a more fundamental sense, we have no choice but to apply these techniques to the legislative process if the Congress is to continue to fulfill its obligation to the people.

The legislation we consider today, H.R. 404 and H.R. 5522, provides for a coordinated businesslike approach to the introduction and use of computers in the Congress.

(The bill H.R. 404 follows:)

91ST CONGRESS
1ST SESSION

H. R. 404

IN THE HOUSE OF REPRESENTATIVES

JANUARY 3, 1969

Mr. BROOKS introduced the following bill; which was referred to the Committee on Government Operations

A BILL

To amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data-processing systems, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 312 of the Budget and Accounting Act, 1921 (31 U.S.C. 53), is amended by adding at the end thereof the following new subsections:

"(f) The Comptroller General shall—

"(1) develop, establish, and maintain data processing and information systems necessary for the effective and efficient fulfillment of the substantive responsibilities

of the Congress as may be determined by the President pro tempore of the Senate and the Speaker of the House;

"(2) cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system (including uniform classifications of programs, activities, receipts, costs, and expenditures, as well as other necessary standards) for budgetary and fiscal data for use of the Federal Government;

"(3) have available in the General Accounting Office employees qualified to conduct and to analyze cost effectiveness studies at the request of committees of the House or Senate;

"(4) to the extent feasible, provide committees of the House or Senate with data and information from such systems or with data otherwise available to the General Accounting Office;

"(5) enter into contracts with organizations or individuals, or employ individual experts and consultants in accordance with section 3109 of title 5 of the United States Code, to assist in the development and establishment of such systems, at rates not in excess of those prevailing at the time for comparable services in private industry, and acquire data processing capacity to carry out the responsibilities delegated him under this

part and to meet any additional requirements for data processing capacity the President pro tempore of the Senate or the Speaker of the House may determine is required; and

"(6) submit recommendations at such times as he deems appropriate to the President pro tempore of the Senate and the Speaker of the House as to the most effective and efficient manner by which the data processing and systems design requirements of the Congress can be fulfilled.

"(g) To assist in the performance of the duties and functions extended the Comptroller General under this part, there is hereby established in the General Accounting Office a Division for Budget Information and Analysis. The Division shall be headed by a Director who shall be appointed by the Comptroller General and shall receive compensation at the rate provided for GS–18 under the classified civil service.

Mr. BROOKS. There are at least two basic levels of coordination which we must consider. First and foremost is the overriding needs of the Congress to be reflected in the systems design efforts that the Bureau of the Budget is undertaking to computerize the budget and appropriation cycle. This basic system, the development of which will remain the primary responsibility of the executive branch, must, however, have those factors that will allow for the production of the data Congress needs relating to the Federal budget.

This legislation does not affect the traditional relationship between the executive and legislative branches of Government. Really, what we seek is proper coordination between them to avoid costly and wasteful duplication in systems design and possible compromise in system capability which would arise through the development of incompatible data systems in the two branches of Government. Where there is a common need for data, we must coordinate systems development. Otherwise, incompatibility will plague us and compromise all we do.

The matter of executive privilege would remain as it is today. We are simply improving the system for the handling of data.

Furthermore, it is our intention that should conflicts arise between the Comptroller General and the Director of the Bureau of the Budget, these conflicts would be resolved through the legislative process. By this means we avoid injecting the Comptroller General, an officer of the legislative branch of Government, into the budgetary responsibilities of the executive, which is represented primarily by the Bureau of the Budget at that level.

There is a second level requiring coordination of data processing within the Congress, and that is between the Senate and the House. Under this legislation, the Comptroller General would serve this purpose. He would have the responsibility for meeting the needs of the two Houses of Congress as these needs may be determined by the Speaker of the House and the President pro tempore of the Senate.

Under this approach, the Comptroller General would determine the net requirements of the Congress. He would then structure the data systems needed to meet these needs. Under this authority, he could call upon other offices in the legislative branch to provide certain computer services or to assist in maintaining computer systems in operation. For example, the Legislative Reference Service in the Library of Congress would have major responsibilities in support of a unified system to maintain the status of legislation.

Under this new legislation the traditional jurisdictions of congressional committees remain undisrupted. The Comptroller General would deal directly with committees and, to the extent feasible, as he does now, meet the individual committee requirements. Routine administrative review of the Comptroller General's operations would be at the discretion of the Speaker of the House and the President pro tempore of the Senate. And, in regard to most aspects of this authority, it would be assumed that the oversight jurisdiction would be given to the House Committee on Administration and the Senate Rules Committee.

We have with us today the Honorable Elmer B. Staats, Comptroller General of the United States, and the Honorable Phillip S. Hughes, better known as Sam here, Deputy Director of the Bureau of the Budget.

28–870—69——2

We look forward to hearing from these witnesses. First, however, I would like to introduce the Honorable Dante B. Fascell, a very distinguished and capable Member from Florida who over a period of many years has served on the Government Operations Committee.

Congressman Fascell is a leading exponent of broader usage of computers in Congress and in the Federal Government as a whole.

Congressman Fascell, if you would like to, we would be honored to hear from you, sir.

STATEMENT OF HON. DANTE B. FASCELL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Mr. FASCELL. Thank you, Mr. Chairman, and members of the committee. I have a prepared statement which I would submit for the record.

Mr. BROOKS. Without objection.

(The statement referred to follows:)

PREPARED STATEMENT OF HON. DANTE B. FASCELL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Mr. CHAIRMAN. The time has come to use computers in the Congress. American business and industry have more than 50,000 computer systems and are using computers in ever-increasing numbers to increase the efficiency of operations and provide more responsive service to customers.

The Federal Government, the world's largest user of computers, now has more than 4,000 computer systems, and these systems are making it possible for the various departments and agencies to manage their operations more effectively and to be more responsive to the public.

Yet, it is a paradox that the legislative branch of the Government, which from a decisionmaking standpoint probably has the most complex and difficult role of any of the branches of Government, has not kept up with these advancements. Only in recent months has the House of Representatives applied computer techniques to such mundane operations as payroll and inventory. No facet of our legislative responsibilities is supported by an adequate flow of accurate, up-to-date information such as can be obtained through application of these techniques.

The design of efficient computer systems is a costly and time-consuming process. Exploitation of these techniques by the Congress will take many years. We cannot afford to delay any longer in establishing an efficient management system to allow for the fullest application of computers to assist us in meeting the growing responsibilities we have to the American people.

I recommend H.R. 5522 for your consideration. It is a cautious approach in that it does not interfere in any way with the traditional jurisdiction of congressional committees or significantly alter the functions of congressional support organizations such as the General Accounting Office and Legislative Reference Service of the Library of Congress. The bill provides the coordinating authority in the Comptroller General and the accompanying responsibility to get an efficient and effective job done.

Mr. Chairman, this bill can save the taxpayers countless billions of dollars in the years to come through providing the Congress of the United States with more accurate information upon which we make our decisions. I urge that you approve this legislation and recommend its passage to the full committee, the House of Representatives, and to the Congress as a whole.

Mr. FASCELL. I would like to make some brief remarks. I thank you for this opportunity to appear and I commend you and the members of this committee for your long and continuing interest to modernize the operation of the Congress.

It is a paradox that we do not now have the most modern techniques and equipment available to us to do a most difficult complex and time-consuming job.

It is very easy to make a decision if you can ever get the facts, and marshalling the facts is a most difficult problem. The legislative branch in making policy decisions needs all of the surrounding facts, administrative implementing, and operating. Therefore, it is inconceivable to me that anybody could seriously object to making available to the Congress all of the modern techniques available with computers and automatic data processing.

I remember your interest, Mr. Chairman, in automatic data processing, and its uses in Government, and how important it was for us to take the steps necessary to establish guidelines for use and acquisition. I see that same kind of problem arising with respect to the uses in the Congress and I hope that the first thing we would do would be to establish an integrated system between the Bureau of the Budget and the Congress and its committees, particularly the Appropriations Committees.

We find ourselves today in the Congress in the same condition as one who uses a quill pen to write all of our reports and to record all of the actions we take in the Congress compared with someone who has available to him a 1,200-line-a-minute printer. I just cannot see why we in Congress insist on shackling ourselves and continue to make our complex job more difficult.

Therefore, I strongly support this legislation. I commend the chairman of this committee, the Bureau of the Budget, and the General Accounting Office for their efforts on this bill. I support coordination of acquisition and use being in the General Accounting Office. It seems to me that they are better equipped to work out compatible and integrated systems between the legislative and executive branches.

The quicker the better, Mr. Chairman. I would hope that this bill will be approved promptly, and we can start putting this system into effect immediately.

That is all I have to say, Mr. Chairman, except once again to say that I commend you and the committee because I think this bill is a vital step for the effectiveness and the efficiency of the Congress in this day and age.

Mr. BROOKS. Thank you, Mr. Fascell.

Mr. MOORHEAD. I am just sorry that all of the Members of Congress could not hear that eloquent statement of the gentleman from Florida.

Mr. FASCELL. Thank you, now that you suggest it I will run right down to the House floor and make it again.

Mr. BROOKS. We just happen to have a copy here.

Now we will hear from the Honorable Elmer B. Staats, the Comptroller General of the United States.

Following a great and distinguished career in the executive branch in which he served as Deputy Director of the Bureau of the Budget, through several administrations, he brings to the Office of the Comptroller a broad knowledge of all facets of Government operations. We are fortunate to have a man of your capabilities, General, in this crucial spot in the Government.

Before beginning, you may want to introduce those of your staff that are accompanying you.

STATEMENT OF HON. ELMER B. STAATS, COMPTROLLER GENERAL OF THE UNITED STATES; ACCOMPANIED BY ROBERT F. KELLER, GENERAL COUNSEL; AND EDWARD J. MAHONEY, ASSOCIATE DIRECTOR, OFFICE OF POLICY AND SPECIAL STUDIES

Mr. STAATS. Thank you very much, Mr. Chairman. Yes, indeed, I would like to introduce Mr. Robert Keller, to my right, General Counsel of GAO, and well known to the Congress and to this committee.

On my left is Mr. Ed Mahoney. He is Associate Director of our Office of Policy and Special Studies, our principal officer concerned with computer application, and our chief adviser on all work in the computer ADP area.

Mr. Chairman, I have a statement in which for sake of completeness I have included the wording of the bill, which I will not read, but with your permission I will start on page 3 of this statement which comments on the substance of the proposed legislation.

As we understand it, the purpose of the bill is to provide for coordination with the executive branch in the development of one basic compatible data processing and information system to serve both the legislative and executive branches of the Government in providing budgetary and appropriation information. The Bureau of the Budget is in the initial stages of developing such a system.

For a part of that compatible system the bill would have the Comptroller General develop, establish, and maintain data processing and information systems necessary for the effective and efficient fulfillment of the substantive responsibilities of the Congress as determined by the President pro tempore of the Senate and the Speaker of the House. With reference to the other part of that system, the bill would have the Comptroller General cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system for budgetary and fiscal data for use of the Federal Government.

It is understood that you, Mr. Chairman, are of the view that there is a need, separate and apart from the maintenance of an information system to assist the Congress in its review of appropriation requests, for a legislative capability in advanced cost analysis techniques so that the legislative branch can make its own cost evaluations and have the capability to analyze those made by the executive branch.

You have also indicated possible further areas in which the Congress could effectively utilize modern information handling and data processing techniques. For example, the system could be used to provide the congressional committees and individual members and their staffs with immediate information as to the status of legislation. It might also be extended to keep an index of the Congressional Record constantly and immediately available, and for the storage of the entire United States Code, the Statutes at Large, and other similar data.

As you know, there are several specific computer operations already underway which could play an important part in the system to be developed for Congress. One of these is Project LITE (Legal Information Through Electronics). This project for computerized storage and retrieval of legal information is operated by the Air Force Accounting

and Finance Center, Denver, Colo. Included in the LITE data base at the present time are the published Decisions of the Comptroller General, the United States Code, the Armed Services Procurement Regulations, the Defense Contract Audit Manual, unclassified Air Force Regulations, and certain other items of particular interest to the Department of Defense.

We have recently received the first computer generated key word index to the published Decisions of the Comptroller General of the United States from July 1, 1921, to June 30, 1967 (vols. 1 through 46). This was a cooperative effort between the Department of Defense and the General Accounting Office and utilized the GAO Linotron printing process.

Another system which might be utilized is the one being developed by the Library of Congress to provide information on the status of bills. The Library is now using an IBM 360 model 40 computer with 14 remote terminals. In addition to providing current status information, the system provides a biweekly report containing synoptic and identifying information on bills. It also provides a monthly status report on 200 major pieces of legislation with a bibliography on the subject matter of the legislation.

We are in full agreement with the purposes of the bill. It has been generally recognized that the Congress has a growing need for data processing and information systems of its own in order to fulfill its responsibilities.

As we understand the provisions of H.R. 404, the data processing and information systems to be developed for the Congress would not duplicate the system presently being developed by the Bureau of the Budget. The objective would be to develop a supplementary system to serve the particular needs of Congress, yet compatible with the system being developed by the Bureau for budgetary and fiscal data.

With respect to subsection (f)(1) of the bill, which would direct the Comptroller General to develop, establish, and maintain data processign and information systems for the Congress, we have some question as to whether the Comptroller General should be given these responsibilities. It may be that the development, establishment, and maintenance of the system should be the responsibility of the Congress itself in order that it could have complete control over the system and thus be assured that its needs will be fully served. However, if the Congress should decide that this task should be performed by the Comptroller General we will, of course, make every effort to carry out the responsibilities assigned.

It should be understood that the development of the systems contemplated, whether performed by the Comptroller General or by the Congress itself, will require considerable time. Ascertainment of the specific needs of Congress and its committees and the systems necessary to serve those needs will be significant.

Considerable additional funds over and above our present funding levels will be required if the General Accounting Office is to do the job contemplated in the bill.

Subsection (f)(2) of the bill requires the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system including uniform classifications of programs, activities, receipts, costs, and expenditures, as well as

other necessary standards for budgetary and fiscal data for the use of the Federal Government. We construe this subsection to mean that the primary responsibility under the subsection is with the Director of the Budget, but that the Comptroller General will cooperate with the Director in an effort to see that the needs of the Congress are met.

With regard to subsection (f)(3), we wish to call your attention to progress already made toward establishing the capability in the General Accounting Office to conduct and to analyze cost effectiveness studies. A systems analysis group was established in 1967 in our Office of Policy and Special Studies with the responsibility to provide such capability and to provide leadership and policy guidance in developing appropriate levels of this capability among our professional staff.

The Systems Analysis Group has for example, played an important part in our review under title II, section 201(2), of the Economic Opportunity Amendments of 1967 to determine the "extent to which such programs and activities achieve the objectives set forth in the relevant part or title of the Economic Opportunity Act of 1964 authorizing such programs or activities." It developed last year a comprehensive report on the need for improved policies in the discounting of costs and benefits in cost-effectiveness studies and is currently developing a report to Congress on the status and problems in the Planning Programing and Budget System (PPBS). We believe the actions already taken and the experience gained in actual studies have prepared the General Accounting Office to provide an orderly growth of this capability.

We recommend the deletion of subsection (g). We believe that the Comptroller General should retain the discretion and the flexibility to organize the General Accounting Office in such a manner as he considers necessary to carry out the duties which the legislation places upon him. The General Accounting Office would not need new authority to seek funds to carry out the purposes of this bill. Also new authority would not be required for departments and agencies to obtain funds to comply with direct requests made upon them for information in support of appropriations under the Budget and Accounting Act. That is already provided for, Mr. Chairman, in the Budget and Accounting Act. However, there may be sizable necessary recurring requirements to furnish information which the departments and agencies might not need for their own use. That is separate and apart from the appropriations request. Therefore, the committee may wish to include language in the bill which would authorize appropriations for this purpose.

As previously stated, we favor the purposes of this bill and we will make every effort to fulfill such responsibilities as Congress may give us in this area.

Mr. Chairman, this concludes my statement and I will be glad to discuss any of these matters in further detail or answer any questions the subcommittee may have. I would simply like to state what you stated at the outset, that the concept of a system which is designed to be compatible with other information needs of the Government, so as to serve the needs of Congress, and which would not duplicate those already in being or in process of being established, is a highly desirable objective. It is our understanding that it is this approach which you are seeking, and we commend you for your interest in it.

Mr. BROOKS. General, I thank you very much for an excellent statement, and I have a couple of questions that you might elaborate on for us, if you would.

What is your general estimate of the future of data processing in Government?

Mr. STAATS. Mr. Chairman, this is a difficult question to answer. If you look at the inventory of the acquisition and development of ADP in the Government since the Bureau of the Budget first started maintaining such an inventory, I think you see in very graphic form the spectacular growth which has taken place here in the Government. Going back to 1960, when the total ADP cost to the Government was less than $500 million, to a projected 1969 cost of nearly 2 billion illustrates one dimension of the growth of computers in the Federal Government. We have now something over 4,000 computers in use. I believe this will go up another 400 or 500 in 1970. This figure, by the way, excludes those computers which are utilized solely in connection with the weapons systems, but it does include all computers which the Government is financing 100 percent.

I am sure that Mr. Hughes will have additional data on this, since this is primarily BOB's responsibility, but I think it does give you some indication as to the growth of the use of computers in the Federal Government as a whole.

Now, a computer serves, of course, only a part of the Government's interest in improving its capability, both to acquire information and to analyze information. The acquisition portion of it is somewhat easier to grasp than the analytical part because it is in the analytical part that you have so much disagreement as to need for information, how this information can best be obtained, the qualifications with respect to the use for different purposes, and, in effect, the costs and the benefits of obtaining information. In many cases it is not always possible to anticipate far enough in advance a need to be sure that you have got the data in your system to make all of the analyses that you need. But, as you suggested at the outset, even though there are these problems, every large organization in both Government and in private industry is finding it necessary to use the computer both for data collection and data analysis.

I think I should say here that I believe some of the State governments are ahead of the Federal Government in terms of utilizing this technique for legislative purposes.

Pennsylvania, for example, has a well advanced system that is being used in its legislative process.

Mr. BROOKS. Again, in a more specific sense, how do you view the role of the computer in audit operations such as you conduct in the GAO?

Mr. STAATS. As you know, Mr. Chairman, the GAO has three broad interests in computers. One is for internal management of the GAO itself. We have not had an integrated management information system in the GAO, but our work has become more complicated and we are having more and more assignments, and we are trying to improve the scheduling of our work to meet deadlines. In order to improve our capability we have undertaken a program to provide GAO internally with computer capabilities, not only for our ordinary business operations, payroll, and all of this, but to give us better information as to the capability of our people to undertake audit

assignments, and to assist us in scheduling our work. As you know, we have a large number of field offices, and frequently we have to interrupt our scheduling to meet the priority needs of, say, a committee of the Congress. We feel, from the standpoint of more effective internal operation, that the computer can be a highly useful instrument.

The second interest we have is to assist us in our audit work itself. We have now developed ways in which we believe we can use a computer. We have already made arrangements to establish terminals in the GAO, and we have arrangements where we can utilize terminals of the defense agencies out in the field to speed up the computations and calculations which are required, thus saving enormous amounts of time.

We are also interested in the computer from the standpoint of data retrieval, data that is already on the computer. We are experimenting with two or three different approaches. One that has been used to the greatest extent in our office is called the Auditape which has been developed by Haskins & Sells for their own purposes, and which they are now making available to the Government and other concerns at a very nominal cost.

But, there are other means as well, such as one by a firm in New York which has developed a different approach and we are experimenting with that. But, the point is we feel that computers can give us a much greater capability to retrieve data that is already recorded. And the reason that Haskins & Sells, for example, went to this approach was a very simple one. They found that the traditional records they had to use were all disappearing, their information was on the computer, so that this was a matter of necessity.

Mr. BROOKS. It was disappearing?

Mr. STAATS. In the terms of a formal piece of paper like this. Not disappearing in the sense that it didn't exist, but you could no longer go and pull it out of a file, because it was on a tape.

We have a third interest, of course, and a broader interest which is how the Government itself utilizes the computer in its operations. That is the question of lease versus purchase; the question of whether or not there is adequate planning for the design of the system; the question of how the equipment is maintained, and whether it is maintained more economically in-house or by contract. These are all questions of concern because of the fact that we do have this very large investment in computers and we are interested in the economy and effectiveness and efficiency of that equipment.

Mr. BROOKS. You recall this subcommittee has long maintained an interest in this area.

Mr. STAATS. Yes, indeed; I do not need to educate you on this subject.

Mr. BROOKS. Contractor-held equipment still fascinates me. Have the conglomerates got into the contract-held computer equipment? That ought to be the day.

Mr. STAATS. Well, I did not mean to extend this answer too long, Mr. Chairman, but we do have all three of these interests.

The financial management systems of the Government are being placed more and more on computers as an integral part of management information systems, and without the kind of design which the Budget Bureau, for example, is attempting, it would not be possible to accomplish the objective which H.R. 404 seeks. There has to be a close

relationship between the management information systems, including the budgeting system and the accounting systems which are designed by the agency under our principles and standards, and which normally have to be approved as a statutory duty of the GAO. So, we have this interest as well.

Mr. BROOKS. General, what are the ongoing programs at GAO at this time to exploit ADP in carrying out the responsibilities Congress has delegated to you; that is, other than the Auditape activities which you are exploring?

Mr. STAATS. Let me ask Mr. Mahoney to supplement what I have said. I think I have answered this in part in my previous response, but let me ask Mr. Mahoney if he would care to elaborate on that.

Mr. MAHONEY. Well, Mr. Chairman, I believe the Comptroller General's statement adequately covered the basic programs that we have underway. There are a few things, perhaps, that I could add. As you know, over the years we have provided analyses and reports to the Congress through what we call our green cover reports. These reports get at the heart of how the computer is being used, the applications being developed, and these reports are intended to cover the trend of development, and so forth. I think that these reports have proven to be quite useful to the Congress over the years. We still carry out many reviews along that particular line, and further reports will be forthcoming.

We have a great many plans for using the computer in a more sophisticated environment as the Government agencies convert more and more to the realtime environment. As many of you know, this is the way the big logistic systems are going, using realtime and having many terminals and all sorts of data being inputted from various points, with computers and communications so closely interwoven it is not necessary to be right next to the computer any more to perform auditing operations. So, we have some plans to do auditing in what we would consider to be a realtime environment which we plan to implement in the future.

Mr. STAATS. Could I just add one point.

Mr. BROOKS. Yes, General.

Mr. STAATS. We feel that it is important to all of our professional staff to have a working familiarity with how the computer works, what it can do, and what it cannot do. It is becoming more and more one of the tools of the trade, you might say, like the typewriter or any other device, and it is important that any person on our staff have at least some familiarity with it. That does not mean necessarily that everyone of them has to be a leading expert in the country in computers, but we do want to have in our building a number of individuals who will be experts in the use of computers.

Mr. BROOKS. Do you find also, General, that most of the better accounting schools and business-trained young men and women have had some computer experience, some course work and experience, and——

Mr. STAATS. We find it more and more.

Mr. BROOKS. And have used it, actually, in their courses and their study?

Mr. STAATS. That is correct.

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Mr. BROOKS. Which means the auditor of tomorrow is computer trained and utilizes it as a tool?

Mr. STAATS. We have, as I say, a goal that every individual in our professional staff will have some training. If he has had this training before he comes with us, then obviously we do not have to do as much as if he did not have that, but we have something around 60 percent——

Mr. BROOKS. Exposure?

Mr. STAATS. About 60 percent of our professional staff have had some training.

Mr. BROOKS. In the Marine Corps, as of last year, maybe a year, a full year ago, they had given some, maybe just a little, exposure to every general officer in the U.S. Marine Corps. The Commandant, Mr. Chapman, felt that they had to have some understanding of what its capabilities were, and I believe he told me that every general officer in the Marine Corps last year had had something like a 2- or 3-week course on computer use and potential. That was so that they would understand it and would realize that it was fundamental and essential, not only to the normal operations of the Government, but to the development of a good fighting system and maintenance of it.

Mr. STAATS. I think this is very important, not only for the value it provides to them, but also as a symbol of their interest to their subordinate officers.

Mr. BROOKS. Some of these generals are not going to be computer experts; they concede that. General Walt, he is not just a computer man, but he is a good general, and he will be tolerant of those people who are, and understand them better if he has that kind of exposure.

Mr. STAATS. We have arranged to have eventually all of our top people have at least a short course in computer and computer applications. I took it myself.

Mr. BROOKS. Turning to the purpose of this legislation, do you believe that Congress will benefit by this approach?

Mr. STAATS. Well, I think there has been a great deal of testimony already presented on this point. There is no question about it, that the normal needs of the Congressmen and the committees have grown. This, at least, is my observation. I have not been a Member of Congress or have not served directly as a member of the staff of a committee, but judging from all of the testimony that I have seen from members of committees, and of staff, and judging from the numbers of requests that come to our office and to the Legislative Reference Service, I think it can be said without much fear of contradiction that this normal requirement is fantastic, not only to meet the needs of the committee, but also the constituency which the members have to serve. This constituency, as you well know, is growing. I believe it is about 500,000 population on an average now for each Member of Congress, which contrasts, by the way, with the British Member of Parliament, who has less than 55,000, an order of about 10 to 1.

So, this in itself has generated need for information which somehow has to be provided, and if Congress cannot provide it out of its own staff resources, then it ends up in some other part of the Government for a reply.

Mr. BROOKS. General, I would say that your awareness of this is reflected by your background. The GAO developed the 1958 to 1965

ADP reports that were a significant contribution to this Nation and to this committee. They certainly were a big help.

Now, do you see a need, then, for coordination with the Bureau of the Budget in the design of a capable system to support the budget and appropriation cycle as provided in this legislation?

Mr. STAATS. I think the Budget Bureau can respond in a more definitive way to this. We are quite interested in the system which they are working on. At the time it was inaugurated, the Bureau invited a number of us from the GAO to participate in a briefing. We had conversations with them recently, and I believe it is their intent that we have further discussions as the work progresses. I think it is quite obvious, and I think this is basic to the whole Budget and Accounting Act, that the executive branch be the primary source of the data for support of the appropriation requests, support of authorization requests, and in supplying information that the Congress needs in its oversight responsibilities.

So, again, the concept which we both have is to build on the data management capabilities of the executive branch to supply the needs of Congress. Thus, it is important that coordination take place at an early enough point to avoid developing an incompatible system, or invest in unnecessary equipment which could otherwise have been avoided if we had started our planning early enough. I believe your idea is a good one.

I would like to emphasize, though, something here, and that is that the concept of supplying this information is in some ways not as radical as some people might assume that it is in that we already have capability in many of the agencies. Not only am I thinking here about the Bureau of the Budget system, I am thinking about the capabilities of the Department of Defense, the Legislative Reference Service, the Science Information Exchange, which is a highly computerized operation, and the Commerce Department clearinghouse. All of these would be related, as I understand it, under the concept of this bill.

Mr. BROOKS. General, thank you very much. I think that adequately handles that question.

Do you see any difficulty in cooperating in the design of such a system?

Mr. STAATS. Well, I do not believe we are far enough along in our discussion to be completely definitive about it. I see no problem at all in willingness to cooperate on either side. I think I understand the problems of the Budget Bureau pretty well, and I believe they understand the role and the problems that we would face in this undertaking.

There would obviously have to be some adjustments. I do not believe the problem would be so much of cooperation as it might be one of what kind of information of an appropriation request nature could be supplied under the ground rules of the executive branch in terms of forward budgetary requirements and appropriations requests.

Secondly, there may be problems of finding the necessary funding if additional requirements are indicated which the agency feels that they could not justify on the basis of their own internal requirements. Then quite conceivably there would be questions of who is going to pay for it, this sort of thing. But, I do not see any problem of cooperating in the development of the system that the Bureau of the Budget is in the process of attempting to bring to fruition in so far as any indicated responsibility that we would have.

Mr. BROOKS. You understand, General, of course, that as Representatives of Congress we are vitally concerned with all of the information we can get, feeling that the Government is based on a democratic evaluation of facts as they are presented to the Congress, and we are going to want to get them all. We are just basically encouraged about your feeling that there would be no problem in cooperation between the Bureau of the Budget and the GAO. Certainly I am sure that the Executive would be pleased to have as much information as is available turned over to the House Appropriations Committee and the Senate Appropriations Committee, and any other committee that would have a pertinent request, or to individual Members, as it is developed.

Would you assess the technical problems in GAO in implementing this legislation? Do you see any difficult problems?

Mr. STAATS. Well, it is obvious that the effort to supply a management information system presents problems. We have been almost 2 years in the process of trying to develop the one that I mentioned, for our own internal requirements, and all for good and understandable reasons I suppose that if there is a common fault in developing management information systems, it is that the organization will try to go too far too fast without adequate assessment of the needs in relationship to the cost. This is the kind of precaution that practically every expert in the field will give you.

We had in our office yesterday one of the top experts from a management consulting organization. I thought he put it pretty well when he said, "Do not expect to go too far too fast, but at the same time you cannot afford not to start." What he was really suggesting to us is that we define our needs as they become a specific need, and as we can justify the expenditure of the effort, but also have a continuing plan and a process by which to assess those needs so that we do not delay employing our plan when that need becomes clear. I thought it was really quite a good statement.

Mr. BROOKS. Maybe more simply stated, do not buy the kid an automobile when he cannot yet ride his tricycle. I think you have got to learn those things.

Mr. STAATS. You have to learn to crawl before you can walk, and walk before you can run.

Mr. HICKS. Mr. Chairman.

Mr. BROOKS. Mr. Hicks.

Mr. HICKS. Mr. Chairman, for one of the lesser troop here that does not understand the technicalities, could we just have two or three simple illustrations of what this might do to help? I hear all of these general words, that it is going to be excellent and greatly helpful, but just a couple of real simple concrete illustrations would be of help to me. Would there be less testimony that we would be listening to once this thing got into effect, or what?

Mr. BROOKS. I think we would have better questions.

Mr. HICKS. It would be helpful if I could understand it, it would be from this end, anyway.

Mr. BROOKS. Essentially what we hope is that the GAO would be able, in response to a congressional committee or individual, to provide a realistic, workable readout on what is being done in any one area within the Government activities—any area that you were interested in, whether it be education or housing. This readout would

give figures that reflect the actual costs, say from a program budgeting standpoint. These figures would give you an opportunity, and give me an opportunity, to know how much money they are spending on roads, secondary and primary, whether we are doing anything for disturbed children, whether we are doing anything for old people, or what the extent of our efforts are in the various categories. Now, this gives you an opportunity to know what is being done and base a judgment on what should be done.

Mr. HICKS. Like the statement made a moment ago that now we go to some other department of the Government to try to find out this sort of thing, and under this system you are talking about you would go to the system, whatever that is, to find it out, instead of going to this specific agency or department? Now you are asking your questions to some other department?

Mr. BROOKS. That is right. The basic system would be between the agencies and the Bureau of the Budget and you would draw from that. This is an ultimate operation, they are not going to get this done for a couple of years, and they are going to have a lot of fighting every inch of the way. Sometimes Government agencies do not want anybody to know what they are doing. They want it as involved and as complicated as they can make it, or so it seems. The object in many agencies is to keep Congressmen and the world from knowing just what they do, how they spend their appropriations, and what their results, basic results, are, other than keeping them all on the payroll.

Mr. HICKS. Didn't you just a minute ago say that there were not going to be any problems, and that they wanted Congress to know all of these things?

Mr. BROOKS. No, my confidence is that they will do this sooner or later, or you cannot run the Government. You have got to come to it.

Mr. HICKS. Thank you, Mr. Chairman.

Mr. BROOKS. They are going to come kicking and screaming, some of them.

Mr. STAATS. I think if I could just supplement that a little bit, Mr. Chairman, and maybe I could make some of my statements a bit more concrete. I know that Mr. Hughes can elaborate on this more than I can. For example, more crosscutting information is needed on programs which are being administered by more than one agency where we have either similar or very closely related programs with similar objectives which are carried on in maybe half a dozen individual agencies. We have not been able up to now to supply currently a detailed estimate of what is involved in terms of prior expenditures, or what is in the current budget year with respect to that kind of information.

Mr. HICKS. Or even what the program is, according to Congressman Roth, I understand.

Mr. STAATS. We hope that more of this kind of information could be made available to the committees of Congress considering budget requests for one individual agency, to know really what the total is. The budget can provide us with some detail on this now, but it cannot go beyond what is called an activity breakdown in the budget. The hope has been to define this system in such a way that you could get a quick readout on what the total costs and what the total obligations are with respect to some common activities. This is just one illustration.

Mr. HICKS. Thank you very much, sir.

Mr. BROOKS. Fine. You agree then that despite the difficulties and the problems of implementing, that the effort of bringing computers to congressional use would fully justify that effort in expenditure?

Mr. STAATS. I think you stated it quite well, Mr. Chairman, a while ago when you indicated that our role in this would be, as I understand it, to try to bring together what would be the capabilities as against the need. We would not determine that need. I do not think this is your intent. I think this would have to be a determination of the committees of the Congress or whatever arrangement the Congress might establish for this purpose. The bill contemplates that this would be done through our working with each committee to try to assess their interests and their needs and our own part would be to try to say how this could be done and what it would cost. I think you get down again to the question of how do you ascertain these needs, how far do you go, how fast can you go, and at what price. I think this is what it comes down to.

Mr. BROOKS. And you would talk with the committees and see what their needs were, try to evaluate them and see what kind of flow could be developed that would meet those needs.

Mr. STAATS. I think that states it very well.

Mr. BROOKS. General, I have just a couple of more questions. Once the computer requirements of the Congress are established in general, what do you consider to be the systems design problems?

Mr. STAATS. I would like to turn to my expert here on that. I am not trying to avoid it, but I think he can really answer the question quite well.

Mr. MAHONEY. Well, I think, Mr. Chairman, this is one of the most difficult problems which one confronts, whether in Government or industry, whether in State government or Federal—the actual design to fit the need. Now, we have many kinds of computer systems. We have computer systems where you can browse and you can do information retrieval-type things, and we have batch-type systems for processing masses of data where you do not need every second or two to have impact or direct interface with the system. So, in thinking about this I had the feeling, that first of all we would have to develop a conceptual framework to see basically how we would go about solving these particular problems, and then based on the objectives that the committees of the Congress establish, we could look at these objectives in relation to applying the various system design techniques.

Now, there are many ways to do this. You can use advanced modeling techniques, and simulation techniques. There is a necessity to perform these operations to assist in the actual design of the system. Then once the basic information as to system design requirements is established, testing can be accomplished without really performing actual programing operations until system design concepts are firmly established. Once we get past that kind of a milestone, then we can move right into the question of tradeoffs, the question of costs versus benefits. What the benefits would be to the Congress, what timesaving features would be involved, and so on. This basically, I think, is the approach that would have to be taken, regardless of who attempted to do this particular job.

Mr. BROOKS. General, to what extent do you believe this system could be supported operationally by legislative employees other than those in the GAO, that is, some of our people here?

Mr. STAATS. Well, I think that certainly the Legislative Reference Service plays a part in this. This is well known, and my impression is that they have made very commendable progress in providing information on the status of bills. The staff in the Legislative Reference Service obviously would be one resource that would be involved. And there might be as well, I think, the staff of the committees that would be concerned with the assessment of the need for information. Now, this seems to me to be a very natural starting point as far as any role that we would have under this legislation.

Mr. BROOKS. Now, General. what about building up a large computer complex on the Hill? Do you envision such a possibility?

Mr. STAATS. I would not. I would not foresee this, myself, as a real need, if we understand the objectives. I think the point that I made earlier, which I would reiterate, would be that we ought to develop and build on the capabilities we already have anywhere in the Government so that it is a matter, as you say, of making that system compatible either by modification or by running additional analyses to supply these needs.

Mr. BROOKS. And you recommend, General, that we delete subsection (f)(3) relating to the availability of employees qualified to conduct cost-effective studies. What are your present thoughts on this? As I understood it, you did not think it was required.

Mr. STAATS. Well, no, not particularly with respect to that provision on cost-effectiveness studies. This provision, I think, is identical or very similar to the one that was in the Legislative Reorganization Act of last year. We do not technically need that provision of it to carry on this activity. Any expression of interest, either in this form or otherwise, to the extent that it indicates an interest of Congress in our doing work in this field, is obviously of interest to us.

Just to take an illustration, last year the Senate Labor and Welfare Committee expressed an interest in our doing more cost-effectiveness-type reviews in manpower training. We feel this is an area in which we can be very helpful. We want to build our capability in this area, generally, and we will do so, irrespective of whether this provision is enacted. We have adequate legislative authority to do this at the present time. I think it certainly would not create any problems for us if the Congress——

Mr. BROOKS. General, I think that is excellent. I am glad we put the section in, just to get that kind of a delineation and your keen awareness that the authority you now have requires you to exercise this capability and have computers throughout the GAO, and that it is not going to be a five-man job or a 10-man job, but you are hoping, as I understand it, that all of your people will be able to utilize this kind of equipment and cooperate in its implementation and expansion. That is a good deal.

Now, you also suggest subsection (g), establishing a new division to carry out these functions, be deleted. This, I assume, is on the same basis that you are trying to use all of your people in this capability and upgrade them all?

Mr. STAATS. That is right. It is for the very reason you just indicated. We feel that we ought to have the maximum flexibility on how we would organize and carry out the responsibilities, not only in this, but in other areas as well.

Mr. BROOKS. Do you have a question?

Mr. MOORHEAD. General, when did the GAO first acquire computer hardware? When did you first get into the computer business?

Mr. STAATS. Well, we would have to differentiate here. We do not at this time have any computers directly. We are considering this just currently, as a matter of fact. We have leased the terminals which I mentioned to you a while ago and have two different arrangements on that, and we have made the arrangements for the terminal use for these people. But, this has to be distinguished from the interest of the GAO and how computers are used in Government as a whole.

Mr. MOORHEAD. Oh, I realize that.

Mr. STAATS. This goes back a long ways, at least to 1960.

Mr. MAHONEY. If I could just supplement a little bit on this, Mr. Moorhead, this is going back really to the early 1950's. The General Accounting Office had some major, fairly routine type operations that we wanted to convert to computer type operations. We also thought it best to divest ourselves of some of those operations by helping the agencies to design systems and to acquire the capability of placing those types of operations in the agencies. So we have actually over the years been involved in computer system design and implementing these systems and training programers and all these sorts of things, but we never had actually acquired specific hardware for our own use. We have always used other people's hardware throughout.

Mr. MOORHEAD. I want to encourage you to get your own hardware. I believe very strongly that the Congress, and the GAO, should have computer capability under its direct control, rather than to be borrowing.

Mr. STAATS. We are finding it very difficult to rely on other agencies. Their work comes first, and our work necessarily has to come second. We are finding our people having to work Saturday nights and Sunday mornings to do this. Also, we are going to be using the computer more and more and, therefore, we think that the investment is necessary. Our problem is not whether we should acquire it, but what particular type of equipment.

Mr. MOORHEAD. I think it is terrible that the Congress votes money for these agencies to have computers, and then the Congress itself, and its agent, the GAO, has to go hat-in-hand to borrow a little bit of time on Saturday night to answer our questions. This is terrible. Three years ago I tried to find out what computer capabilities we had on Capitol Hill, and they consisted of one computer in the Library of Congress which handled the payroll of the employees of the Library of Congress, and that was all.

I think the chairman has done a magnificent job of arousing not only the support of Congress, but of the people in giving us a computer capability, without which we cannot discharge our constitutional functions in this modern day. Fortunately, I think we have finally managed to stir up a little bit of interest in the Congress, and I think we should continue to do this.

As you no doubt are aware, General, the Secretary of the Senate now has a computer to help the Senators with their constituent work, which is an important function of the Members of Congress on either side of the Capitol, and I think he should be encouraged to carry on with it, and I assume, from your testimony, you would agree with that.

Mr. STAATS. Oh, yes.

Mr. MOORHEAD. And the Clerk of the House is now doing some of the housekeeping chores of the House of Representatives on a computer, and he has been conducting a demonstration of legislative retrieval work. I think he should be encouraged to go on with this. The Democratic caucus adopted a resolution encouraging the House Administration Committee to look into this matter, and I think this action should be encouraged. The House Administration Committee has been having hearings about computer capability for the House of Representatives.

Also, the Appropriations Committee staff is looking into computer capabilities for the Congress. I believe all of these activities should be encouraged. I know they sent some staff members up to my State of Pennsylvania to look into the way the Pennsylvania Legislature has been computerizing the legislative process.

Mr. STAATS. I referred to that.

Mr. MOORHEAD. Yes. It is embarrassing to me to think that about 10 States are ahead of the Congress of the United States in computer services. The Joint Committee on Reorganization, on which our chairman served, recommended computer utilization by the Congress, and I think this should also be encouraged.

I do not know if you know it, but the Banking and Currency Committee is putting the legislative calendar on computers, through a terminal tied into the Library of Congress' computer and I think this is a good thing. The Legislative Reference Service, as you have stated, is working on computer assistance to the Congress. I think there should be an information retrieval system in the Library of Congress. We should have that there. That is the greatest store of information in the world, and it is so large that it is almost useless because you cannot retrieve the information quickly.

I would suspect the the Government Printing Office would be interested in this field because I think a lot of the work that they print can be kept more effectively and more efficiently on computer printout rather than the old style printing of calendars, and now the General Accounting Office is expressing its interest in assisting the Congress, particularly with the budget. I certainly support the theory of this legislation which would be for the General Accounting Office to be able to retrieve budgetary information quickly and effectively for the Congress.

So, I think we are moving ahead very well, though unfortunately in a somewhat scattered arrangement. I think, if I had my preference, I would say that GAO should be part of this operation which should, in my judgment, be coordinated by a special joint committee of the Congress, rather than have the GAO do the coordinating for us. But, the important thing is that the Congress have computer capability.

General, I believe you can answer my question yes or no. I was very much interested in your testimony about your systems analysis

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capability now, and your cost effectiveness studies. Will you not need to have computer capability to do that work as effectively as you would like to?

Mr. STAATS. Yes. In our study of the OEO programs we had to go outside and purchase time to make analyses in connection with that study. Yes; I think the answer is clearly that we are going to need more and more computer capability as we do more and more work in the cost effectiveness area. It is just inevitable that that will be the case.

Mr. MOORHEAD. General, you have done the cost effectiveness on programs like the Economic Opportunity Act. Do you have the capability to do a cost effectiveness study on the military, on one of our weapons systems; for instance, this system versus that system, or can you check upon the cost effectiveness done by the Department of Defense?

Mr. STAATS. I think it is primarily the latter, Congressman Moorhead. We feel that we do have the capability to analyze cost effective studies made of weapons systems by the Department of Defense or similar systems by any other agency, whether it be FAA or any other agency.

Mr. MOORHEAD. You mentioned defense systems——

Mr. STAATS. We do not think it is necessary that we do this ab initio in the sense of redoing all of the work that has been done, but we must have sufficient familiarity with the techniques and with the pitfalls involved in making such studies so as to raise the proper questions and make the kind of analyses we think would be most useful for the committees of the Congress, as they act on authorizations and appropriations.

Mr. MOORHEAD. Well, I think this is extremely important today, and particularly following the retirement of Robert McNamara of the Defense Department. One can come up to the Congress and say, "We have analyzed this weapons system and its cost effectiveness, and it is the best way of doing the job," and we have no way of really checking this out. But you will now be developing a system that, should the Congress ask, not if you do it ab initio, but if the House Government Operations Committee should ask you to do a cost-effectiveness study of the anti-ballistic-missile system you could check it, check the computations or the study of the Defense Department?

Mr. STAATS. Within the limits of the capabilities of our staff, and here I think the limit is not our interest or our charter, but rather the capability of the individuals involved, and we are making a heavy investment in training for our people, for this very purpose. There will always have to be the question as to the extent of our capability, but I would have no reservations with respect to the interest or responsibility to the extent, as you indicate, that the Congress expresses interest in our doing so.

Mr. MOORHEAD. Well, the Congress gets puzzled when Mr. McNamara's computer says that a manned bomber is no longer effective, and Secretary Laird seems to say it is, and we are in the dark. We need somebody with the capability to be responsive to questions of Congress and say "In our opinion the question and the judgment factor is this" or is that, and I think we should encourage the General Accounting Office to increase its systems analysis computer capability.

Mr. BROOKS. I think they will, but, of course, to be realistic, it is going to take them several years to get the design worked out, to get the needs identified, to design a system that would meet the needs and then implement the system. It is a longtime project and the thrust of it is a good ways off. We have just got to start now. We are behind and it will be some years before they get it done. Furthermore, the basic systems will always need updating and improving as ADP capability increases and we learn better methods of systems design. I am just trying to encourage them to try and get it done yesterday when I know very well you will not have it done for a good while.

Mr. MOORHEAD. General, you asked for authorization for appropriations in this bill on page 8 of your testimony. Do you have a figure in mind?

Mr. STAATS. No. I will make this point very clear; we do not need an authorization for the GAO, and for supplying of information to appropriations requests by the agencies, they do not need it for that either.

What we are referring to here was the possibility that there would be data needed from the executive branch agencies, by the Congress which would not relate specifically to an appropriation request and, therefore, the question would be as to the legality of funding for that function. We suggested there should be included in the bill the usual language to authorize appropriations for that purpose.

Mr. MOORHEAD. On page 4 of your testimony you mentioned the storage of the entire United States Code on computers. Are you aware that the statutes of the 50 States have been placed on computers by an outfit called the Aspen Corp.? I just mention this to you because you might want to call on this existing capability, rather than having to do all the extra work.

Mr. STAATS. That would be very important in connection with this.

Mr. KELLER. I knew that they were working on it, but I was not aware that they had completed the job.

Mr. MOORHEAD. They have completed it.

Mr. KELLER. Perhaps we could buy their tapes and put them into a system for Congress. I do not know.

Mr. MOORHEAD. I do not know how you could relate to it, but you would not have to do the manual work of putting them all on tape originally.

Mr. BROOKS. Mr. Reid.

Mr. REID. Thank you, Mr. Chairman.

General Staats, it is very nice to have you here this morning, and I appreciate very much the thoughtful and precise character of your testimony. I have just a few questions.

First, I would assume that in the design of the systems or the kinds of information that you would seek to retrieve in the first instance you are concerned with existing programs and the coordination of facts relative thereto.

A second area, it seems to me, is whether we can get current and up-to-date information to see whether certain assumptions are being borne out. This would be items such as: Is the budget proceeding the way it was designed to? Have the economic indicators that have been put into the budgetary process proved to be correct? Would that be

an initial area where you think you could provide some guidance?

Mr. STAATS. I would prefer to have Mr. Hughes answer that question because this relates to the design of the system which they are now working on.

Mr. REID. Well, I assume you can design most any system today, but I was asking you from your concept how you visualize that. In other words, what we do not know over here at the Congress a great, great deal of the time is whether the assumptions are being borne out on any number of programs with current experience. By the time we get the data it is frequently relatively late; or, putting it another way, you cannot correct things as promptly as you would like.

Mr. STAATS. There has been a good deal of discussion and there was last year in connection with the Legislative Reorganization Act about current updating of estimates on receipts and expenditures so that the Congress would have this information prior to the time it acts on a particular appropriation bill, rather than having this come up at a later point in time. The action of Congress might have been different if they had had this information in advance.

I would say, from my standpoint, that the objective is clearly to do what you are talking about. The only reservation I was making was the feasibility of doing this, on how current a basis, and that is really the—

Mr. REID. I assume when you are talking about these several committees, that is something that you would have to study, but I think it would be welcomed both in the executive and in the Congress to get information as currently as possible.

I have before me here a letter to Chairman Dawson, from a Mr. Wilfred H. Rommel, Assistant Director for Legislative Reference, the Bureau of the Budget. He states in here that section 312(f)(2) of the instant bill would require the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system for budgetary and fiscal data for use of the Federal Government. We have customarily received the full cooperation of the Comptroller General in respect of our work on such matters and we would expect such cooperation to continue without the necessity for enactment of such a provision.

Now, I wonder whether you would care to comment on that?

Mr. STAATS. Well, I think we would have to certainly confirm that the relationship we have had has been excellent, and the cooperation has been very good. I think the issue is more one of an expression by the Congress itself of the importance of this.

Mr. REID. Another question he raises:

> We understand the bills are intended to relate basically to activities of the legislative branch, and that they are not intended to impose new rules or procedures upon the executive branch.

I would question that a bit because I think the executive does not always provide information in a timely fashion to the Congress, and certainly the currency of the information, if not the substance, can be improved.

Mr. BROOKS. Pardon me, would the gentleman yield?

Mr. REID. Yes.

Mr. BROOKS. We are going to include in the record in consideration of the testimony of Mr. Hughes, their efforts to do just what you are

talking about. They have the McKinsey report and we have the synopsis of that, and it is an effort by the best people they could get, in their judgment, to try to make such a report readily available both to the executive, and optimistically, I say, to the Congress.

Mr. REID. To put it another way, I think one of the roles of the Comptroller General, that he could play that would be particularly helpful is to help start to develop for the Congress better research of the quality that is germane to agreed purposes so that we are not only current, but more accurately informed as to what is happening in any particular area.

This obviously would include some concept of evaluation. I have noted recently that in a number of programs it is very difficult to find out just what the performance has been, and I would hope that some systems analysis could help without your necessarily having to get into judgmental factors, whether Program ABC is going good or bad, although that might be a proper request of the Congress.

Mr. STAATS. That is the reason I answered Congressman Moorhead the way I did. To put it this way, if the question is whether a program that is before a committee of the Congress for authorization has really proven to be a good program or one approach is better than another, I believe that our proper role is to come into that at the request of the committee or the request of the Congress as a whole. Otherwise, we would be injecting ourselves into a stream or a process of authorization in a way which might or might not be of interest to the Congress.

Mr. REID. Well, I think we totally agree on that, but it is a question of areas where the specifics are relatively clear, or where it is new, where the parameters are agreed to, so that we can get the timely information to check for a legitimate legislative purpose, or improve on it, or find out we need more or less funding, as the case might be. But I think that basically what happens on the Hill is that the Executive comes up with information in support of a particular program, and sometimes it is not disinterested in its presentation, and when it comes to statistical information of one kind or another it is hard for the Congress to make a judgment. Certainly it is hard fiscally, without more current information, but I think anything that would speed up the process and identify the kind of facts that could be made available, and properly so, would be extremely helpful.

So, I certainly welcome your interest and support in this general area, and I think that you can develop some system that will be of great benefit both to the executive and to the legislative, and it would serve a clear national purpose.

Mr. STAATS. Well, we certainly welcome the interest of the members of all of the committees of the Congress in this area, because it is clearly an objective that we have, and I hope we can move in this area and that we will realize it. We will not be producing 100 percent in the first week, of course.

Mr. BROOKS. Mr. Buchanan?

Mr. BUCHANAN. Thank you, Mr. Chairman.

Let me precede my question with a statement of appreciation to you, Mr. Chairman, for introducing this legislation. As one of the many sponsors of the Legislative Reorganization Act which has some related provisions in title II, I am glad you proceeded in this needed area.

General Staats, on page 6 of your statement, you raised a question as to whether or not the Comptroller General should be given the responsibility to develop, establish, and maintain data processing information systems for the Congress.

You have mentioned the work and responsibility of the Legislative Reference Service in this area. Would you recommend some amendment to point up the responsibility of the LRS to provide for the intermingling of these two systems, particularly in areas outside of the fiscal area, which are clearly your problems?

Mr. STAATS. What I was really trying to emphasize and underscore here is perhaps the difference between our ascertaining the need and the interest of the committees of Congress as against determining those needs.

Now, this is more than a semantics point as far as we are concerned. I think the chairman has pretty well stated, and satisfactorily from my point of view, the concept here; namely, that our role would be "broker role" in the sense of trying to meet the capability with needs, and so my reservation goes more to the question of how far would the Congress look to us to supply this kind of information on demand, because it just does not lend itself to that. We also do not feel as a part of the Legislative Branch that we ought to be telling the committees what information they ought to have to perform their legislative functions.

So, this is what I think states my position on that.

Mr. BUCHANAN. Now, let me ask you the policy of the GAO in supplying information to individual members, your present policy?

Mr. STAATS. Yes. Our present policy is to supply that information to the extent of our capability to do so, and we respond to inquiries, particularly those that relate to problems in a congressional district from either party, without regard to the individual's party affiliation.

We serve both parties of the Congress, and we do not provide any priority to one individual as against another. If an individual's request involves a major undertaking on our part we have usually been able to get the appropriate committee to formulate a request, in cooperation with us, so as to reflect the interest of a committee as a whole, rather than say one or two members. But on a matter which might relate to your congressional district, but which did not relate specifically to matters before a committee as a whole, we would make every effort to respond to it.

Now, there are times when we have to beg off as to timing because we may have our staff all tied up on other priority work. But generally we have been able to accommodate these requests. But we are not looking for more business.

Mr. BUCHANAN. Well, Mr. Chairman, you had mentioned our obtaining information, but the resolution itself puts it in terms of committee, whereas the Legislative Reorganization Act does specifically mention individual members, and I was interested both in what you had in mind and also your appraisal of what this might mean if this function were to include some such services directed to individual members.

Mr. BROOKS. Now, as a general rule, when the GAO makes a report to a committee on a given matter, that committee, all of that committee staff, has it available, and they generally would make the same information available to a direct inquiry. It is available to any

Member of Congress, Republican, Democratic, old, or new. GAO is a source of information and they are perfectly willing, within the limits of their capability, to extend that same service to everybody, but you cannot design a system that would meet the individual requirements of each Member of the Congress at this point.

Later it can be adapted, where they can extract most of the information that you might want, but it would have to be based, I think, primarily on a committee breakdown of the areas of concern, whether it is housing, or banking, as examples. The individual Member would probably be able to get it without any problem. In many instances they could run it off and give you the same sheet they run off for the committee.

Mr. BUCHANAN. Would this then be within your capability and not impose an undue burden on the GAO?

Mr. STAATS. As we indicated in our statement, we would have to have more staff than we now have in this area, and we do not assume that it could be done without some additional staff on our part.

Mr. BUCHANAN. Thank you.

Thank you, Mr. Chairman.

Mr. BROOKS. Thank you very much.

General, we are grateful for your interest and your contributions, and your awareness of the necessity for this type of information for the Congress, and the need for this step forward for our Government. We appreciate your bringing down your able counsel, Bob Keller, and Ed Mahoney, who has worked long and diligently in improving the capabilities of this Government.

Our next witness is the Honorable Phillip S. (Sam) Hughes, Deputy Director of the Bureau of the Budget, and he is one of the truly outstanding career officials in the Federal Government. He has extensive knowledge and experience in the complex areas of budget and finance legislation, and other vital fields important to the efficient and effective operation of the Federal Government.

Before you give us your statement, Mr. Hughes, would you be so kind as to introduce those of your staff that have accompanied you here this morning?

STATEMENT OF HON. PHILLIP S. HUGHES, DEPUTY DIRECTOR, BUREAU OF THE BUDGET; ACCOMPANIED BY WALTER W. HAASE, DIRECTOR, MANAGEMENT INFORMATION SYSTEMS STAFF; AND JOSEPH F. CUNNINGHAM, DEPUTY DIRECTOR, GENERAL GOVERNMENT MANAGEMENT DIVISION

Mr. HUGHES. I surely will, Mr. Chairman, and thank you for the kind introduction.

On my right is Joe Cunningham, known to you, and I believe to the committee. He is Deputy Director of our General Government Management Division, and the man in the Bureau of the Budget primarily concerned with the management of computers and automatic data processing equipment.

On my left is Mr. Walter Haase, who is in charge of our Management Information Systems effort, a systems expert on how you put together, not just the equipment, but the manually processed data

and the whole complex arrangement to be made and is in the process of being made, both for preparation of the budget and to evolve toward a Government-wide management information system.

Mr. BROOKS. Delighted to have both of you here.

Mr. HUGHES. Mr. Chairman and members of the subcommittee. I appreciate this opportunity to discuss with you H.R. 404, a bill to amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems, and for other purposes.

The Bureau of the Budget shares the committee's concern over the need to make more effective use of automatic data processing and information handling techniques to help cope with the constantly increasing volume and complexity of information pertaining to both the executive and legislative processes.

Certainly we agree that modern information systems and computers play a vital role in insuring effective handling and analysis of information, not only within the respective branches of Government, but in the continuous communication and dialog which takes place between them at all levels. Actions which the Bureau has taken in carrying out its responsibilities under Public Law 89–306 demonstrate our purpose to assure that the variables of the technology will not prevent our ability to interchange and intercommunicate data among the various levels of the executive branch. We do not have all of the answers to this information problem, but we have taken a number of significant steps, and are planning to take additional steps, to deal with it. Likewise, as the committee knows, much progress has been achieved within individual agencies in tailoring their information systems and their use of data processing and information science techniques to the management and operational characteristics of their particular programs or agencies. In this respect the Government's situation is very similar to that in industry where much has been done by individual corporations to their own information systems to improve responses to their markets, but progress on either a specific industry-wide basis (i.e., railroad, air transportation, etc.) or interindustry basis has been limited.

The problem is a chronic and complex one and is not susceptible to quick solutions or panaceas, in our judgment. Our own assessment is that substantially upgrading of agency and Government-wide information systems and information management practices will require several years of intensive work by both the Bureau and the agencies.

This estimate reflects consideration of wide divergence in agency needs, goals, and technological capabilities, and from the inherent difficulty of correlating data elements and codes across agency lines for the purpose of developing standard, Government-wide systems.

This does not mean that significant results have not already been achieved or cannot continue to be achieved in the interim period, on an incremental basis; rather it means that the ultimate goal of developing fully comprehensive, integrated reliable management information systems to support legislative and executive processes and decisionmaking cannot be achieved, realistically, much before the middle 1970's. Furthermore, we feel it would be a mistake to embark now upon any "grand design" because experience thus far clearly points to an evolutionary—learn-by-doing—approach as the more prudent course of action, given the substantial complexities involved.

Accordingly, we are moving ahead concurrently on both long- and short-range fronts. I would like to take this opportunity to briefly identify for subcommittee the most significant efforts already underway and planned by the Bureau of the Budget. All of these efforts are aimed, broadly speaking, at improving the usefulness of Federal program and budget information, information systems, and information management concepts.

First, efforts to unify the Federal budget. Former President Johnson's Commission on Budget Concepts placed great emphasis on the need for unifying budgetary and fiscal information by using commonly defined and understood concepts and terms that would replace competing concepts and definitions that in the past have been confusing both to the public and the Congress. As you know, that report was published in October 1967. The Bureau immediately undertook to implement 10 of its key recommendations, including a unified budget statement presentation to the Congress, bringing the form of the budget closer to serving also as a broad financial plan, making a loan and expenditure distinction, and others.

Other recommendations, such as the reporting of budget expenditures and receipts on an accrual basis instead of a cash basis, are more difficult and change cannot be effected immediately. Nevertheless, President Nixon has given personal impetus to concerted action now being taken by the Bureau and agencies to move forward on the remaining recommendations. The work of both the Congress and the executive branch will be greatly facilitated by the adoption of budget concepts in which all the different major purposes of the budget come into focus in a comprehensive, unified framework.

Mr. BROOKS. Mr. Hughes, that may be one of the areas in which President Nixon and I agree, and maybe one of the few, but I am delighted to see that he has encouraged you to continue on this particular effort, because it is a major breakthrough for the Government, whatever party is in power. He, as President, has much to gain by it.

Mr. HUGHES. He has indeed, Mr. Chairman, and I am sure that is the basis for his particular interest.

Second, efforts to improve the usefulness of Federal budgetary information. For some time the Bureau has been concerned about the growing size and complexity of the task of examining and evaluating both agency budgets and the Federal budget as a whole and the need for more comprehensive and detailed information for these purposes. In a survey completed last year, we identified some 22 different classification schemes used in the formulation and execution of the Federal budget. These schemes vary from presentational and explanatory purposes to resource allocation and decisionmaking purposes. Authority for their use stems directly, in many cases, from specific legislation such as the Budget and Accounting Act of 1921, the Government Corporation Control Act of 1945, and the Budget and Accounting Procedures Act of 1950. In other cases they stem from more recent endeavors such as recommendations made by the Budget Concepts Commission.

While all of these categories of information serve a useful purpose, one result of their separate development has been unnecessary overlap and duplication. Certainly some overlap and redundancy is both inevitable and even desirable, since not all classifications can or should be constructed on a mutually exclusive basis. But substantial room for streamlining and simplification is apparent.

Beyond the problem of multiple classifications, the tabulation of the detailed data needed to prepare the 200-odd summary and special tables that go into the budget and its related documents has been primarily a manual job over the years. As the Federal Government and therefore the Federal budget has become larger and more complex, the Bureau has begun to develop an integrated, computerized budget preparation system. When completed, this system will allow us to quickly revise and update our initial agency budget figures that flow into the Bureau between September and December—during the period of budget preparation. Progress last year enabled us to generate directly from the computer over 40 tables in the printed budget documents and to automatically reconcile actual year data reported by agencies to the Treasury with corresponding data reported to the Bureau in budget submissions through use of automation techniques. We plan to make further substantial improvements and refinements in computer support to the budget preparation process as further experience is gained.

We also are exploring the development of a year-round "rolling budget" system to support Bureau decisionmaking needs. This gets, I think, to Mr. Reid's inquiry.

This system would combine: (1) Recording congressional action on appropriation bills for the President's budget year request under consideration by the Congress; (2) apportionment control on spending for the current year and comparison of actual with planned financial performance; (3) planning for the upcoming budget year, beginning with the agency and crosscutting program reviews we hold in the spring; and finally (4) providing for checking the consistency of budget authority, receipts, and outlays between successive budgets.

Third, efforts to improve the meaningfulness and consistency of Federal program information to support the budget process. The Budget Concepts Commission recognized a crucial prerequisite to the continued evolution of program budgeting when it recommended that:

> Flowing from the definition of a budget as a basic part of a comprehensive financial plan, the budget should include all programs of the Federal Government and its agencies.

When the Bureau examines agency budgets on a Government-wide basis in order to recommend a balanced overall Federal program to the President, it must conduct certain of its reviews horizontally, across agency lines in order to evaluate the relative effectiveness of similar programs with similar objectives; in vertical functional terms to assess the relative efficiency and effectiveness of individual agency programs one to another; and in broad dollar terms finally to make the necessary fiscal and financing decisions. Since the basic information building block for review and decisionmaking may be different in each of these three areas, decisions made in the context of one type of review may be difficult to translate into those of another.

Our major longer range effort to deal with this problem is a study we initiated last September, using an outside management consultant firm to help us identify ways to strengthen the planning, programing, and budgeting processes in the Bureau and in the executive branch as a whole. The key objectives of this study are: (1) to identify ways of more effectively integrating established appropriation budgeting processes with budgeting and analytical processes based on other systems;

(2) to recommend an integrated classification scheme—which, incidentally, is fundamental to the whole effort, and (3) to conceptualize an underlying information system that would be flexible enough and comprehensive enough to support such an improved integrated process. We view this study as a major step in the evolution of program budgeting. The study is now at the three-quarter mark of its first phase. Specific recommendations are being reviewed by the Bureau, departments, and major independent agencies.

In addition to the longer range consultant study, however, we are pursuing a number of shorter range efforts, some of which are already operational:

Issuance, in March 1969, of the latest updated *Catalog of Federal Domestic Assistance* pursuant to BOB Circular A–89. This catalog explains the nature and purposes of Federal domestic assistance programs, specifies major eligibility requirements, tells catalog users and potential beneficiaries of Federal aid where to apply, and lists printed materials available. The catalog contains information on 581 domestic assistance programs administered by 47 departments and agencies.

It superseded the *Catalog of Federal Assistance Programs*, dated June 1, 1967, published by the Office of Economic Opportunity and similar documents of a more limited scope previously published by various executive departments and agencies.

We are currently exploring the feasibility of automating some of this data to make it more readily accessible and to facilitate substantive analysis for the purpose of producing special-purpose catalogs such as a compilation of Federal programs that may assist minority entrepreneurs.

Issuance in January 1969 of two related publications—"Federal Outlays in States" and "Federal Outlays in Cities"—pursuant to BOB Circular A–89. These complementary documents provide Federal outlay data for more than 980 programs, activity or appropriation items summarized by agency, program and appropriation for States broken out by counties and for cities with a population of 25,000 or more.

The purpose of this report is to provide a guide to the general nature and order of magnitude of the Federal impact on the States and U.S. territories as well as 700 of the Nation's largest cities.

Substantial effort is being devoted to improving the accuracy and reliability of the basic source data reported by agencies.

The information is on a computer and is processed by the so-called Federal information exchange system which is operated by the Office of Economic Opportunity pursuant to title VI of the Economic Opportunity Act of 1964.

This legislation authorizes the Director of OEO to collect, analyze, correlate, and distribute information concerning Federal social and economic programs.

Fourth, efforts to improve the coordination and management of executive branch information systems and establishment of an intergovernmental information interchange. We have recently taken a number of important steps in this area:

Issuance in September 1968 of BOB Circular A–90, "Cooperating with State and local governments to coordinate and improve information systems."

This circular furnishes guidance to Federal agencies for cooperating with and assisting State and local governments in the coordinated development and operation of information systems.

A major thrust of the circular is to establish an orderly mechanism for the consideration by Federal agencies of requests for financial assistance to State and local governments to develop and operate information systems.

Undertaking a comprehensive inventory of executive branch information systems to service users at all governmental levels.

The Bureau views the undertaking of an inventory of executive branch information systems as an essential prerequisite to the creation of a Federal information systems exchange program, and it views the latter as a logical building block leading to the eventual establishment of an intergovernmental information systems clearinghouse. Such a clearinghouse was recommended in the report by the Intergovernmental Task Force on Information Systems in April 1968.

Development of additional Bureau of the Budget guidance aimed squarely at the problem of improving the coordination and management of executive branch information managment practices.

While the precise form of this guidance has not yet been determined, we anticipate issuance sometime this summer.

We are, of course, coordinating our efforts in this area closely with the newly established Office of Intergovernmental Relations in the Vice President's Office.

Improvement in the use of computers and automated techniques in the development and maintenance of data processing and information systems.

From the time computers first came upon the scene, the Federal Government has aggressively sought ways in which this new technology could be used to improve governmental operations.

The first computer produced commercially was acquired by the Bureau of the Census in 1951 to assist in processing census returns.

Since then, the inventory of computers used by Federal agencies has grown to about 4,300. Extensive use of computer-based systems will be found, for example, in such programs as military logistics, tax administration, satellite tracking, scientific and engineering laboratories, social security, and veterans' benefits administration, military base operations, air traffic control, and Federal supply activities.

The accumulation of data processing experience, coupled with advancements in computer technology and new information system concepts, provide a continuous spur to improve these computer applications and extend the use of computers to other areas. Increasingly, computer systems are becoming interrelated, in the sense that data is exchanged from one to another in machine-processable form, with substantial savings in time and cost. To facilitate such interchange, considerable effort is being devoted by the Federal Government to establishing standards to eliminate the incompatibilities among data and computers which at the present time are severely handicapping the efficient exchange of data among systems.

However, computer systems are only as good as the data fed into them. This means, of course, that we can neither produce from the computer information that didn't get introduced into the computer in the first place; nor expect information of a different character or

quality than the basic source data. These considerations are the ones that have led us to emphasize the improvement of management information.

Undergirding the efforts to improve the effectiveness of our computer systems are a number of other Government-wide ADP management programs devoted to achieving greater economies in the management, procurement, utilization and redistribution of computers. These programs have been undertaken pursuant to Public Law 89–306, sponsored by the chairman of this subcommittee.

The common goal of all of these efforts is, we believe, consistent with the objectives of H.R. 404. Moreover, we believe the organization, methodological, and technological experiences we are gaining in all of these efforts is essential to the ultimate development of truly modern and effective agency and Government-wide information systems which will, we believe, meet many of the objectives and needs of the Congress as well as the executive branch.

In summary, the Bureau of the Budget favors the objectives of H.R. 404 and will assist the Congress in any way possible in the development of information systems necessary to support its legislative functions. We believe we are making significant progress in tasks fundamental to these objectives and do not believe that specific legislation is necessary to continue or even accelerate this progress. If specific legislation of the type contemplated by H.R. 404 is deemed desirable, however, we will be pleased to work with the committee and its staff on such legislation.

Mr. Brooks. Pardon me at this point. You mean for your own purpose you do not think there is any additional legislation necessary?

Mr. Hughes. That is correct, sir.

Mr. Brooks. Right.

Mr. Hughes. In this statement I have outlined the activity underway within the Bureau so that the committee may be aware not only of what we are doing, but also of the fact that to a considerable extent the information developed within the executive branch to conduct its executive functions should to the maximum degree possible serve the needs of both the President and the Congress.

With this recognition and with careful systems design we may preclude the very real possibility of the development of noncoordinated or duplicate requirements which are costly, delay accomplishment, and introduce crippling confusion through overlapping and inconsistent terms, definitions, and system methodologies.

In closing, let me assure you, Mr. Chairman, that we are keenly aware of the need to improve the accuracy, reliability, and timeliness of both budget and program information for Federal decisionmaking. Therefore, the system concepts, design criteria, and implementation plans we are developing are and will continue to take into careful account the needs of the Congress in furtherance of its substantive decisionmaking responsibilities and functions.

Thank you, Mr. Chairman, and we would be pleased to attempt to respond to questions that you and your committee may have.

Mr. Brooks. Mr. Hughes, I think that was an excellent dissertation on the problem. You presented it realistically and forthrightly. It was very helpful. And, I would say that in your statement you eliminate or preclude, rather, the very real possibility of the development of noncoordinated or duplicated requirements. This is one of

the basic reasons that I introduced this legislation. so that the design can be worked out in coordination with your own efforts in the Bureau so that Congress can avail itself of that input.

Mr. HUGHES. Well, we certainly appreciate that, Mr. Chairman, and recognize that that was your objective, expressed in both the bill and the accompanying legislative statement.

Mr. BROOKS. And you understand, of course, that my original thrust some years ago was to get the Bureau of the Budget to do what you are doing now, and I am quite pleased with the effort that you all are making, you have gotten away from the pencil and the old adding machine a little bit, but it was quite an effort to do it, was it not, Sam?

Mr. HUGHES. Indeed it was, Mr. Chairman, and I think that is a point worth giving some emphasis. We are all creatures of habit, even us in the Bureau of the Budget, and you in the Congress——

Mr. BROOKS. Especially.

Mr. HUGHES. And partly what we are undergoing here, all of us, even us in the Bureau of the Budget, is a process of education in new techniques and in their utilization, not just in budget preparation, but in the management of the Government, and it is difficult.

As I believe Mr. Staats mentioned, it is difficult for you and it is difficult for us to get used to seeing reports in a different form or not seeing them. They now come out in a form which at least is not before your very eyes preservable. It may come out on a screen or something of that sort, and these problems are mental problems that all of us will need to struggle with as we proceed with this effort, which is an educational effort perhaps, as much as it is a technical effort.

Mr. BROOKS. I agree, and would you send a copy of this statement to my old and distinquished adversary down there, Mr. Gordon Osborne?

Mr. HUGHES. I certainly will.

Mr. BROOKS. I think he would appreciate it. A friend of mine I was visiting with at the NATO conference said he had no enemies, only adversaries.

Mr. Hughes, it would seem that the Bureau of the Budget is now fully dedicated to the concept of exploiting data processing techniques to the utmost in this important maintenance of the budget and appropriations cycle. How would you assess information requirements of the Bureau of the Budget in the next decade and can they be efficiently and effectively met by the proper use of data processing techniques?

Mr. HUGHES. Well, I think that I can answer that question with several fairly specific examples.

Mr. BROOKS. We have a few questions that I want to get clarified, and I hope if you will, Mr. Hughes, that we can conclude that right now, and not come back after lunch, if that is all right with you, and the members will bear with me.

Mr. HUGHES. If that was a suggestion that I should be as brief as possible in my responses, I will try hard.

Well, with respect to your question, Mr. Chairman, the time is already here when we could not have handled the budget without the computer. This last year you may have read in the newspapers about the great surtax hassle. In our terms it was reflected in the fact that

we came down to the wire, and I mean down to the wire, with three different budgets depending on how the President or the President-elect jointly decided they were going to handle this matter. We could not have done it had we not had the computer capability that Joe and Wally have developed for the Bureau.

So, that time is here. In terms of the future, Mr. Moorhead has impressed on me fairly recently the need to give as much emphasis as possible to the analysis of the Defense establishment and weapons system, and those analyses likewise require equipment and the detailed look that you can only take through the mechanized approaches.

Mr. BROOKS. How do you assess the present capabilities within the Bureau?

Mr. HUGHES. I think, in brief, Mr. Chairman, they are limited but growing, and we are doing our best in our appropriations request for fiscal year 1970 to have them grow still further. We have more than a start. We are going through the contract effort which I mentioned. Mr. Haase has a staff which is significant, by our terms, working on the systemization of not just the budget preparation process, but the whole accumulation of management information. This effort started within the last 3 or 4 years, and Mr. Haase has been with us about a year. It is a massive effort, as you appreciate very well, and we have proceeded, not as far as we would like, but I believe we are getting stimulation from a lot of sources.

President Johnson, you know as well as I, was not a patient man when it came to meeting his information requirements, and he gave us a good shot in the arm on this.

Mr. BROOKS. You are stating that kindly, I remember. I have worked with a lot of Bureau of the Budget Directors, as you know, and I used to meet them when they were sworn in and tell them that I wanted them to get with it, with that bill, and get with it in the Bureau, and I have just visited just casually with your new boss.

I hope that he has taken this to heart and is fully cognizant, and that he is prepared to work on this report which you have made. I think it is important that the general in charge understand, or those privates are not going to be able to operate too well.

Mr. HUGHES. He certainly does, Mr. Chairman. He is aware of the effort, the various efforts that the Bureau is making and has had occasion to review very carefully the McKinsey contract work. Also, he has a substantial background in a very large bank which was a heavy user of computer equipment for a variety of purposes, including management purposes.

Mr. BROOKS. And I hope that his effort to cut the Public Works projects will not deter him from going ahead and asking for all of the money that is required for Mr. Haase and Mr. Cunningham and for you to implement the progress you all are making and need to be making in the Bureau. I think it would be foolish economy to be reluctant to request and to approve in the Bureau of the Budget for your own purposes all of the money and all of the personnel that you need. This is going to save billions of dollars if you all can get it set up, and the longer we delay the more the cost is going to be.

Mr. HUGHES. That is correct, and we share your view.

Mr. BROOKS. Now, as I understand it, you are working on a hard core system that will provide a continuously updated version of what the budget is. Is that correct?

Mr. HUGHES. That is correct, and I tried to describe this "rolling budget" process in my prepared statement. Again, it is not an easy thing to do because of the range of the input and the range of the users. At some point in this system definition process, as we relate to the Congress, we will come up against the question of who should get what information, but I——

Mr. BROOKS. Well, that is a problem between the executive and legislative. We cannot resolve that here. I want to encourage Elmer to get it out of you.

Mr. HUGHES. Fair enough. I do not see that problem as any more acute with the system probably than without it. It is here all the time, and we live with it, and are able to work one way or another to deal with it.

Mr. BROOKS. What is the relation of the McKinsey recommendation to the development of this basic system? And we will include this 16-page synopsis that you furnished us in the record.

(See app. A, p. 45.)

Mr. HUGHES. Perhaps we rest pretty largely on that synopsis as reflecting the nature of the effort, Mr. Chairman. The one thing that I would like to emphasize is the very difficult nature, but the fundamental importance of the concept on the one hand, and the system for classification of information on the other. When we are trying to deal on a Government-wide basis, this is a very difficult problem.

Mr. BROOKS. Terminology is your problem?

Mr. HUGHES. Terminology, and communications is the problem we are struggling with. Mr. Hicks mentioned the Catalog of Federal Assistance Programs and Congressman Roth's criticism of it. I think the fundamental question there is how the Federal Government should be divided up into program categories, and "boxes" for various fundamental purposes. We need to work with Mr. Staats, the agencies, and I am sure directly with the Congress from time to time on that problem.

Mr. BROOKS. In your testimony you mentioned several additional projects. Would either you or your staff wish to elaborate on any of these projects as they affect the basic availability of budget data?

Mr. HUGHES. I do not think we need to elaborate, Mr. Chairman. We could furnish some material for the record with respect to the general question which Mr. Reid raised of availability of data to the Congress. I think some of the problem here, not all of it, but at least some of it, rests in the fact that data is frequently not available anywhere or sometimes it is not available in time to be really helpful. One of the objectives of the management information system, whether looked at from the executive branch or the congressional standpoint, must be to speed up the flow of information, and in one way or another make significant information available earlier.

Mr. BROOKS. Would you review for us the time phasing that you contemplate in the development of these various systems?

And as an example, when will Congress have available through the Bureau of the Budget up-to-date information as to budget changes?

Mr. HUGHES. Well, forecasting in this area we have found hazardous, but——

Mr. BROOKS. To say the least.

Mr. HUGHES (continuing). But we regard the effort we are engaged in as a long-range effort. To some extent the results appear without

anybody actually realizing it. I cite again our struggle with the budget last fall. It probably buys me no credit, but we just could not have met the budget schedule had it not been for advances we had made, so some of the results are flowing out now.

The catalog of Government programs, whether it meets all of the requirements of the Congress and the executive branch or not, represents a gain over the situation a year or two ago.

The data on the geographic distribution of Federal expenditures, again, needs significant improvement, and we are working on it all of the time. But that is a product really of detailed budget analysis, statistical techniques and information handling processes, which could not be made available were it not for the machinery that we have.

As far as looking forward to the rolling budget and a kind of a continuing capability to plug into the system and find out where we stand, I think that is off 2, 3, or 4 years. The timing is dependent upon on how detailed a system we try to establish, what sort of a cost cut is built into it, and how much luck we have in wrestling with problems that we do not fully understand.

The fundamental problem, again, here is this classification problem, very difficult.

Mr. BROOKS. Will this data be on a program budgeting basis?

Mr. HUGHES. It will, Mr. Chairman. We are, I think, devoted, I think that is the right word, and we are convinced that program budgeting is the fundamental system. However, we will need to maintain some of the crosscutting types of information that have been available on the more traditional appropriation budgeting basis.

Mr. BROOKS. You will still have the classification problem within program budgeting?

Mr. HUGHES. That is right. Part of the classification problem results from the need for various types of crosscutting classifications. You can see, if you divide the Government into 500 programs and need 500 crosscutting slices in order to meet these other kinds of problems, you have a volume of data to manipulate vastly greater than if we can reduce the number of cross-tabulations.

Mr. BROOKS. If this is so, will the funds allocated to the various programs be broken down under any further subcategories such as the traditional appropriation classifications as reflected in our survey hearings last year?

Mr. HUGHES. Yes; traditional appropriation cuts certainly will be provided, Mr. Chairman, and I see no way, even at the present time, of fulfilling all individuals' needs with only one fundamental classification system. We are just going to have to structure our system so that we can put this data together in different kinds of program packages, depending on the need. The specific cuts of information to be included in the system are still under consideration.

Mr. BROOKS. Would you describe the progress the Bureau is making in developing an effective data base in the various departments and agencies in our Government?

For example, how many departments furnish you budget information in computerized form?

Mr. HUGHES. The answer to that question is relatively simple, Mr. Chairman, and somewhat disappointing.

Mr. BROOKS. I will bet.

Mr. HUGHES. It is none, basically. We have more capability of receiving this kind of information at the present time, but the agencies by and large do not have the capability of giving us data in that form.

(Mr. Hughes subsequently supplied the following for the record:)

Bureau of the Budget Circular No. A–11, comprising the instructions for preparation of the annual budget, provides, in section 11.1: "* * * agencies having computer capability are encouraged to provide certain budget data in the form of input to the Bureau's computer operation. Bureau of the Budget staff should be consulted concerning the detail of the Bureau's requirements."

Mr. HUGHES. So that I will not be misunderstood, we could in some circumstances, and I believe have from time to time in the past, received pieces of information from the agencies in punchcard form or in tape form, but for the most part what they have to do is, in a sense, some of our work. They are simply doing the punching, the key punching of the data that we would otherwise be doing, and that is not—that is not the desirable way to do the business. The data ought to come out of their machine and into ours in some fashion.

Mr. BROOKS. Now, this is going to be one of the problems, Mr. Hughes. In the Bureau of the Budget you have the authority to reason with the agencies. You know, just before you cut this out of their budget, eliminate this or that item, you just tell them, "This is very touchy now, you know, and we have a little trouble getting all of these things done."

You know how to reason with them, you have been down there long enough, and they have got to be aware of the urgency of preparing that information for you. They need to comply here.

Mr. HUGHES. You are correct, Mr. Chairman. There is a fundamental need to get this data converted to a form where it can be transmitted and translated without human hands, so to speak, or without the use of a pencil or from within an agency and from one need to another.

Mr. BROOKS. Now, your present capability, as well as that anticipated, is based upon an obligation rather than a cash basis. Is that correct?

Mr. HUGHES. We have got to keep track of both obligations and cash. Particularly, as long as we are under congressional expenditure limitations, so that we have got to work both sides of that street.

Mr. BROOKS. Of course, if you had real computer capability it would not be necessary for either Congress or the executive to put arbitrary limitations on the budget as a whole. That, I think, is a hatchet approach to running the Government—the executive, or the Congress putting a percentage decrease on everything. That is not responsive to the needs of the public.

It is dangerous, actually, from the standpoint of efficient operation in Government, and I am thinking if you can get this capability at the Bureau of the Budget it will give the executive an opportunity to make whatever adjustments in the budget that are required by income or by other changing circumstances within the economy.

Mr. HUGHES. Well, certainly one of the big and sensitive concerns for us in the executive, and I am sure for the Congress as well, is to develop better information handling capabilities that should enable us to do better budgeting and better program management, and that is built in or is common to all of the agencies, the Bureau, and the Congress.

Mr. BROOKS. That is right. Now, what is the Bureau doing, Mr. Hughes, to inject the necessary computer discipline in the development of compatible standardized accounting systems for the Government as a whole?

Mr. HUGHES. Well, I think Mr. Cunningham might wish to talk to that. We have initiated a number of efforts within the executive branch to standardize the languages used in computers and to enable one agency and one machine thereby to talk and to communicate with another machine. This is part of the problem, of course, of our receiving budget data in machine processable form.

Joe, would you like to comment?

Mr. CUNNINGHAM. Yes. There are other aspects of the problem of integrating data that have been pursued, aspects that the committee and the staff are aware of, under Public Law 89–306. For example, the President approved the adoption of standards for recording data last year that will facilitate the interchange of data among computer installations.

These and other standards will be used in the modification and development of all kinds of systems throughout the Government. There are standards, for example, in a register now published by the Bureau of Standards which standardize certain nomenclature so that specific data that is used is identified uniformly in all data systems.

Mr. BROOKS. The same terminology problem as in classification.

Mr. CUNNINGHAM. Yes, the manual is now being published but it is a continuing program and will go on indefinitely.

Mr. BROOKS. Have you had Mr. Haase operating in that same area of trying to set up standard accounting systems in the systems design?

Mr. HUGHES. Mr. Haase and others, both in and out of the Bureau, Mr. Chairman, as far as the accounting side of the problem is concerned.

Following the work of the first Hoover Commission, the Congress enacted the Budget and Accounting Procedures Act of 1950, which replaced the old concept of a uniform accounting system for the diverse agencies of the Government with the concept of separate accounting systems designed to meet the specific needs of each agency, but in conformance with "principles, standards, and related requirements" prescribed by the Comptroller General of the United States. The agency accounting systems must also, under the law, provide financial information required by the Bureau of the Budget. The Bureau's contribution to standardized accounting therefore is not in the prescription of a single, rigid system for all agencies, but in the determination of the uniform types of data needed from all agencies to carry out the Bureau's functions.

Of course, it is a fundamental requirement of management information that it be standardized in the sense that it is manipulatable and understood to a wide range of users. Now, through our management information system effort and through our participation in the financial management program with Treasury and GAO, we are struggling with the accounting problem which is a basic part of the whole management information problem.

Mr. BROOKS. Yes, and do you anticipate any problem, or any unusual difficulty with the Comptroller General in your efforts along this line?

Mr. HUGHES. If we cannot get along with Mr. Staats, Mr. Brooks, we are in real trouble. If anybody ought to understand our problem, he should, out of his experience in the executive branch, and I certainly have not experienced any difficulty thus far, and do not expect any.

Mr. BROOKS. I think one of our problems is he is a little too sympathetic to yours.

Mr. HUGHES. I will withdraw that comment.

Mr. BROOKS. You fully understand, then, that the full responsibility for design of the information system remains with the Bureau of the Budget?

Mr. HUGHES. You are speaking of a system that would be established under the terms of the bill?

Mr. BROOKS. That is right.

Mr. HUGHES. I think basically that is right. I think the Comptroller General used the term "primary responsibility," and I would feel a little more comfortable with that, because we do have cooperative relationships with him.

Mr. BROOKS. I understand, but really the buck is going to stop with the Bureau of the Budget because the GAO does not have the clout to encourage the agency sufficiently, and you do. You know, you can tell them, this is the way we are going to do it, and they can complain, but who do they complain to? The President? And then he asks Mr. Mayo, "Well, did you tell them that?"

And he says, "Yes, this is in accordance with your requirements and desires," and they are blocked—one, two, three—just like that.

Mr. HUGHES. Certainly, Mr. Chairman, I can accept full responsibility. I simply refer to the fact that we have got to work with the Comptroller General and with the Congress on that design, and regardless of our persuasive capacity we do not always find the agencies persuaded as soon as we wish they were.

Mr. BROOKS. Some of them have a tendency to forget after their budget is approved. You ought to keep a list of those, because they also always come back next year. They are the kind that you really want to take care of next time around, and I will be delighted to help. It appeals to me, you know.

Do you believe that there would be any significant compromises of a technical sense that will have to be made in the Bureau's system in order to provide the capabilities that the Congress will require?

Mr. HUGHES. I am not a technician in this business, but from the education that I have had, Mr. Chairman, I do not really see any problem of that sort. I think the problems are of a policy nature, and not a technical nature. Would you agree with that, Joe?

Mr. CUNNINGHAM. I think so. The technical problems, as I mentioned a few minutes ago, we—and the Comptroller General—are well aware of and we are trying to solve these technical problems. We do not find complete cooperation from all interested parties in solving them. It is a slow process, but we are getting there. I do not see that there are any unsurmountable technical problems.

Mr. BROOKS. Do you foresee any problems arising out of the concept of the Executive privilege?

Mr. HUGHES. Well, I think that the shortest and the simplest way to answer that, Mr. Chairman, is to say no new problems there. We

are now, one way or the other, working with the Congress on providing information.

Mr. BROOKS. We have only a couple of more questions. What cost estimates are presently available and what cost projection can you make on any reliable basis for the work that is being done on these various systems?

Mr. HUGHES. Well, I think any cost estimate really is speculation at this point. Mr. Haase, Joe and I and others have talked about this, and we have a figure that scares us a little bit. They tell me something like $4 to $6 million development cost is in the ball park here.

Mr. BROOKS. What is the total budget figure this year, $200 billion?

Mr. HUGHES. In round numbers, that will do it.

Mr. BROOKS. Of that magnitude. That is one of those words. $4 to $6 million.

Mr. HUGHES. It is not a big number, Mr. Chairman, and I do not think it is big enough, frankly. If we had to gather all of the pieces that will have to go into this thing, by the time we are through, it will take substantial funds, I mean, in the millions or tens of millions, to do this job.

Mr. BROOKS. And it has a potential savings of billions?

Mr. HUGHES. Yes, certainly the expenditures not only are worth it, they are essential.

Mr. BROOKS. You cannot even make it, can you, without it?

Mr. HUGHES. I do not believe we can over the long run, Mr. Chairman.

Mr. BROOKS. It must have been interesting, Mr. Hughes, that you all played a surtax both ways, and it must have been a real test of computer capability, I mean just in that instance, and also the people.

Mr. HUGHES. I am glad you included the people.

Mr. BROOKS. Now, I want to say one thing further. I hope that when we get the record back that if there is any additional factual information that you could add to any of these answers, Mr. Hughes, that you would add that to your answers so that we can fit them in and it will give us the best response we could get to the questions that we proposed.

Mr. HUGHES. I will certainly be glad to do that, Mr. Chairman.

Mr. BROOKS. Mr. Moorhead, do you have any questions, sir?

Mr. MOORHEAD. Just two, Mr. Chairman.

First, Mr. Hughes, I am pleased that you remembered that I was interested in your giving a hard look at the military budget in this connection. You said that there were 4300 computers in Government. How many of those are in the Department of Defense, in the military?

Mr. CUNNINGHAM. About 60 percent.

Mr. MOORHEAD. Sixty percent? Now, looking way down the road, do you envisage a system where the agencies would put their information into their machines which would translate to your computers, and then up here on the Hill there would be also machines that could tap into your machine, or into the agency, or both?

Mr. HUGHES. Conceivably both, Mr. Moorhead. This is one of the problems, you know, and this is part of a conceptualized system that we have. I am not clear on how this should go. Part of the problem here, of course, is what information should flow to the Congress, and there has been a good deal of talk about that.

I think it is worth saying that the problem arises here when we move from fact to information to speculation, judgments or work papers of some sort with respect to the factual data. It may be that it will only happen kicking and screaming as the chairman suggested, but it seems to me basically that information, historical data, facts with respect to programs and program accomplishments insofar as we can measure that data, should flow to the Congress.

They need it to do their work. The difficulty starts to arise, I think, when you are talking about forecasts on such things as what will be the program level next year in a given area, what is the expected workload, how many beneficiaries are going to be benefited, and those are only some of the simple items.

But, they begin to pose policy questions, because a forecast is in a sense a policy statement and it starts to raise all kinds of questions. They raise policy questions and political questions, in the best sense of that term, as to what an administration intends to do. It is in that area where we start to get into difficulty.

But, to answer your question, I think that rather than a single kind of monolithic system, we have been thinking of individual agency systems so designed that they can be integrated, and that they are compatible, one with another. Some data can flow from the individual systems to one point, perhaps, for Presidential or Executive Office use, and then from that point to the Congress. In some areas, information could flow directly from the agencies to the Congress.

Computers are fast, but whether you want all data to come up through the system and back to the Congress, I do not know. I doubt it offhand. If we can solve the problem of what data should flow adequately——

Mr. MOORHEAD. The important thing I think is that we must be compatible on both ends of Pennsylvania Avenue.

Mr. HUGHES. That is correct. And it gets again to this tough classification question, making sure that you know what we are talking about in a given program, and vice versa, what we are talking about and right now the world is not nearly that simple. We are not used to dealing in such clearly designed and precise terms.

Mr. MOORHEAD. We have serious subdivisions of the Congress working independently of each other, and maybe we cannot even communicate up here.

Mr. HUGHES. I pass.

Mr. MOORHEAD. That is my statement, it was not intended as a question.

Thank you, Mr. Chairman.

Mr. BROOKS. Mr. Buchanan?

Mr. BUCHANAN. Thank you, Mr. Chairman.

I certainly appreciate both your work and your performance here today, and I am particularly interested in your statement on page 13. "However, computer systems are only as good as the data fed into them." and I might paraphrase and say, decisions of Congress are only as good as the information upon which they are based, and for this reason, of course, I think this information is very much in order.

Mr. HUGHES. I think that is a very important point, Mr. Buchanan, and one of the things contesters are doing is making us aware of the inadequacy of data, and I include data in the budget in that area.

We have not had the manpower, let alone the time to do the cross-referencing necessary in a budget document to make sure that everything adds up. The computer has enabled us to apply new techniques which have assured a better, a more refined, more accurate final product.

The same thing is true in the geographic distribution business. That data first time around was not all that it ought to have been. I am understating the case somewhat.

Mr. BUCHANAN. What is your personnel complement in the Office of Management in BOB, and how many would be involved in the development of the computer capability?

Mr. HUGHES. Mr. Haase, our management information systems man, has a total of eight that are loud and clear in this business, and we are detailing three others at the present time, and borrowing some additional part-time help.

We are, also, using some of our persuasive ability to get computer time and computer expertise from other agencies as well, and obviously in this area, as in many others, we are drawing in the budget analysts representing particular program areas where their expertise is important.

But, I would say, 11 is a pretty good approximation of the present manpower on this business within the Bureau.

Mr. BUCHANAN. I see. Well, in connection with your statement on the four million scaring you a little, I hope it will not scare you too much, because it is conceivable that hundreds of millions of dollars or billions even could be saved through the implementation or continued implementation of this.

Mr. HUGHES. We agree, and we are seeking more of the same kind from your Appropriations Subcommittee, and if any of you gentlemen would like to put in a word, we would be appreciative.

Mr. BUCHANAN. That would be very much in order.

Mr. BROOKS. Thank you very much, Mr. Buchanan. I have just one further question of you, would your General Counsel give us a reply or a judgment, rather, on whether it is necessary to authorize expenditures in departments and agencies to comply with data requests by the GAO?

Mr. HUGHES. I will.

Mr. BROOKS. My recommendation, my feeling is, of course, that it is an ordinary requirement of the departments and agencies, and they do not need any special request, they just need the money to do it, and need to get with it as with any other request from GAO, but I would like to have the counsel for the Bureau of the Budget give us such a statement.

Mr. HUGHES. Would you object if we worked with the GAO on this and talked with them about their needs as they see it?

The reason I asked the question——

Mr. BROOKS. Find out. They had some question about it but they are supercautious, as you know.

Mr. HUGHES. We are a little bit that way, too.

Mr. BROOKS. You are not as cautious as they are, I know that.

Mr. HUGHES. One of the points that we had in mind with respect to the bill was the possibility of some indication of the sort that Elmer, Mr. Staats, talked about.

Mr. BROOKS. Of course, my feeling is the agencies are not going to be doing their jobs unless they have that capability, period. I would appreciate that.

(Subsequently, Mr. Hughes submitted the following information:)

The General Accounting Office, in the audit and settlement of accounts, makes the ultimate decision as to the purposes for which appropriations are available. Consequently, the Bureau of the Budget would defer to the Comptroller General as to whether agencies could use their appropriations to pay the cost of supplying information which the Comptroller General might request to enable him to carry out his duties under section 312 of the Budget and Accounting Act, as that section would be amended by H.R. 404.

However, the General Counsel of the Bureau of the Budget observes that section 313 of the Budget and Accounting Act already contains a requirement that agencies "shall furnish to the Comptroller General such information regarding the powers, duties, activities, organization, financial transactions, and methods of business of their respective offices as he may from time to time require of them". He believes that section 313 contains ample authority for using any appropriations which may be available generally for an agency's necessary expenses to pay the cost of furnishing information which the Comptroller General might request under the provisions of the pending bill.

In any event, the Bureau of the Budget would recommend that any provision dealing with this matter be in the form of an amendment to section 313, rather than in the form of a general authorization for appropriations to all agencies for carrying out the purposes of the bill; the latter approach might have the unfortunate effect of requiring specific amendments to the appropriation language for each agency of the Government.

Mr. Brooks. Are there any other questions?

(No response.)

Mr. BROOKS. Well, gentlemen, I thank you very much, and I appreciate your coming down, Mr. Hughes.

Mr. HUGHES. Thank you, Mr. Chairman.

Mr. BROOKS. It is always a pleasure to do business with you.

The committee is adjourned, subject to the call of the Chair.

(Whereupon, at 12:35 p.m., the committee adjourned, subject to the call of the Chair.)

APPENDIX A.—STRENGTHENING PLANNING, PROGRAMING, AND BUDGETING IN THE BUREAU OF THE BUDGET—A STUDY BRIEFING

(A Synopsis of the McKinsey & Co. Study Effort)

To better fulfill its role as a principal staff arm of the President, and to set the tone for analytic and information support to decisionmaking throughout the Federal Government, BOB, over the years, has fostered the development of improved management tools—appropriation budgeting, program budgeting, and, most recently, program planning.

Typically, these new tools have supplemented, but have not replaced one another. Thus, while individually needed for effective decisionmaking, together they have produced a complex, cumbersome, and weakly integrated process.

This study, which is another step in the evolution toward improved decisionmaking in the Federal Government, is aimed largely at welding existing tools into a more responsive, effectively functioning whole.

The purpose of this meeting is to present the results of our work to date, covering in turn:

1. **The background and status of the study;**
2. **Our frame of reference;**
3. **Study recommendations;**
4. **Implication of those recommendations for the road ahead.**

STUDY BACKGROUND AND STATUS

BOB conceived of this study in two broad phases—concept development and system design—covering in total a 20-month period. We are now at the 75-percent mark of the first phase. To date, we have—

1. **Conducted several hundred factfinding and followup interviews;**
2. **Performed indepth analyses and preliminary tests of our concepts in nine selected bureaus;**
3. **Submitted two major progress reports:**
   - **(*a*) In December, outlining high-leverage improvement opportunities and, in light of these, future study direction—which was generally endorsed;**
   - **(*b*) In February, blocking out the basic approach we recommend to solving the problems identified.**

At the present time, we are—

1. **Reviewing our recommendations within BOB and among the agencies;**
2. **Resolving key issues raised by these reviews;**
3. **Developing plans for the upcoming design phase, including a rough cut estimate of its timing and costs.**

STUDY FRAME OF REFERENCE

In undertaking this study, we all recognized that—

1. **We would be grappling with hard problems of long standing, but problems which must be met in light of mounting national needs and increasingly limited resources;**
2. **Our recommendations would only be a start down a long, tough road.**

To keep this study on target, dealing as it does with an impressive array of problems and issues, we have consistently moved toward two basic goals:

1. **Improve the quality of BOB support to the total Presidential decisionmaking process;**
2. **Produce workable results, not only in theory but, more importantly, in practice.**

SUPPORTING BOB'S ROLE

It goes without saying that the total Presidential decisionmaking process is immensely important and incredibly complex, and that BOB is only one element in this process.

However, BOB is a very significant element, for it—

1. Assists in estimating available resources (beyond study scope);
2. Provides analytic support to establishing goals, setting priorities, and resolving major policy issues;
3. Helps guide agency program planning and development;
4. Is the central staff for balancing agency plans and programs within Presidential priorities and economic constraints;
5. Examines agency programs both individually and across agency lines to spot program gaps and redundancies;
6. Monitors program funding and execution, adjusting programs, and funding where necessary.

In this study our focus has been on these key BOB functions in the total decisionmaking process, and our purpose has been to develop an approach for performing these functions more effectively.

In time this approach must be "fit" with the other elements in the process (the White House and Congress). To date, however, we have restricted our work to BOB and the several agencies.

PRODUCING PRACTICAL RESULTS

In formulating our recommendations, we have aimed at following five basic guidelines:

1. Build on sound prior developments, avoiding still another "new" system;
2. Root recommendations in the real world. For example, our proposed approach to resolving the "crosswalk" problem is to return to the touchstone of the individual operating program responsibly managed by a single agency;
3. Avoid doctrinaire answers. Thus, we have retreated for now from a Government-wide program structure or a frontal assault on the appropriation structure;
4. Recognize there are a few general answers, but mainly specific remedies; thus, our approach to levying information requirements is a case-by-case one.
5. While recognizing that Presidential decisionmaking cannot and never should be routine, develop an approach that will adequately orchestrate the many process steps, the different analytic cuts, the many management disciplines, and the several parties at interest.

RECOMMENDATIONS FOR MEETING BOB DECISIONMAKING NEEDS

Our goal in this study has been to assist BOB in performing more effectively its principal functions—listed above—as a key staff arm of the President. To perform these functions well in the demanding and complex Federal environment, we believe BOB must build a process that:

1. Is capable of guiding program planning and budgeting through a series of successive approximations—from the earliest issue analysis to the final expenditure;
2. Maintains a cross-agency, goal-oriented view of the total program and budget in order to:
   (*a*) Help define and apply Presidential goals and priorities;
   (*b*) Pinpoint program gaps and duplication;
3. Views the total program and budget in several frames of reference—each responsive to the legitimate needs of the many parties at interest;
4. Can move readily among these different frames of reference, and always back to the individual agency operating program;
5. Has quickly available the relevant data for decisionmaking;
6. Is practical to operate and maintain.

To meet these needs, we have targeted on six major opportunities for improving BOB's ability to play its role effectively.

1. Although the overall process contains all the essential steps, more substance can be given to some key steps and the whole process better integrated;
2. BOB's ability to aggregate and analyze the total program and budget across agency lines can be strengthened;

3. Major structural gaps, overlaps, and confusion, which exists because the varied—but valid—bases for review are not meshed, should be cleared up;
4. A program for obtaining essential information should be undertaken;
5. BOB should build the capability to manipulate available data efficiently and quickly; and
6. The whole system, once pulled together, can be simplified.

In the following sections, we briefly discuss each improvement opportunity.

STRENGTHENING AND LINKING INDIVIDUAL STEPS

The basic mechanism for planning, programming, budgeting, and execution exists today.

1. Priorities are set;
2. Major issues are identified, analyzed, and finally resolved;
3. The budget begins to take shape in the spring;
4. Programs are reviewed and a budget is produced; and
5. Funds are appropriated and apportioned, and programs are monitored.

Notwithstanding key early steps lack the real substance needed to formulate goals and begin to shape the total program.

1. There are too many issues, often of marginal interest, typically poorly analyzed, and often submitted too late to be of practical value.
2. The key spring preview step—
   (*a*) Lacks solid input, beyond late and inadequate issue analysis (for example, agency plans);
   (*b*) Does not systematically take a cross agency view of the program; and
   (*c*) Produces only spotty programmatic guidance to set up subsequent budget formulation.

Furthermore, the individual steps lack the integration and followthrough needed to carry initial planning through succeeding steps.

1. The issue process is not disciplined to insure that—
   (*a*) Timely, high quality results are obtained; and
   (*b*) Continuing relevance of individual issues is maintained.
2. The capability is limited to carry forward major decisions in cross-agency terms from spring preview to Director's review, and beyond.
3. There is only a limited capability to keep the program and budget updated as decisions are made, legislation is enacted, changes occur, and programs are executed.

To meet these needs, we have proposed a significant strengthening of key early process steps.

1. The issue process should be made more relevant to Presidential decisionmaking needs by—
   (*a*) Building the Director more intimately into the issue identification process to insure all key issues—but only key issues—are captured;
   (*b*) Working with the agencies more closely to agree on analytic approaches, required results, and practical timetables;
   (*c*) Starting the process sooner, targeting it on spring preview.
2. Spring preview should be upgraded into a more substantive program decision point—
   (*a*) To the extent possible, get resolution of major policy issues;
   (*b*) Review present and proposed programs across agency lines;
   (*c*) Produce better programmatic guidance.

To better link together the whole process, we recomend that BOB—

1. Install an issue-tracking system to insure not only that analyses are performed in time but also that the issues are updated as external conditions change;
2. Use spring preview to make the transition from planning to guidance for budget formulation, setting the stage for Director's review;
3. Support the entire process with a "rolling" information system capturing decisions and changes as they are made, and reflecting program execution as it proceeds.

POSITIONING THE TOTAL PROGRAM

At each step of the process, BOB requires a cross-agency, goal-oriented overview of the total program and budget to aid the Director and his top staff in—

1. Formulating feasible goals and reasonable priorities at early planning stages;

2. Developing longrun policies aimed at reshaping the program over time;
3. Pinpointing options for redirecting outlays and authority in line with Presidential desires, both for budget formulation and subsequent reexaminations;
4. To highlight program gaps and duplication throughout.

To get this analytic overview of the whole, BOB requires—

1. The ability to aggregate individual programs in functional and other goal-oriented ways;
2. Information on program status, constraints, and out-year trends;
3. Visibility into the performance of the individual operating programs that comprise the functional and other aggregates;
4. Adequate analytic support.

Although progress toward developing this capability is being made, BOB's present capacity for achieving this overview is limited:

1. Only part of the budget is now presented in aggregate terms, and analysis is incomplete;
2. The ability to aggregate program data is severely restricted;
3. Program data is partly out of phase with need (e.g., commitment projections on PFP), or missing entirely.

To build this capability, we have recommended that—

1. BOB start viewing the budget in functional aggregates, recognizing this structure will evolve with use;
2. BOB's staff analytic capability be aimed toward providing more complete support;
3. Information sources (e.g., PFP) be restructured to collect more useful data on financial status, statutory status, and selective outyear trends;
4. Build the information processing capability—as information becomes available—to aggregate the budget in other ways that will aid in applying Presidential priorities and constraints.

The use of a functional structure in BOB is widely misinterpreted:

1. Some view it as another structure to be imposed on agencies—which it is not;
2. But others view it as backing away from a Government-wide program structure that should be imposed on the agencies; we do in fact recommend against this move for the foreseeable future.

MEETING MULTIPLE REVIEW REQUIREMENTS

The existing inability to move smoothly among the varied—but valid—views of the budget has produced an intolerable situation:

1. Gaps, overlaps, and confusion permeate attempts to relate these structures (e.g., PPB, appropriation, functional);
2. Not only is it costly in terms of waste motion, but this confusion also erodes the ability of individual examiners to focus on the quality of individual programs, and of the Director to obtain meaningful aggregate data.

The missing link that relates these structures is the individual agency operating program:

1. Operating (or "entity") programs are the real world of the Federal budget—the only things that actually consume resources, produce results, and embody work activities under responsible agency management control;
2. Trying to solve the "crosswalk" problem without starting from this touchstone is to move from structure to structure without ever passing through the real world.

This concept is not foreign to BOB or agency operations today; our examination of nine agencies shows that—

1. Examiners in fact target on operating programs, largely informally, in seven of the nine agencies;
2. Most agency information systems start at the program level.

Although the operating program is a natural starting point for building aggregations, the fact is that neither agency PPB nor appropriation structures embody these programs explicitly.

1. Only one agency defined more than half of its entity programs in its PPB structure;
2. Only five defined more than half of its programs in their appropriation structures.

We recommend BOB undertake a positive program to bring order to this situation:

1. Identify the entity programs;
2. Imbed them in agency PPB structures;
3. Take the lead in simplifying needlessly complex funding arrangements;
4. Base its own information system on these building blocks.

Reconciling these structural problems is not an insurmountable task; our recommended approach—

1. Is straightforward, based on the real world of operating programs;
2. Is not costly in terms of the benefits to be reaped; we estimate a BOB investment of 84 man-months to cover the entire Government;
3. Offers a balanced, fact-founded approach to Congress for modifying appropriation structures.

CLOSING THE INFORMATION GAP

There is a generally recognized need for better information at BOB, especially on program outputs and benefits, recipient characteristics, and even some work activity measures.

But the job of closing this gap—a job independent of any system BOB adopts—is the task of many years. Thus, what is needed now is a reasonable structure for identifying data needs and for meeting them at minimum cost.

We believe that our recommendations provide this framework; within it, BOB can:

1. Pin down specific needs for specific programs—avoiding the pitfal of a general call for data;
2. Apply uniform requirements to satisfy BOB aggregates;
3. Apply sensible cost-value judgments to individual data requirements.

BUILDING AN INFORMATION PROCESSING CAPABILITY

As BOB acquires the data and information building blocks it needs, an internal information processing capability—probably computer based—must be built.

At this stage of the study, we have outlined the concept of a system aimed at—

1. Maintaining "rolling" files;
2. Aggregating program data for the Director and his staff;
3. Cutting the clerical load, especially during budget preparation.

We see this capability being built from sound work started last year by the MIS staff.

1. Refining last year's system;
2. Building a rolling appropriation file this year;
3. Designing the balance of the system as experience is gained.

SIMPLIFYING THE PRESENT SYSTEM

Overtime, system has been grafted to system to produce excessive complexity. In addition to buttressing the basic decision process and information system, our recommendations aim at simplifying them. For example:

1. Substantial simplification will be attained by clearing up the "crosswalk" problem;
2. The A–11 and 68–9 procedures will be consolidated;
3. The PFP will be simplified and restructured to provide less, but more useful data;
4. The number of issue analyses will be reduced to cover only key issues;
5. Some special analysis submissions will be dropped;
6. Computer support will be provided to free up BOB personnel from clerical duties.

THE ROAD AHEAD

We recognize that the recommended approach is not a quick answer to the long accumulation of problems. It will require a long term, sustained executive commitment to—

1. Discipline process, particularly in its early pace-setting steps;
2. Evolve new analytic dimensions (for example, functional analyses);
3. Take the lead in defining entity programs and modifying PPB and appropriation structures;

4. Define and satisfy information requirements;
5. Marshall the resources required to carry out the program.

To make this commitment move ahead along the path we have proposed, based on comments we have received, these questions must still be answered:

1. Is the process really responsive to BOB's role in support of Presidential decisionmaking particularly in the earlier "pace-setting" steps?
2. Can BOB move readily from functional analyses to agency guidance, given the existing time pressures?
3. Can Spring Preview be sufficiently disciplined to produce the necessary decisions and guidance?
4. Will entity programs constitute just another structure and require another crosswalk?
5. Can the entity program concept be implemented at a reasonable cost?
6. Can information requirements be met at a reasonable cost?

In the next weeks, we will focus on—

1. Developing responses to these questions;
2. Blocking out the plan for the second phase effort;
3. Preparing our first phase final report.

Appendix B.—Agency Reports on H.R. 404: General Accounting Office—Bureau of the Budget—General Services Administration

Comptroller General of the United States,
Washington, D.C., February 20, 1969.

Hon. William L. Dawson,
Chairman, Committee on Government Operations,
House of Representatives.

Dear Mr. Chairman: Reference is made to your letter of January 14, 1969, requesting our comments on H.R. 404, entitled "a bill to amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems and for other purposes."

In introducing H.R. 404 on January 3, 1969, Congressman Brooks said that in substance the provisions of the bill correspond to title II, entitled "Fiscal controls" of the proposed Legislative Reorganization Act of 1968, with two exceptions. First, rather than set forth explicit descriptions of the data to be submitted to the Congress as provided in that proposed reorganization bill, this had been made a matter within the discretion of the President pro tempore of the Senate and the Speaker of the House. Second, certain provisions are not included which relate principally to committee procedures.

The purpose of the bill, as stated by Congressman Brooks, is to provide for coordination with the executive branch in the development of one basic compatible data processing and information system to serve both the legislative and executive branches of the Government in providing budgetary and appropriation information. The Bureau of the Budget is in the initial stages of developing such a system. For a part of that compatible system the bill would have the Comptroller General develop, establish, and maintain data processing and information systems necessary for the effective and efficient fulfillment of the substantive responsibilities of the Congress as determined by the President pro tempore of the Senate and the Speaker of the House. With reference to the other part of that system the bill would have the Comptroller General cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system for budgetary and fiscal data for use of the Federal Government.

Congressman Brooks believes that there is a need, separate and apart for the maintenance of an information system to support the budgetary and appropriation cycle, for a legislative capability in advanced cost analysis techniques so that the legislative branch can make its own cost evaluations and have the capability to analyze those of the executive branch.

He also believes that there are other areas in which the Congress can effectively and efficiently utilize modern information handling and data processing techniques to provide congressional committees and individual members and their staffs with immediate information on the status of legislation. The system used could be extended to keep an index of the Congressional Record constantly and immediately available, and for the storage of the entire United States Code, the Statutes at Large and other similar data.

We are in full agreement with the purposes of the bill. It has been generally recognized that the Congress has a real need for data processing and information systems of its own in order to fulfill its responsibilities. As we understand the provisions of H.R. 404 the data processing and information systems to be developed for the Congress would not duplicate the system presently being developed by the Bureau of the Budget. The objective would be to develop a supplementary system to serve the particular needs of Congress, yet compatible with the system being developed by the Bureau for budgetary and fiscal data.

With respect to section (f)(1) of the bill, which would direct the Comptroller General to develop, establish, and maintain data processing and information systems for the Congress, we have some question as to whether the Comptroller General should be given these responsibilities. It may be that the development, establishment, and maintenance of the system should be the responsibility of the Congress itself in order that it could have complete control over the system and thus be assured that its needs will be fully served. However, if the Congress should decide that this task should be performed by the Comptroller General we will, of course, make every effort to carry out the responsibilities assigned.

It should be understood that the development of the systems contemplated, whether performed by the Comptroller General or by Congress itself, will require considerable time. The development of the needs of Congress and its committees and the systems necessary to serve those needs will be a difficult task. Also, it should be recognized that the costs will be significant. Considerable additional funds over and above our present funding levels will be required if the General Accounting Office is to do the job.

Subsection (f)(2) of the bill requires the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system including uniform classifications of programs, activities, receipts, costs, and expenditures, as well as other necessary standards for budgetary and fiscal data for the use of the Federal Government. We construe section 2 to mean that the primary responsibility under the section is with the Director of the Budget but that the Comptroller General will cooperate with the Director in an effort to see that the needs of the Congress are met.

With regard to subsection (f)(3) we wish to call your attention to progress already made toward establishing the capability in the General Accounting Office to conduct and to analyze cost effectiveness studies. A Systems Analysis Group was established in 1967 in our Office of Policy and Special Studies with the responsibility to provide such capability and to provide leadership and policy guidance in developing appropriate levels of this capability among our professional staff.

The Systems Analysis Group has performed a substantial part of our review under title II, section 201(2), of the Economic Opportunity Amendments of 1967 to determine the "extent to which such programs and activities achieve the objectives set forth in the relevant part or title of the Economic Opportunity Act of 1964 authorizing such programs or activities."

We believe the actions already taken and the experience gained in actual studies have prepared the General Accounting Office to provide an orderly growth of this capability.

We recommend the deletion of subsection (g). We believe that the Comptroller General should retain the discretion and the flexibility to organize the General Accounting Office in such a manner as he considers necessary to carry out the duties which the legislation places upon him.

As previously stated we favor the purposes of this bill and we will make every effort to fulfill such responsibilities as Congress may give us in this area.

Sincerely yours,

ELMER B. STAATS,
Comptroller General of the United States.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., April 2, 1969.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
Rayburn House Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your requests for comments on H.R. 404 and H.R. 5522, the purpose of which is "to amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems, and for other purposes."

Both bills would amend the Budget and Accounting Act, 1921, by requiring the Comptroller General to provide the Congress with data processing and information systems to meet the substantive responsibilities of the Congress. They would also require him to have available in the General Accounting Office employees qualified to conduct and analyze cost effectiveness studies at the request of committees of the Congress.

To the extent that these activities involve the collection and compilation of factual data, as distinguished from the performing of analyses they would seem to unnecessarily duplicate work which is being performed in the executive branch. We understand the bills are intended to relate basically to activities of the legislative branch, and that they are not intended to impose new rules or procedures upon the executive branch. Whether the Congress needs to formalize arrangements to provide such support and assistance is a matter for each House to decide for itself, and one on which we do not believe it would be appropriate for us to comment.

Section 312(f)(2) would require the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system for budgetary and fiscal data for use of the Federal Government. We have customarily received the full cooperation of the Comptroller General in respect of our work on such matters and we would expect such cooperation to continue without the necessity for enactment of such a provision. Further, we have considerable doubt as to the wisdom of a provision which might inject the Comptroller General—an official of the legislative branch—directly into the budgetary processes of the executive branch. Subject to the normal qualifications regarding information in support of budget requests which are still under consideration by the President, information in the possession of the executive branch generally is available to the Congress, or to the Comptroller General on its behalf, without the necessity for any specific provision of the nature proposed in section 312(f)(2).

If we can supply further information with respect to these measures, please do not hesitate to call on us.

Sincerely yours,

WILFRED H. ROMMEL,
Assistant Director for Legislative Reference.

GENERAL SERVICES ADMINISTRATION,
Washington, D.C., April 4, 1969.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN. Your letter of February 11, 1969, requested the views of the General Services Administration on H.R. 5522, 91st Congress, a bill "To amend the Budget and Accounting Act, 1921, to direct the Comptroller General to establish information and data processing systems, and for other purposes."

The automatic data processing and information systems to be developed and established by the Comptroller General under H.R. 5522 would be used for the purpose of providing the Congress with data and information necessary for the effective and efficient fulfillment of its substantive responsibilities as may be determined by the President pro tempore of the Senate and Speaker of the House. Additionally, the bill would require the Comptroller General to cooperate with the Director of the Bureau of the Budget in the development, establishment, and maintenance of a standard data processing and information system for budgetary and fiscal data for use by the Federal Government.

GSA is responsible under section 111 of the Federal Property and Administrative Services Act of 1949, as amended, to coordinate and provide for the economic and efficient purchase, lease, and maintenance of automatic data processing equipment (ADPE) by Federal agencies. The General Accounting Office is a Federal agency as defined in section 3(b) of the Property Act. We do not believe that H.R. 5522 is intended to provide independent authority to GAO to acquire ADPE or otherwise except GAO from the requirements of section 111 of the Act. However, the language of the bill is not clear in this respect. For example, the language of proposed new subsection (f)(5) of section 312 of the Budget and Accounting Act on line 23, page 2 of the bill authorizes the Comptroller General to "acquire data processing capacity." The apparent purpose of subsection (f)(5) is to provide authority to the Comptroller General to contract for assistance to develop and establish information systems rather than to provide specific authority to acquire ADPE. For purposes of clarification, therefore, we recommend that a new subsection "(h)" be added at the end of the proposed bill to state that:

"(h) Nothing in this section is to be construed as superseding section 111 of the Federal Property and Administrative Services Act of 1949, 79 Stat. 1127."

If H.R. 5522 is enacted with the amendment suggested, GSA would be pleased to make available to the GAO automatic data processing equipment in the same manner as such equipment is now made available to other Federal agencies.

Subject to the foregoing, GSA does not object to enactment of H.R. 5522.

The Bureau of the Budget has advised that, from the standpoint of the administration's program, there is no objection to the submission of this report to your committee.

Sincerely,

ROBERT L. KUNZIG, *Administrator.*

○

Union Calendar No. 746

90th Congress, 2d Session - - - - - - House Report No. 1842

PRIVACY AND THE NATIONAL DATA BANK CONCEPT

THIRTY-FIFTH REPORT

BY THE

COMMITTEE ON GOVERNMENT OPERATIONS

AUGUST 2, 1968.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

U.S. GOVERNMENT PRINTING OFFICE

98-006 WASHINGTON : 1968

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(89th Congress)

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LETTER OF TRANSMITTAL

HOUSE OF REPRESENTATIVES,
Washington, D.C., August 2, 1968.

Hon. JOHN W. McCORMACK,
Speaker of the House of Representatives,
Washington, D.C.

DEAR MR. SPEAKER: By direction of the Committee on Government Operations, I submit herewith the committee's thirty-fifth report to the 90th Congress. The committee's report is based on a study made by its Special Subcommittee on Invasion of Privacy.

WILLIAM L. DAWSON, *Chairman.*

PREFACE

An American's right to be left alone—his right to privacy—must be given paramount consideration in the development and use of computerized data systems which contain personal information on individually identifiable citizens.

The committee recognizes that computers are indispensable to modern society. They extend man's intellectual capability and will continue to occupy a key role in our struggle against poverty, ignorance, and disease. An essential element in computer application is the processing and evaluation of statistical information, for a flow of reliable and accurate data must be available to those who try to understand our increasingly complex society. The need for insuring this salutary flow has motivated the executive branch of the Federal Government to consider pooling records now scattered among separate agencies.

While this report focuses primarily on the suggestions advanced from the Bureau of the Budget to establish a National Data Bank, the views and recommendations are applicable more generally to the structure of any data system which allows unified or central retrieval of diverse information in a form that could relate such data to individuals. The creation of dossiers by means of such systems poses a grave threat to the constitutionally guaranteed rights of each American to express himself and his ideas freely.

A suffocating sense of surveillance, represented by instantaneously retrievable, derogatory or noncontextual data, is not an atmosphere in which freedom can long survive. Liberty under law is our foundation as a stable Nation, and it is the conviction of the committee that any private or governmental action which would restrict the exercise of liberty would compromise respect for law.

At the same time, we must recognize the value and legitimacy of properly safeguarded computerized data systems containing limited personal information for limited and specific aims, such as those used separately and noninterchangeably for medical records, social security records, military records, and for law enforcement purposes.

The committee believes that a forceful assertion of privacy, individuality, and dignity need not be contradictory to the fullest exploitation of electronic data processing within rigidly defined spheres. The computer is as vital to efficient and economical government as civil liberties are to the citizen's confidence in democratic government.

This report, therefore, charges the Federal Government as well as the computer community with a dual responsibility. While they have the opportunity to create meaningful programs and to measure their effectiveness by the use of electronic data processing, they must also guarantee Americans that the tonic of high speed information handling does not contain a toxic which will kill privacy.

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PRIVACY AND THE NATIONAL DATA BANK CONCEPT

AUGUST 2, 1968.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. DAWSON, from the Committee on Government Operations, submitted the following

THIRTY-FIFTH REPORT

BASED ON A STUDY BY THE SPECIAL SUBCOMMITTEE ON INVASION OF PRIVACY

On July 31, 1968, the Committee on Government Operations approved and adopted a report entitled "Privacy and the National Data Bank Concept." The chairman was directed to transmit a copy to the Speaker of the House.

INTRODUCTION

The rapid expansion of our Nation's population, its vastly more complicated laws, and the increasing reliance upon statistics to create and evaluate social action programs, have developed an understandable desire to take advantage of advances in computer technology to make Government recordkeeping and analysis more efficient and economical.

By 1961, this desire led the Bureau of the Budget to commission a feasibility study for the centralization and computerization of the many personal records now residing in individual agencies of the Federal Government. It was performed by the Committee on the Preservation and Use of Economic Data of the Social Science Research Council, with Richard Ruggles, professor of economics at Yale University, as chairman. In 1965, that committee issued the so-called Ruggles report, which recommended "that the Bureau of the Budget . . . immediately take steps to establish a Federal Data Center." Two subsequent reports were developed upon request by the Bureau of the Budget: the Dunn report, by Edgar S. Dunn, Jr., of Resources for the Future, Inc., and the Kaysen report, by Dr. Carl Kaysen, chairman of the Institute for Advanced Study at Princeton University.

Both endorsed and expanded the Ruggles report findings that such a data center would be technically feasible and would make the Federal statistical system more comprehensive and relevant.

The Special Subcommittee on Invasion of Privacy undertook a study into the potential erosion of the citizen's right to privacy that might be the ultimate result of the proposed National Data Bank. The far-reaching implications of the proposed National Data Center and other data banks on a lesser scale which are contemplated or already in existence, inside and outside the Government, caused the subcommittee to seek the benefit of the views and experience of many individuals, Government agencies, and private institutions.

On July 26, 27, and 28, 1966, the subcommittee held public hearings on the proposed data bank. Testimony was presented by: Paul Baran, computer expert with the Rand Corp., Santa Monica, Calif.; Raymond T. Bowman, Assistant Director for Statistical Standards, Bureau of the Budget (accompanied by Paul Krueger, Assistant Chief, Office of Statistical Standards, BOB); Edgar S. Dunn, Jr., research analyst, Resources for the Future, Inc.; Robert R. J. Gallati, director, New York State Identification and Intelligence System (accompanied by Eliot H. Lumbard, special assistant counsel for law enforcement to Governor Rockefeller, and Edward DeFranco, executive assistant to the director); Vance Packard, sociologist, author, and lecturer; Prof. Charles A. Reich, Yale Law School; Richard Ruggles, Department of Economics, Yale University; and Burton E. Squires, Jr., visiting assistant professor of computer science, University of Illinois, Urbana, Ill.

Material was submitted for the record by: Mr. Gallati; the Honorable Frank Horton, a Representative in Congress from the State of New York; Dr. Donald N. Michael, professor of psychology and program director in the Center for Research on the Utilization of Scientific Knowledge, University of Michigan; and John deJ. Pemberton, Jr., executive director, American Civil Liberties Union, New York, N.Y.

The hearings have been printed under the title "The Computer and Invasion of Privacy," referred to herein as "hearings." Appendixes to the printed hearings are the Ruggles report, the Dunn report, "The New Computerized Age" (from Saturday Review, July 23, 1966), and a speech by Vice Admiral H. G. Rickover, U.S. Navy, entitled "Liberty, Science, and Law."

Appendix I to this report contains an excerpt from "Privacy and Freedom" (Atheneum, 1967, New York) by Professor Alan F. Westin of Columbia University. The committee acknowledges the contribution of Professor Westin and the Association of the Bar of the City of New York in this significant summation of the problems created by the National Data Bank concept and the dangers inherent in the growing use of computerized data systems.

Appendix II to this report contains excerpts from a report to the Congress by the Comptroller General of the United States entitled "Review of Reliability of the Air Force Personnel Data System" (B–164471, July 25, 1968).

The Special Subcommittee on Invasion of Privacy would like to express its appreciation to Mr. Steven J. Eagle who was assigned from Chairman Gallagher's staff to assist in the preparation of this report.

(NOTE.—In this report and in literature in the field generally, the proposed centralized computer system is being referred to as the National Data Bank, the National Data Center, the Federal Statistical Data Center, and the Federal Statistical Service Center. Other similar designations are used. As of this date the Bureau of the Budget has not selected a formal name for the system and all of the names cited above continue to be used. Hence, it should be understood that in its report, this committee uses the terms interchangeably unless a distinction is made in a particular context.)

FINDINGS AND CONCLUSIONS

1. RUGGLES AND DUNN REPORTS RECOMMEND DATA CENTER

Prior to the hearings, surveys commissioned by the Bureau of the Budget reported that the National Data Center is feasible and should be instituted promptly.

2. SUBCOMMITTEE NOTES POSSIBLE THREAT TO INDIVIDUAL FREEDOM POSED BY THE NATIONAL DATA BANK CONCEPT

The creation of such systems might well make the individual citizen apprehensive about exercising his rights to express controversial views and behave spontaneously, lest he run afoul of what he might conceive of as a "big brother" system. The hearings developed the necessity for due consideration being given to privacy from the very start of any projected data system which can retrieve information on specific individuals.

3. TESTIMONY INDICATED THAT DATA CENTER INFORMATION MIGHT BE MISUSED

Specific units of data might be used to violate the privacy of specific individuals, or cause particular individuals to be unjustly deprived of privileges as American citizens. Malfunction or misuse could occur anywhere in the long process from gathering to utilizing computerized information.

4. NEED FOR LIMITATIONS ON TYPES ON DATA STORED DEMONSTRATED

From testimony presented at the hearings, it is clear that there should be definite limitation on the types of data contained in the National Data Center. There is a natural tendency for more and more data to be requested; and, if uncontrolled, this process would infringe on individual freedom. Well defined restraint is necessary on anyone who evolves or operates data systems containing personal information.

5. KAYSEN REPORT RECOMMENDS STATUTORY PROVISIONS AS SUFFICIENT TO PROTECT PRIVACY

In his report to the Bureau of the Budget after the hearings, Dr. Kaysen stated that statutory protection of privacy has worked well in the Census Bureau. Dr. Kaysen maintained that such protection, together with an anticipated lack of individual dossiers in the Na-

tional Data Center, would be sufficient to safeguard personal privacy. The Kaysen report, however, represented an insufficient examination of all the problems and potentialities that would arise from the establishment of a National Data Center and should not be considered an acceptable basis for undertaking actual construction of such a center.

6. DATA CENTER SECURITY WOULD BE MORE DIFFICULT THAN PRIVACY PROTECTION IN PRESENT AGENCY SYSTEMS

Although statutory provisions are generally effective within the Census Bureau, that agency is not faced with the multitude of problems which would have to be solved before security could be guaranteed for confidential information within the National Data Center.

7. INDIVIDUAL DOSSIERS APPEAR INEVITABLE

Testimony and studies suggest that individual dossiers (i.e., ways of storing all information on an individual in one place or of compiling it quickly) cannot be avoided under the envisioned National Data Bank.

8. THE CITIZEN MUST HAVE ACCESS TO HIS OWN RECORDS

The best and most reliable way to assure that erroneous or noncontextual information is not stored in a National Data Center or any data system would be to allow each individual access to information concerning him.

Even with restrictions on the type of material that can go into a data system and provisions for guaranteeing that only proper retrievals can be made, procedures should be established to allow an American the right to determine the nature of information that could harm him. Electronic data processing need not, and must not, subvert the constitutional and legal safeguards Americans have the right to expect and demand.

9. THE DANGER OF UNAUTHORIZED ACCESS TO INFORMATION IS GREAT

The problem of totally unauthorized use of the national data bank or of similar systems containing personal information demands sober analysis. Access could be gained either by an outsider intercepting data transmissions or using keys and procedures to which he has no right, or by an employee of the Center, altering, taking, or giving out data without authorization. These illegal steps could be taken inadvertently, under compulsion, or with malice.

10. BUREAU OF THE BUDGET STATES NATIONAL DATA CENTER WOULD BE FOR STATISTICAL PURPOSES ONLY AND SUPPORTS ADVISORY COMMISSION

Charles J. Zwick, Director of the Bureau of the Budget, stated in 1967, when he was an Assistant Director, that the National Data Center would not store investigative information but would be used only for statistical aggregate purposes.

11. BUREAU OF BUDGET NOW CONSIDERING SPECIFIC PROPOSALS TO SUBMIT TO CONGRESS

In a letter dated March 21, 1968, Mr. Zwick stated:

> In our study of the data center idea, we are proceeding along the lines we discussed when Director Schultze and I met with you over a year ago; that is, we will prepare a specific, concrete plan which could be exposed to the critical review of a group representing the broad variety of interests in the matter. Only after that would we consider that we have a proposal for appropriate consideration by the Congress. In view of the priorities which we must give within the total program of the Bureau, it is doubtful if we will reach this latter stage in time to make a formal presentation to this Congress.

12. STUDIES BY PROFESSIONAL GROUP SUGGEST IMPROVED FEDERAL STATISTICAL SYSTEM MAY RENDER NATIONAL DATA CENTER CONCEPT IRRELEVANT AND UNNECESSARY

The Federal Statistics Users' Conference has suggested that improvements in the present Federal statistical system might make it totally adequate and that the National Data Center might not be necessary.

A comprehensive sudy of the National Data Bank proposal is currently being undertaken by the conference. This group is composed of over 160 member corporations, unions, and universities that are major users of available federally compiled data.

According to the executive director of the conference, Mr. John Aiken, this independent group decided to do a study of the Kaysen report, and is devoting a large part of its investigation to the privacy implications of the data bank proposal.

RECOMMENDATIONS

I

As it has been clearly demonstrated that a grave threat to the constitutional guarantees exists in the National Data Bank concept, the committee strongly recommends that in the design and implementation of such systems the priority of privacy be asserted. While computerized data bases hold great promise, they must contain procedures which can assure the continuation of freedom of thought and action that is such a vital part of the American tradition. The collection and processing of statistical data should not and need not be gained by sacrificing the guiding principles of our democracy.

II

The Bureau of the Budget is to be commended for reflecting these concerns by its decision to prepare legislative proposals with great care. Its pledge to emphasize individual privacy in a National Data

Center and its willingness to obtain opinions from a broad spectrum of interested parties are also highly commendable. The Bureau of the Budget is to be further commended for avoiding commitments to establish the National Data Center without following the traditional congressional process of authorization and appropriation.

However, studies by and testimony presented to the special Subcommittee on Invasion of Privacy indicate that the reports commissioned by the Bureau of the Budget do not contain well thought-out theoretical or practical procedures necessary to assure privacy. Although the Bureau of the Budget has acknowledged that privacy is a consideration, it has not come to understand fully the importance of privacy in the National Data Center system. Nor has it commenced the difficult task of devising the complicated technical facilities which would be needed to assure protection of confidentiality even in the most elementary data system.

The committee, therefore, recommends that no work be done to establish the national data bank until privacy protection is explored fully and guaranteed to the greatest extent possible to the citizens whose personal records would form its information base.

III

It is recommended that the Bureau of the Budget, in formulating specific proposals for a national data bank, be informed that it is the sense of the committee that the following procedures, safeguards, and alternatives be considered:

A. The Bureau of the Budget should include within its presentation to the preliminary panel at the executive branch level as well as to the Congress in its enabling legislation, a detailed treatment of the following questions:

1. How would individual and business economic data be uniformly classified in the agency system?

2. Assuming that a data center received a request for a certain combination of economic aggregates, should it request each agency to provide its subaggregate according to a uniform classification system so that the center itself would only total and transmit the necessary aggregate desired?

3. Should a similar classification system in social and personal areas allow each agency of Government to process its files on its own computer and thus restrict all transfers to the central data bank to aggregates without identifying individuals?

4. In those cases where variables from more than one agency must be correlated, should other agencies involved send their data to the agency contributing the most "sensitive" data for processing? Furthermore, would it be possible in some of the cases for each agency giving its nonaggregated data to another agency to employ a one-time-only identifier in conjunction with outgoing data?

5. Could the cases where it is necessary that several agencies analyze variables about the same person be held to a strictly defined minimum? (i.e., where interagency exchanges on specific individuals are needed for analysis, could these exchanges be confined to small samples of the population in question?) If so, what procedure would be necessary to determine and enforce the size and type of sample limits?

6. How might an objective standard on confidentiality of personal information be established? Who would judge what information from one agency could be mixed with information from another agency, and how would that judgment be made?

7. What precedures will be established to insure the existence and use of objective standards to prevent contextual errors? (i.e., transmission of facts innocuous in one context but detrimental in another?)

8. What would be the cost in time, efficiency and money in implementing special hardware and software that would provide an acceptable level of privacy protection from physical access by unauthorized persons, tapping of transmission lines, obtaining of physical access keys or identifying access codes by unauthorized persons, and unauthorized programing to provide easy access to information? What procedures will be instituted to guarantee that safeguards adequate to meet current levels of threats will be improved sufficiently to counter the increased sophistication of future devices to "crack" the data bank? How would these additional requirements and costs, both present and anticipated, affect the total program?

9. How can individuals be protected from the creation and distribution of derogatory data caused by clerical errors or machine malfunction? Would a system of vertification be instituted to protect against machine malfunction? In what way could a check against clerical error be instituted? What quality controls will be devised to translate privacy theory into Data Center practice?

10. What system of checks and counterchecks would be necessary to prevent a janitorial, clerical, technical, administrative or executive employee of the data bank to insert, modify, delete, or take information from the Data Center in an unauthorized manner or for an unauthorized purpose?

11. What procedure should be instituted to assure that information in the National Data Center will be accessible to the individual? The manner in which the person in question would apply for and obtain the information should be discussed in detail. If some or all of the information in the Center is to be restricted and kept unavailable from the person who is the subject of the information, the reasons why this information would be withheld, the special procedures used to verify any information that the subject could not challenge for accuracy, and the degree to which this information would be utilized by any Government agency without the individual or his counsel having access should be explained in detail. This question is most important and a comprehensive answer is necessary.

B. The Bureau of the Budget should accept statements from interested parties other than its appointed panel before making its recommendations to Congress.

C. The Bureau of the Budget should supply the Congress with transcripts of the statements made to it concerning its preliminary draft and the report of its panel of experts.

D. The Bureau of the Budget should obtain a copy of the final report of the Special Committee to Study the National Data Center proposal of the Federal Statistics Users' Conference as soon as that report is issued. Further, the Bureau of the Budget should be prepared to discuss any disparities between its recommendations and those of the conference and justify its own position.

E. The Bureau of the Budget should report the nature of improvements that might be made in the present system of gathering, storing, and utilizing Federal statistics as they relate to identifiable citizens without establishing a national data bank system. This report should be made to the Committee on Government Operations within 6 months of the issuance of this report.

IV

The Bureau of the Budget should include within its proposals to the Congress a detailed plan for the establishment and operation of an independent supervisory commission. This commission would regulate the extent and operations of the National Data Center and would insure objective review of the data center's operations and its use by agencies of the executive branch.

A. Such a supervisory commission should be appointed from nongovernmental as well as governmental experts in the fields of data gathering, storage and usage, statistics, law, the social sciences, and civil liberties.

B. The commission should report to the Congress on a regular basis. Its reports should include financial, administrative, and systems summaries. They should also include detailed information on the types and sources of information stored in the system and on the agencies with access to the data. They should list the types of information available to each agency, the purposes for which each type might be used, as well as the justification for and description of each printout from the national data bank.

C. The supervisory commission would be independent of any existing agency or bureau and would be responsible solely for the operation of the national data bank. Various suggestions have previously been advanced to locate the national data bank in, for example, the General Accounting Office, the Library of Congress, the Bureau of the Budget or the Bureau of the Census. It is the feeling of the committee, however, that the creation of a separate and distinct supervisory commission would most adequately resolve the manifold problems contained in the national data bank concept.

V

The committee recommends that the Bureau of the Budget include procedures to permit access to the national data bank by standing committees of the Congress. The committee recommends this broadened access for three basic reasons:

1. The Congress encompasses a broad spectrum of public philosophy within both political parties. Congressional committees or members of committees already have the power to call for information, relevant to their jurisdiction, from the executive branch. However, affirmatively asserting this procedure for all standing committees of Congress will assure the American people that the immense storehouse of knowledge contained in a national data bank would not be misused for the partisan benefit of the political party which controls the executive branch.

2. Congressional access to the national data bank would give the public some assurance that the system does not contain dossiers of potentially harmful data on individual citizens. While executive

branch proponents of the national data bank have pledged that dossiers could not be its product, knowledge of congressional access would help dispel public fears of creating an intelligence system within the national data bank.

3. The national data bank would give the executive branch an allegedly powerful statistical aid in the creation of legislative proposals. In order to evaluate fairly the legislation suggested by the executive branch, the Congress must have the advantage of access to such a system. The viability of congressional alternatives to executive branch programs would be greatly enhanced and the growth of executive power would be accompanied by a counterbalancing growth in congressional capability.

DISCUSSION

RUGGLES AND DUNN REPORTS RECOMMEND DATA CENTER

There is no question that the total number of bits of personal information on individuals in the United States is rising at a rapid rate. Since 1950 our population has increased from 150 million to over 200 million. Consumer credit has expanded so rapidly that over 100 million Americans now have charge accounts. Over 67 million individual tax returns are filed with the Internal Revenue Service each year. There are over 22 million veterans' dossiers on file in the Department of Defense and the Veterans' Administration, and over 7.5 million individual résumés on file at the U.S. Civil Service Commission.

The plight of many in the Nation's urban areas has caused the passage of much Federal legislation such as the Public Works and Economic Development Act, the Economic Opportunity Act, and the Urban Mass Transportation Act. The aggregate of Federal grants-in-aid to States and municipalities has increased from $4 billion in 1957 to $8 billion in 1962, to $11 billion in 1965, and is now several billions of dollars above that figure. Albert Mindlin, Chief Statistician of the District of Columbia government, has noted that "the information about the community that government needs in order to research, plan, administer, and evaluate these vast new programs has escalated in parallel with the new activities themselves."

It is within this context of rapidly expanding needs in the data-gathering and analyzing field that the Bureau of the Budget commissioned the Ruggles report in 1961. The area of chief interest to the Ruggles committee was that of "development and preservation of data for use in economic research." Its central recommendations were:

> First, * * * that the Bureau of the Budget, in view of its responsibility for the Federal statistical program, immediately take steps to establish a Federal Data Center. Second, * * * that the Office of Statistical Standards of the Bureau of the Budget place increased emphasis on the systematic preservation in usable form of important data prepared by those agencies engaging in statistical programs. Third, * * * that at an early date the Social Science Research Council convene representatives from research institutions and universities in order to develop an organization which can provide a clearinghouse and coordination of requests for data made by individual scholars from Federal agencies.

The Ruggles report was primarily devoted to technical problems, such as the type of automatic data processing (ADP) systems that would be needed, and their indexing systems. Very important was its recognition that in order to be compatible in input, storage and retrieval, bits of data from all agencies would have to be standardized and mutually supportable. After its study of machine-readable statistical information in over 20 Government agencies, the Ruggles committee concluded that there would be some important problems in making information compatible. Among them, it noted inconsistent policies in maintaining past records (length of time before destruction, etc.), time gaps in certain files, collection, coding and tabulation procedures that are different in various agencies and which would have to be re-done, different conceptions of statistics within the agencies (i.e., ranging from recognition of statistical data as necessary to decisionmaking, to the mere storage of data as they are developed in the course of the agencies' operations.)

The important problem of the different standards by which agencies give their information to outside groups was also mentioned, but received no detailed treatment.

The Dunn report was commissioned in early 1965 to evaluate the points in the Ruggles report noted above. It concentrated on trying to learn what was, in fact, necessary for "a systematic and comprehensive coverage of the material available in its area of competence" (i.e., to provide a wide range of service based upon computer technology in a way similar to that provided by the Library of Congress with books.) The Dunn report also analyzed "the relationships between the collecting and compiling processes on one hand, and the preservation and accessibility for further use on the other." It stressed the importance of classifying data so that variables would be singled out and their correlation, if any, noted.

The Dunn report made two recommendations for possible immediate action—the development of uniform standards of data-gathering and treatment within the agencies to make their data compatible, and the establishment of a 9,000 reel core for the projected data bank to be composed of existing tapes from the Internal Revenue Service, the Bureau of Labor Statistics, Bureau of Old Age and Survivors' Insurance Social Security data.

With the need for a better information usage system established, its technical feasibility confirmed, and the beginnings of the system actually planned, the Bureau of the Budget made a tentative decision to commence work. Since it already had jurisdiction over the interagency statistical field, and since initial expenditures would be modest, the Bureau of the Budget did not feel that specific authorization of the project by the Congress was necessary.

SUBCOMMITTEE NOTES POSSIBLE THREAT TO INDIVIDUAL FREEDOM POSED BY DATA BANK

Due consideration should be given to individual privacy from the very start of any projected data bank system. Special Subcommittee Chairman Gallagher noted that the subcommittee sought to "create a climate of concern" and develop "guidelines" to protect privacy, and not to hinder efficient operation of Government or statistical analysis in the social sciences.

Two main threats to individual freedom were developed at the subcommittee hearings. The first was stated in the testimony of Vance Packard as growing mistrust of Government: "People are becoming wary of what they tell their Government as they discover that information they are confiding for one purpose may be used to affect their life in some entirely different connection." More generally, this point was asserted by Mr. Gallagher in a recent speech in which he declared that a data bank might result in "the eventuality that the social outlook of a given individual will and must be altered to meet the possibility that everything he does is recorded and remembered, without, necessarily, an understanding of the contextual or historical evolution of the action or event."

Implicit in all such criticism is a deep fear, which has been expressed by Dr. Norman A. Hilmar of the U.S. Public Health Service, in the February 1968 issue of American Journal of Public Health. He declared that "Many of the pressures generated by the need for information may well incline us toward viewing individual persons not really as persons at all, but simply as objects." He quoted Abraham Heschel: "Just as death is a liquidation of human beings, dehumanization is a liquidation of being human." Discussing the data center, Dr. Hilmar added "A Federal data bank is obviously possible in a technologically advanced nation, but this may well demand our bolstering the individual's privacy and prerogatives, even, in some cases, at some painful loss in the efficiency of research or even the effectiveness of Government operations."

The major argument against a full-scale data bank is that it would tend to make each American fearful and constantly on guard lest a spontaneous statement or act ruin his record forevermore. This fear rests upon an abstraction, but it might be noted that privacy is not tangible and was defined by Supreme Court Justice Louis D. Brandeis as "the most comprehensive of the rights of man and the right most valued by civilized men." It must be recognized that an apprehensive public might lose the freedom of thought, action, and creative risk taking that has been the cornerstone of our national power and prosperity.

TESTIMONY INDICATES THAT DATA CENTER INFORMATION MIGHT BE MISUSED

Americans could be deprived of constitutional rights by errors in gathering information at the investigative level, at the clerical level within any agency, and at the input level at the data bank. Certainly errors are much less likely with ADP techniques than they are at present.

There probably would be fewer errors in a quantitative sense. Qualitatively, however, an error would be many times more destructive to an individual. Since all requests for information would go into the central data system, all agencies would receive the erroneous information instead of the error being confined to the agency in which it was made.

The error would be more detrimental for another and more subtle reason. A computer printout is accorded a very high status, for it comes from a machine which is impartial (if not programed otherwise) and which very rarely makes a mistake itself.

The irrefutability of the scientific method and the mystique of the computer would tend to superimpose the status of validity on what in other contexts would be highly suspicious data.

Some critics have stated that a much more widespread problem than malfunction might be misuse both in terms of the nature of the information stored and in violations of privacy when confidential information is given to agencies that have, or should have, no legitimate access.

NEED FOR LIMITATIONS ON TYPES OF DATA STORED DEMONSTRATED

The basic structure of any proposed data bank demands that personal information on individuals must be a part of the system. In the future we might expect the types of information considered important for collection to be in areas now considered too personal or simply irrelevant to the decisionmaking process. In a recent magazine article, Prof. Alan Westin of the Columbia University Department of Public Law and Government declared: "When machines can store so much data, and so many questions that we once thought beyond our capacities to receive can be answered factually and logically, our society comes to expect that decisions of business, government, and science ought to be based on analysis of all data. Anyone who advocated withholding the necessary data from the information systems in the name of fragile values such as privacy or liberty may be seen as blocking man's most promising opportunity in history—to know himself and to make more rational, more predictable decisions about human affairs" (Playboy, May 1968).

In view of the expected constant pressure for more intimate information to be collected and centrally stored, it would appear that limits on the compilation and storage of such information must be set by a Congress to whom human values are more important than statistics. Otherwise, they may never be set at all. Many would agree with the observation of Yale Law Prof. Charles A. Reich:

"I would like, in the first place, a law that would prohibit Government agencies from asking some kinds of questions at all," including, he added, questions that are "either so personal it is nobody's business or so close to the constitutional area of religion and free speech that it is nobody's business in a constitutional sense" (hearings, p. 31). There are, however, many divergent views as to what kind of questions are "so personal."

KAYSEN REPORT RECOMMENDS STATUTORY PROVISIONS AS SUFFICIENT TO PROTECT PRIVACY

Neither the Ruggles report nor the Dunn report discussed the threat to privacy contained in their recommended centralization of the Federal statistical system. This oversight was partially rectified by the Kaysen report which was issued shortly after the subcommittee hearings.

The "Report of the Task Force on the Storage of and Access to Government Statistics" was compiled under the direction of Dr. Carl Kaysen of the Institute for Advanced Studies at Princeton University. The main body of the report gives recommendations concerning the

organization and structure of the data center within the Executive Office of the President. It included flow charts for possible interagency cooperation and more efficient planning in individual agencies through the use of information pooled via the data bank. Appropriation requests totaling $10 million (exclusive of buildings and computers) were suggested, as was the obtaining of high-grade positions for much of the staff. Privacy is not treated in the report proper. There is an "annex" to the report, however, which notes that the subcommittee "has raised questions about the possible threats to privacy and freedom that a national data center might present. These are serious questions," it continues, "that deserve to be met squarely."

"In general, our committee believes," Kaysen states, "that the problem of the threat to privacy can be met best by congressional action, which defines a general statutory standard governing the disclosure of information that is collected on individuals either as a byproduct of administrative, regulatory, and taxing processes, or through census or sampling procedures. The Director of the Federal Statistical System should then be given the responsibility for monitoring compliance with this standard, not only by the data center, but by all the parts of the system."

The Kaysen report commends the record of the Bureau of the Census in protecting confidential information. It further notes that other agencies, by their nature, might have to use information supplied by an individual against him. Its example was the Internal Revenue Service in the case of tax fraud. Adding that "it is a real question whether tax returns or social security records should be turned over to other groups who may wish to use them for other purposes if the persons or firms to whom the records refer may individually be affected thereby. The question of the proper or improper use of information by different agencies is indeed a ticklish one, and procedures should be developed by both the executive branch and the legislative branch which will protect confidentiality and insure the privacy of the individual.

"The enforcement of a statutory obligation as the primary method of dealing with the problems of safeguarding privacy can work excellently, as the experience of the Census Bureau shows. Indeed, the present situation, in which there exist a variety of different disclosure standards, some statutory and some executive, is much less conducive to protection of individual's privacy than would be in a situation in which, as our report suggests, the director and the data center would have the obligation of enforcing a uniform standard over the whole system."

Finally, the Kaysen report dismisses the possibility of individual "dossiers" existing within the data bank. "It is not the purpose of the proposed center at all, and it is clearly within the power of Congress to distinguish between the collection and organization of general economic, social and demographic information of the sort that Federal statistical agencies have traditionally collected—much of it on a sample basis—to which our proposed national data center is directed, and assembly of the sort of personal history information on named individuals that is contained in a personnel file or police file." (NOTE.—The Ruggles, Dunn, and Kaysen reports may be obtained from the Bureau of the Budget.)

It should be noted, however, that the Kaysen report did not contradict Dr. Bowman's testimony that it would be impossible to delete the names of all individuals from information concerning their activities.

In response to a question by Chairman Gallagher, the widely respected computer/communications expert, Paul Baran, contended "In specific answer to your question, you can extract intelligence information from a statistical system and get statistics from an intelligence system" (hearings, p. 128).

The Kaysen report recognized the importance of "uniform disclosure standards so that the legal requirement of confidentiality can be met with no unnecessary sacrifice of analytically useful information." It also declared that "Federal agencies or other users should not be able to draw on data which is available within the Federal statistical system in any way that would violate the right of the individual to privacy." However, it made no recommendations as to the specific laws or regulations that would reduce these ideal goals to practical realities.

Chairman Gallagher, noting the lack of specific recommendations concerning protection of privacy within the Kaysen report, declared it represented an insufficient examination of all the problems and potentialities that would arise from the establishment of a national data center and that it should not be considered an acceptable basis for the beginning of a national data center. Rep. Jackson E. Betts of Ohio noted on the floor of the House that: "Legal safeguards would not, in the final analysis, prevent an overzealous bureaucrat or autocratic government from using a national data center to persecute or prosecute its detractors" (August 25, 1967).

DATA CENTER SECURITY WOULD BE MORE DIFFICULT THAN PRIVACY PROTECTION IN PRESENT AGENCY SYSTEMS

As the Kaysen report noted, the Bureau of the Census is highly respected for keeping its data confidential. It does this, however, by strict adherence to its policy of releasing information in aggregate form. Not only does it not release information on individual people or firms, but it will not release information on a class if there is a reasonable possibility that an informed reader might be able to glean information on a member of the class (that is, the dominant company in a small industry). Thus, the Bureau of the Census is not faced with the difficulty of making fine discriminations among its data on individuals as to which information should be released and which should not.

Another point lessens the validity of using the Bureau of the Census and its record for protecting privacy and confidentiality as an argument for the future success of proposed safeguards in a national data bank. While it must be conceded that Census questions in recent years have become more personal in nature, yet it must clearly be recognized that the data stored in a national data bank will be orders of magnitude more sensitive than those now at the Bureau of the Census. While many observers are totally justified in praising the Bureau of the Census for the responsible manner in which it has protected its information, it is a dangerous illusion to allow this reliable record to justify a national data bank.

In practice, at least 30 to 40 Federal agencies could be expected to participate in a data center. Each would have numerous bureaus and other subdivisions. For each of these hundreds of bureaus there

would have to be developed a complicated set of standards whereby every type of report would have to be evaluated. It would be possible, of course, to establish a single rating on a "confidentiality scale" for each report. However, the sensitivity of a given document is not intrinsic, but varies with the relationship between the agency gathering the data and the agency receiving it. (E.g., a person giving his income for a HUD housing survey would have his confidence violated if this income figure were to be given to the Internal Revenue Service, but not if it were given to the Bureau of the Census for aggregate purposes.)

Therefore, each of the hundreds of bureaus would have to rate every type of information it possesses separately for all other bureaus that might request the information.

With the problem of transferral of information now defined as that of taking information gathered from any group of agencies and transmitting this information to any combination of agencies, the number of mathematical possibilities for transfer paths becomes huge.

In any case, it would be very difficult to categorize data and data requests properly in the first instance, as has been noted by both Ruggles and Dunn.

The Ruggles report indicates that:

> Few outsiders can know enough about the data, their nature and characteristics to make sensible requests, or to have a realistic appreciation of the analytic limitations which the data impose * * *.

The Dunn report added:

> The structural problems of concern to today's policymakers and the effort to bypass problems of record incompatibility force the utilization of data at levels of disaggregation that place severe strains upon regulations restricting the disclosure of information about individual respondents.

INDIVIDUAL DOSSIERS APPEAR INEVITABLE

The annex to the Kaysen report stated that the Data Center would not intend to collect dossiers. However, this reassurance must be considered in the light of the evident usefulness in maintaining the connection with each bit of information the name (or identifier) of the person associated with that information. It is probably true that a data bank would initially collect the social, economic, and demographic information that is "traditional," but, as the Dunn report stressed, it is the relationship between variables that researchers are most interested in. In order to determine the correlation between various bits of social, economic, and demographic data, it is necessary, for example, that changes in the economic status of an individual be compared with changes in the social pattern of the same individual, not with those of a neighbor. Social scientists recognize that the problems of the disadvantaged urban dweller are very much interconnected. It is felt that the solution to the interrelated problems of modern life can only be accomplished through study of the combined forces—economic, political, social, educational, medical, legal, etc.—which affect the individual. Since a majority of these records exist in separate agencies

and, it must be noted in any projected future for a Data Center, in separate jurisdictions, it appears that information must be consolidated before it can be usefully analyzed. The identifiers or names attached to files in scattered places are neither absolutely compatible nor totally reliable, so the process of compilation will require great effort. Thus, a file on each person in the Data Center, which correlates the various interrelated forces would appear to be inevitable and exceedingly expensive.

In considering the manner in which information should be fed into the computer, the confrontation between an unrestricted recording system and the right to privacy is direct. At the hearing, Dr. Raymond T. Bowman, Director—then Assistant Director—of Statistical Standards at the Bureau of the Budget, noted that the data center would not attempt to compile large files on individuals, but that names would remain linked to stored information:

> Dr. BOWMAN. I would not want to say that within the Data Center * * * there would be no identification of information with an individual, just as the Census Bureau can now identify information about a particular business firm and about a particular individual. *You would not be able to use this information meaningfully unless this kind of identification were maintained, particularlry by the agency which collects the information or the agency which wants to assemble it for analytical purposes.* * * *
>
> I would emphasize * * * there is no intention to organize the data in the center with regard to individuals; that data in different files, data on different tapes, might certainly identify individuals enough so that this information can be associated together for statistical purposes, but there would be no intention and no need for the data center to organize specific records about specific firms or specific individuals so you accumulated a lot of information about individuals. * * * [Italic supplied.]
>
> Mr. GALLAGHER. You have narrowed it down somewhat from Mr. Dunn's report, and you are zeroing in on the statistical data center aspect of this.
>
> Mr. BOWMAN. The Dunn report and the Ruggles report, while they are not as specific as I now am, were addressed to the same idea. They were just not careful enough in their wording. What they were thinking about and at least what we were interested in, in reviewing their proposals, was not a data center for all purposes, but a Federal Statistical Data Center. We recognize that there are needs for other kinds of data centers for other kinds of purposes, but so far as the data center I am talking about and so far as the data center that the Bureau of the Budget has been interested in, in connection with my work, it has been a Federal Statistical Data Center, not a center for other purposes.
>
> Mr. GALLAGHER. Are you sufficiently confident to say categorically that this will never be used for any other purpose when you have the capacity of a computer to do all sorts of things in this day and age?

> Mr. BOWMAN. We have the capacity to do all these sorts of things right now in the Census Bureau. We can do 75 or 60 percent of it.
>
> Mr. GALLAGHER. Let's not talk about the Census Bureau. Let's talk about the IRS. Do you think the same pattern of confidentiality exists there?
>
> Mr. BOWMAN. No, but let me——
>
> Mr. GALLAGHER. You are going to mix this data.
>
> Mr. BOWMAN. Let me make this clear. The IRS data release is governed by law. These laws can be changed. I would conceive of the Federal Data Center as having information from the IRS files in it, but the data center would not release that information about individuals. If it were released at all, it would be released under the conditions that now prevail with regard to the IRS and only with respect to its data and by IRS. The data center would not itself release that information, nor would it associate that information with anything else and release it in associated form. The kind of data center that I am talking about is a Federal Statistical Data Center which would do a great deal to relieve American business of duplicate reporting, would not reveal information about any individual or any individual business, but would make it possible to bring this information together for statistical purposes when released in statistical form. The identity of the individual would not be disclosed.
>
> Mr. GALLAGHER. Then why can you not give us assurance the identity of the individual or the individual corporation will be eliminated before those statistics will be put into the data center?
>
> Dr. BOWMAN. Mr. Chairman, for this reason: Suppose we have certain information in the data that are in the Center from the Census Bureau about individual persons. Suppose we have certain information in the Internal Revenue returns. We do not want to ask the business firms to give us information they have already given us, but we must be able to take the information that we have given to us which are not on the Internal Revenue returns and put it together with the information that is on the individual returns and save them the job of giving us additional information, and making statistical analyses which will indicate various characteristics of the economic scene. * * *
>
> * * * We have an excellent relation with the business community, and we want to protect that.
>
> Mr. GALLAGHER. Where it is on a voluntary basis and where they know it is adequately protected and not going to be exchanged with other information, the American business community has been very willing to give you information on a voluntary basis. Will not this well of voluntary flow now dry up if they know you are going to put it in a central data bank where the IRS and Census keys might get mixed up some afternoon?

Dr. BOWMAN. Mr. Chairman, all I can say is that we have to assure them in the same way we have in the past (hearings, pp. 52, 53, 54, and 55).

Another explanation for the necessity of linking all data within the Center to the name or identifier of the person the data concerns was recently offered the subcommittee staff by Mr. Herbert Schwartz (May 22, 1968). Mr. Schwartz is former vice president of the First National City Bank of New York for computer systems, and former chairman of the Committee to Study the National Data Center Proposal of the Federal Statistics Users' Conference. Mr. Schwartz said:

> In order to correlate the relevance of various statistics to various kinds of urban problems—for example, the relationship between education and income—it is necessary that the computer be able to link all of the relevant variables about each individual within a particular study. Thus, within the machine it has to be possible to identify the variable as belonging to a particular individual.

He added that if a knowledgeable person "were to stop the machine and know the program, he would be able to figure out just where the bits of information on a particular person might be."

INDIVIDUALS MUST HAVE ACCESS TO THEIR OWN RECORDS

Even in theory it would be very difficult to establish rigid regulations as to what contexts would be needed in what cases and when they would be needed. Low level clerical employees of the agencies yielding information to the Data Center might well be the people to make these sensitive and crucial decisions.

The most effective way to call the attention of the Center to contextual and also to clerical, machine, and investigatory errors would be to give an individual access to material in his own file. This procedure would have the disadvantage of being costly and also of injecting the possibility of the subject learning of confidential information against him. In borderline cases, legal adjudication might be necessary.

Aside from its allowing the subject to call attention to errors in his file, the need for accessibility of his file by an individual was called for at the hearings for more fundamental reasons.

Professor Reich testified:

> I think this is a denial of the constitutional right to confront, the constitutional right to face those who make statements about you, to question them, and to rebut, to answer. * * * The truth, as lawyers know, is brought out in an atmosphere of adversary proceedings, of cross-examination, of being able to answer, to rebut. * * * Here are people who are not even charged with crime, and yet who may be punished far more severely than the ordinary criminal. Here are people whose opportunity to have jobs, to earn money, whose reputations and everything else are about to be damaged forever, and they have no trial, no lawyer, no opportunity to find out anything. It seems to me without question a denial of due process of law to send forth bad information about a person in secret in that way (hearings, p. 28).

THE DANGER OF UNAUTHORIZED ACCESS TO INFORMATION IS GREAT

Writing in the magazine of the System Development Corporation, computer expert Charles Fanwick noted that all conventional computer hardware and software are designed as straightforwardly as possible—simple retrieval, which if fast and inexpensive, is the rule. "A hardware system with a greater degree of maintenance of privacy would have additional hardware complexities. Its design and construction costs would be greater and its selling price higher."

"Even then", Mr. Fanwick continued, "the system cannot be perfect. The philosophy of cryptography must be adopted. No cryptographic code is ever considered foolproof, but rather is designed only to delay the unauthorized use of the encoded information for a long enough period for the information to become valueless to the interceptor" (SDC magazine, July–August 1967).

The second way that an authorized person could misuse information contained in the bank would be for him to obtain an access key. Mr. Fanwick noted that physical keys can be lost or stolen, and that identity codes can be broken or inadvertently given away or discovered. Indeed, his conclusion is that the only way to achieve real privacy is to develop a two-key principle similar to that used in the American ballistic missile system. Even with the need for two men to separately operate access codes, he also recommends separation of data so that unauthorized entry into one file would not mean that all or most of the information on an individual would be learned.

It has been said that the present system of information storage in manila folders protects privacy less than a computer system would. Any investigator who can locate a currently existing folder can easily read what is in it without a computer, access key, and technican. Not only would it be harder to obtain information from the computerized system but, as the Dunn report indicated, it would be more expensive.

The Dunn report concluded that the additional expense would deter snooping, but several experts in the computer field have indicated that this is doubtful. Their consensus was that since all material about an individual would be stored in one place, the reward for each act of snooping would be much greater than at present. Also, there would be more material in the data center file than in all current dispersed records, because the efficiencies of computer techniques would allow more information to be gathered and stored cheaply. It is probable that advances in electronic surveillance will continue to outpace advances in protective devices, in addition.

Finally, it was noted that many sophisticated organizations that would desire unauthorized information, including branches of this or of a foreign government, would be in possession of an almost unlimited amount of funds and would not be deterred by cost if the mission were important.

Based on his own personal experience in dealing with computer-based information systems, similar to the proposed data center, which contain data vital to national security, Rand Corp. computer expert Paul Baran put these concerns into real and disturbing terms:

> A multiplicity of large, remote-access computer systems, if interconnected, can pose the danger of loss of the individual's right to privacy—as we know it today.

The composite information data base may be so large and so easily accessible that it would permit unscrupulous individuals to use this information for unlawful means.

Modern organized crime should be expected to have the financial resources and access to the skills necessary to acquire and misuse the information in some of the systems now being considered.

We are concerned not only with the creation of simple "automated blackmail machines" using this information, but with the added implication of new powerful "inferential relational retrieval" techniques now being developed. Such techniques, when fully refined, could determine relationships of any person, organization, event, et cetera, to any other person, organization, or event.

Human beings, by their day-to-day need to make decisions using totally inadequate evidence, are prone to jump to conclusions when presented with very thin chains of inferred relationships. For example, merely plastering a man's name on billboards will markedly change the outcome of an election, if the other candidate's name is not equally displayed.

The use of private detectives to unearth defaming information on political candidates and their associates has become an increasingly prevalent feature of elections and is expected to increase in the future.

The cost per unit of dirt mined by unautomated human garbage collectors can be cut by orders of magnitude once they obtain access to a set of wide-access information systems now being developed. It is the sophisticated form of chain-relation blackmail that may be of the most social concern. The development of geographically widespread access systems uses communications lines to connect the users into the computer. There is a widespread belief—but perhaps not by this committee—that somehow the communications network used will possess a God-given privacy, but "it ain't necessarily so * * * " (hearing, p. 125).

ZWICK STATES CENTER WOULD BE FOR STATISTICAL PURPOSES ONLY AND SUPPORTS ADVISORY COMMISSION

On August 8, 1967, Mr. Zwick, then Assistant Director of the Bureau of the Budget, addressed the annual meeting of the American Bar Association on the concept of the National Data Center. The speech surveyed the Ruggles, Dunn, and Kaysen reports, the Special Subcommittee on Invasion of Privacy hearings and other critical assessments of the proposed bank. He declared:

> There does not exist today—at least to my knowledge—a fully developed plan for a National Data Center. And without a carefully developed plan, the administration has no intention of creating a Data Center. Furthermore, the administration is committed to obtaining congressional approval before it would proceed to activate a National Data Center.
>
> First, *the* Center *would not be a collection agency*—rather it would have access to data collected by existing statistical

> organizations of the Federal Government. Second, the Data Center *would not have data on all individuals and firms.* Third, the Center *would not have investigatory file* information. For example, the files of the Federal Bureau of Investigation, the Internal Revenue Service investigatory files, individual personnel records and medical records *would not be available* to the Center. Finally, the Center *would not disclose information about individuals or individual firms.* [Italic Mr. Zwick's.]
>
> As currently envisioned, a National Data Center would maintain a current inventory of data collected by Government agencies * * * contain information on a sample of individuals and firms, a key feature of a Data Center from the point of view of the privacy issue. Perform statistical analyses, including analyses requiring data on individuals and individual firms. Supply users both in and out of Government with summary information and the results of statistical analyses.
>
> In short, the purpose of the Data Center is to provide statistical information. Our work to date gives us confidence that this can be done without disclosing individual records and therefore the Center can perform valuable functions and still maintain the confidentiality of individual respondents.

Mr. Zwick then noted that the Bureau of the Budget was working on draft legislation and related material. Among the questions it was studying were:

> what * * * data files * * * would be included and excluded from the Center? What operating procedures would the Center be required to follow, and how are these operating procedures related to the Center's ability to assure confidentiality? What review processes should be required so that the public has adequate guarantees that the intent of any legislation is, in fact, carried out in actual practice? And, of course, overlaying all this, are there adequate confidentiality safeguards built into the system?
>
> It is the clear intent of the administration to submit a more detailed prospectus of a Data Center to public review and comment before it submits legislation to Congress. This review would include computer scientists, suppliers of information from the business community, and representatives of potential user groups. Assuming a detailed prospectus is evolved and has general support, the administration would be in a position to submit legislation to Congress.

A number of "approaches to insuring confidentiality within a National Data Center" were also discussed in the speech. They were: (1) Legislative, the act creating the Center would state that "statistical information about various groups of individuals and firms" but not "information about individuals" would be disclosed, certain agency records would be specifically excluded, and that "operating procedures and penalties for violation" would be specified; (2) "files can be managed in such a way as to make it prohibitively expensive to obtain information about individuals by 'invading' a Data Center," and

(3) "* * * set up a public advisory committee to a Data Center and to have public disclosure of what bodies of data are in the Center, who is using this data and for what purposes. Independent public review is still one of our most effective safeguards."

BUREAU OF THE BUDGET NOW CONSIDERING SPECIFIC PROPOSALS TO SUBMIT TO CONGRESS

At the date of the preparation of this report, the Bureau of the Budget has not scheduled meetings with interested groups to discuss specific proposals. Its staff is drafting legislation which would have to be submitted to the Director, and possibly to other Government agencies before submission to interested groups. The Bureau has indicated that the proposals might not be made public, nor interested individuals given a chance to comment on them, other than a panel of 10 to 15 outside experts representing a broad range of interests. This panel would write its report on the merit and validity of the proposals for the benefit of the Director in drafting final legislation to be submitted to the Congress.

These plans and statements substantially confirm the following projections and opinions reported by Chairman Gallagher in a public statement on February 27, 1967, after his meeting with the then Director of the Bureau of the Budget, Charles Schultze earlier that month:

> It is my understanding from the Bureau of the Budget that there has been no decision taken on the establishment of or proposal of a National Data Center. Moreover, when and if the decision is made to go ahead with the establishment of a National Data Center, these are the steps and conditions which will have to be taken:
>
> (1) No computerization of the universe of data will be included on the tapes of the Center, but only summary tabulations will be stored therein:
>
> (2) Sampling information *only* will be identifiable by the name and address of the individual sampled, and the dispersion of this information will be strictly limited.
>
> If these two conditions are accepted by those who propose the Center, the following procedural steps will be taken:
>
> (1) A panel will be set up to evaluate and investigate all the problems and potentialities inherent in the establishment of a National Data Center. This panel will be composed of constitutional lawyers, computer experts, business suppliers of information, users of statistical information, and, after my own request, appointed representatives of the President of the Senate and the Speaker of the House;
>
> (2) When the panel has thoroughly investigated all aspects of the problem of the computer and the invasion of privacy, and if it reports favorably, or favoring some slight or significant modifications, on this proposal, it will then go back to the Executive with its findings. If, after that, it is still considered desirable to establish some form of a National Data Center, the Executive would draw up legislation and submit it to the Congress for approval and authorization.

> I would not, at this time, state definitively that either I or Mr. Schultze would or could agree in entirety to the final proposal to create a National Data Center, but this is the kind of proposal that is being studied.
>
> My own personal feeling is that we not only have come a long way in a short period of time, but whatever the findings of this panel will be, we will have gone a long way toward securing for every American the right to his own personal privacy.
>
> If we reread the hearings of my subcommittee held in July 1966, and if we reread the Kaysen committee report, we can justly say that my meeting with Mr. Schultze has put the proposal for the establishment of a National Data Center in a more reasonable perspective. We are no longer talking about "running starts" and "beginnings," but now we are talking about reevaluation and rethinking. The immediate purpose of my hearings was not to condemn the National Data Center, though in the end this might result, but it was to halt any action which would bring us closer to a "police state" by enacting something into law with implications not fully known to us, and to create a climate of concern within the Government. This, I believe, has been accomplished.
>
> In addition, and perhaps of equal importance, we have, by placing representatives of the Congress on this panel, reasserted a balance into the decisionmaking processes of our Government. Specifically, when and if the proposal has been accepted by the Congress, it is my understanding that all appropriations for the Center will be made by the Congress, and an annual or semiannual review of its functioning will be in order to insure the American people against any and all possible transgressions against their right to privacy.
>
> Perhaps it is inevitable that we should move toward a reduction of the right of privacy for the individual, but if the National Data Center was or is one step in this direction, then I can unequivocally state that it will not come into existence without our total awareness of its potentialities and without a maximum number of safeguards for the individual.

STUDY BY PROFESSIONAL GROUP SUGGESTS IMPROVED FEDERAL STATISTICAL SYSTEM MAY RENDER NATIONAL DATA CENTER CONCEPT IRRELEVANT AND UNNECESSARY

The Conference's study is now in its second year, but Executive Director Aiken indicated that no interim report would be issued because of the necessity to reach balanced conclusions which fully reflect the immense complexities of the Center. He added that there are many facets of the bank's potential that " we do not understand" and that his group has found that proper regulations to protect against misuse of the system to invade privacy would be "very complicated."

Mr. Aiken also noted that the Conference members have been able to use the present Federal statistical system effectively, and that one major proposed solution that the Conference committee was contemplating was a comprehensive evaluation and "improvement" of current procedures instead of a radical alteration to a centralized data center system.

APPENDIXES

Appendix I.—The Computer and Privacy

(From "Privacy and Freedom," by Alan F. Westin, pp. 321–326)

By the late 1960's large-scale data collection and processing of information about individuals and groups had been added to the American public's list of serious problems involving technology and privacy. For some, like the conservative editors of U.S. News & World Report, the computer promised to advance such unhappy developments as economic regulation, welfare activity, and Government civil rights enforcement by making them more efficient and thus even more distasteful. For others, such as liberals who do not ordinarily shudder at large-scale Government activity in these areas, fears were raised by the prospects of Government loyalty-security and law-enforcement activity. Reaching to each other from opposite ends of the American political spectrum, conservatives and liberals united in alarmed reaction at "computerized Big Brother."

Yet the fundamental thinking necessary to come to grips with the problems of the computer and privacy had not yet reached the public arenas as of 1967. Let me try to illustrate this point by describing first the larger setting of data processing in American society, then examining the possibilities of achieving control over information systems to protect privacy from unreasonable invasions.

One of the basic philospohical and practical assumptions of a society is its theory about social decisionmaking, which can be called its information theory. The classic 18th- and 19th-century information theory was of rational invididual action based on personal interest, for which a relatively limited pool of facts was required to run the business, social, and political systems.

Beginning in the early 20th century, we have moved steadily toward a more behaviorial-predictive theory of information, which assumes the need for much psychological and organizational data in order to make the decisions of social science, business, and government. The more computers offer opportunities to stimulate behavior, forecast trends, and predict outcomes, the more pressure is generated for personal and organizational information to be collected and processed. In a way we sometimes only dimly grasp, this is one of the great changes in modern society.

At the same time, and partly generated by this change itself, there has been a distinct rise in public fear of depersonalization and manipulation through collection and processing of information. Big government, big private employers, even big social science have replaced the softening, face-to-face aspects of social control of earlier times. In this setting, the private personality is the last defense of individuality,

the ultimate shield of personal autonomy. To the extent that this public fear clashes with the new information theory adopted by the decisionmaking elites of the society, this produces a sharp conflict which puts special stress on a society that wants to support both science and liberty.

The first way we can try to come to grips with this problem is to develop a new way of classifying information, to identify what is private and "noncirculating"; what is confidential, with limited circulation; and what is public or freely circulating. This can also be seen as a distinction between the facts about ourselves that are intimate, those that are part of our life transactions (education, employment, family, etc.), and those that are formal public records. Such a classification system actually approximates the theory used by some holders of mixed information files today, such as the system used by law-enforcement agencies which divides files into those of public record, case files, and "raw investigative" files.

Any attempt of this kind to develop a new information theory must take several factors into account. The "facts" about individuals put into new information systems always involve evaluation, by the very selection of what to record, the language terms in which it is formulated, with what other facts it is associated or classified, etc. As our society relies more and more on central files, what is in these becomes the most significant "facts" about an individual in his relations with society. This has great effect on decisionmakers as well. The decisionmaker comes to regard making judgments on such recorded facts as the most rational and fair way to make decisions, and will be threatened in his own role within the bureaucracy if he bypasses the record and relies on personal hunch factors.

In addition, what information about an individual is put in his files becomes part of his estimate of himself; it is how the wise and the powerful forces in his life see him. It takes a very strong personality, especially among children being recorded in the new information-worshipping society, to reject or fight the recorded judgment of who he or she "is". (Part of the value of privacy in the past was that it limited the circulation of recorded judgments about individuals, leaving them free to seek self-realization in an open environment.)

In addition, the new information systems are probably going to create new institutions. While we worry now about investigations by credit agencies, it is likely that the decentralized credit-giving system of retail operations is going to vanish, to be replaced by the central financial utility discussed earlier, in which each person will have a single account that handles all his financial transactions of every kind. If this occurs, these new financial utilities will have in their information systems a total picture of every transaction of each depositor. What legal and ethical controls will we have ready for such bodies?

As for government, the likelihood is that our Federal system will become less of a Federal-State-local system of competing and sometimes cooperating layers and will develop into functional "subject-area control systems." All the government agencies concerned with a problem, such as health, employment, education, etc., whatever their level of government, will be part of an integrated information system

and will coordinate their information to make decisions. These clusters will also be linked closely to private decisionmakers, such as employers, educational institutions, insurers, and hospitals. What controls over information collection and circulation will we have ready for these new public agencies?

If these judgments are valid, then we are now in a last-minute position to plan for the transition from one type of information theory of society to another. We must analyze the kinds of information our private and public agencies now collect, recognizing that increased possibilities of collation and circulation raise the danger potential of information our society was used to acquiring under the old information system.

This analysis would then take us to the planning and development of the new information system. The basic fact to be seen is that, even though machines in a carefully designed system can be made to do a great deal to protect privacy, man can defeat the most carefully designed system. This means that law and ethical restraints must be the final safeguards in the new information system. With this appreciation, we can discuss the machine possibilities and the legal-ethical possibilities for control.

System design aspects can be divided into three stages: input, storage, and output. The input stage can be set up to limit those who are allowed to put information in (excluding certain types of informant); to have the machine reject tainted information (such as wiretap information, grand jury minutes, etc.); to reject information classified as too sensitive for this particular system (personality-test results, sexual records, etc.); and to classify all information as it comes in according to a sensitivity code from public-record to top-sensitive. Encrypting can be used to protect the input process from third-party tapping or attempts to distort information during input.

In the second phase, storage, protections would include physical safeguards against outsiders tapping in or tampering with stored data; background investigations and normal security controls over computer personnel; storing all data in a minimum scrambled form to prevent simple printing out (or "dumping") operations by system employees; creation of random audit operations to check on the functioning of the password-security codes for users; and creation of a program in the computer to reject attempts to convert statistical information into intelligence information (as by setting a minimum number of persons who must be in each category before the computer will give out data, to prevent "one-person" statistical inquiries).

In the third phase, output, machine controls would include locks preventing the obtaining of any information without an appropriate password for the type or class of information sought, and special two- and three-person password-combination requirements for specially sensitive material. Information can be coupled so that the computer will printout only in combinations that insure protection of the individual's rights; for example, in law-enforcement intelligence systems, arrest records could be obtained only along with notations as to dismissals and convictions, and in Government security files, allegations of disloyal conduct could be obtained only with the employee's replies. A major safeguard would be to record automatically all inquiries for information, verify immediately that they come from the

proper source, and then compile a roster of inquiries for periodic review by outside review authorities (such as congressional committees or a general protective agency) as well as by the information-system management.

Despite all these possible system safeguards, the system could still be corrupted from within or penetrated from outside by concerted effort. Thus the other half of the privacy front rests on new legal and ethical policies. Since some of the specific things law might do with the computer systems we have today are sketched out in chapter 14, it is the broader principles for the future that I am concerned with here.

First, personal information, thought of as the right of decision over one's private personality, should be defined as a property right, with all the restraints on intereference by public and private authorities and due-process guarantees that our law of property has been so skillful in devising. Along with this concept should go the idea that circulation of personal information by someone other than the owner or his trusted agent is handling a dangerous commodity in interstate commerce, and creates special duties and liabilities on the information utility or government system handling it.

With personal information so defined, a citizen would be entitled to have due process of law before his property could be taken and misused by Government or by agencies exercising such enormous public power that they would be held to the same rules as Government. Allowing for certain exceptions (national security, for example, or when information was separated completely from identity for statistical use), an individual would have to be notified when information was put into key central files. He would be able, if he desired, to examine the information that had been put into his file, to challenge its accuracy in some kind of administrative proceeding (with court review), and to submit a reply or explanation that would be coupled permanently to the information. In some instances, he should have a right to challenge the very opening of a file on him in certain derogatory-information systems.

Such a system of information review by the individual, somewhat like the rights Government employees now have to see and contest their efficiency rating or of military personnel to rectify their military records, would have the most profound effect on the information system itself. When the information keeper knows that the individual will be notified, can see, and can challenge the information, all the restraints of visibility of action will be on the keeper. His loss of anonymity will be the best guarantee of fairness and care in the information-keeping procedure.

As suggested before, review of these information systems should be set up in an independent regulatory agency with an ombudsman-type character: a watchdog agency. Legislative review would also be needed.

Remedies for improper conduct in collecting, storing, or circulating personal information could include the usual criminal penalties, damage actions, and injunctions, though there would be difficult problems to work out here. What should not be overlooked is that the strongest sanction of all would be to exclude any person or agency from the information system itself, on a partial, short-term, or permanent basis. This, like exclusion from use in court of evidence obtained illegally, may be the most powerful weapon of all against misconduct.

Ethical developments in the future would range from educating a socially conscious, professional group of informationkeepers to official licensing with high qualifications, as well as the development of a code of ethics for the computer profession. One of the most interesting and important problems is: what will happen to those watchdogs of ethical performance in our society, the press and mass media, in the future information system? Can they continue to play their traditional role when access to information will be increasingly difficult for them, as outsiders? Or will the organs of criticism get their own computers and try to monitor selectively the operations of the big public and private systems?

All of these descriptions and suggestions may seem like fantasy to the reader of the 1960's. Yet few persons knowledgeable in the computer field would think that we are more than a decade away from the conditions for which such planning is needed. The most precious resource we have as a free society now is the leadtime to become aware and to prepare ourselves.

In conclusion, two points might be noted as the "message" of this discussion:

1. The strict records surveillance that was for centuries the conscious trademark of European authoritarian systems, and which the young American Republic deliberately rejected out of libertarian principles, is now being installed in the United States, not through a deliberate turn toward dictatorial policies, but as an accidental byproduct of electronic data processing for social-welfare and public-service ends.

2. There is no way to stop computerization. As Prof. Robert M. Fano of MIT has remarked, "You can never stop these things. It is like trying to prevent a river from flowing to the sea. What you have to do is to build dams, to build waterworks, to control the flow."

APPENDIX II.—COMPTROLLER GENERAL'S REPORT TO THE CONGRESS—REVIEW OF RELIABILITY OF THE AIR FORCE PERSONNEL DATA SYSTEM, B–164471, JULY 25, 1968

DIGEST

Why the review was made

The General Accounting Office has examined into the reliability of the U.S. Air Force's multimillion-dollar personnel data system. The Air Force, by combining the latest computer applications with the services of 17,600 personnel specialists, designed the system to furnish timely and accurate management data on its 135,500 officers and 758,600 enlisted men.

Data contained in the system influence decisions on assignments, promotions, school selections, separations, retirements, et cetera.

Because the effectiveness of any automated system generally is limited by the quality of information which it provides management, the General Accounting Office (GAO)—using random statistical sampling techniques—tested the reliability of data entered and being retained in the system.

Findings and conclusions

During the review of the operation of the Air Force personnel data system for the period April through October 1967, GAO found that the system was not furnishing the Air Force with data of the reliability desired. Base-level records were inaccurate and certain types of source documents were missing. (See p. 7).

The reasons contributing to the inaccuracies were—

Lack of adequate review procedures to insure the accuracy of personnel information;

Absence of standards for evaluating the reliability of system data;

Ineffective guidance and instruction by higher levels of command; and

Inadequate staffing and training of personnel.

Recommendations or suggestions

GAO suggested that the Air Force consider taking various actions (see pp. 11 to 16), such as—

Standardizing the review procedures of personnel assistance teams;

Requesting the audit services of the Air Force Auditor General for an assessment of the validity of system data;

Establishing appropriate standards for validating system data;

Improving staffing and training of supervisory and operating personnel.

Agency actions

Air Force officials agreed with our finding and suggestions. Extensive measures have been taken under a personnel data improvement

program to increase the reliability of information in the personnel data system. (See pp. 43 to 46.)

Legislative proposals

None.

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FINDING

Need for improving reliability of information in the personnel data system

During our review, we found that the data provided by the personnel data system was not of sufficient reliability to the various levels of command for use in the management of personnel resources. In this connection, we found that base-level records were inaccurate and that some source documents were missing. We believe that the inaccuracies in the personnel data were primarily due to the following management weaknesses:

1. Lack of adequate review procedures to insure the accuracy of personnel information.
2. Absence of standards for evaluating the reliability of the data in the system.
3. Ineffective guidance and instruction by higher levels of command to personnel at the base level.
4. Inadequate staffing and training of personnel at the base level.

The system was designed to provide personnel managers with timely and accurate information for the efficient and effective management of Air Force military personnel. The effectiveness of this multimillion-dollar system as a management tool depends on the accuracy of the data entered and retained in it, since the data provide the bases upon which management decisions are made. Therefore, the reporting of inaccurate personnel data, such as we found during our review, could result in inappropriate management decisions. These decisions could have an effect on both the Air Force and the individual service member because the system provides data which influence decisions on such matters as assignments, promotions, school selections, separations, and retirements.

During our review, we met with representatives of the Air Force to apprise them of our observations and to discuss possible solutions to the problems found and corrective actions needed to improve the reliability of the data within the system. At the completion of our review, Air Force officials informed us of actions which either had been taken or were planned to correct the matters brought to their attention. They apprised us that review procedures had been standardized and that personnel data system reliability standards had been established for the evaluation of the data maintained in the system.

In addition, we were advised that clarifying instructions had been issued to personnel at the base level regarding the proper coding of personnel data and that actions had been taken to improve the training of personnel specialists. Included on pages 43 through 46 of this report is a list of actions included in the personnel data improvement program which the Air Force has initiated.

A detailed discussion of our finding follows:

Inaccurate personnel data

Our review of the accuracy of data in the uniform officer records and uniform airman records at the base level showed that these records contained erroneous data. We measured the results of our review against the system reliability standards established by the Air Force (see p. 13) and found that the data in the system were not of the reliability required by the Air Force. In addition, we found that 5 percent of the officer data and 2 percent of the airman data were not susceptible to audit due to the absence of source documentation in the individuals' personnel folders. Presented below are the results of our review of the accuracy of UOR and UAR data.

Uniform officer records

Our examination of 378 UOR's involving 32,337 applicable blocks of information showed that these records contained a total of 1,725 errors, or an error rate of 5 percent. Our analysis of the records showed that 366 of the 378 UOR's contained one or more errors. The number of errors on the UOR's examined averaged five for each record. More significantly, however, we found that the error rates for 52 percent of the critical data items and 28 percent of the noncritical data items did not meet the Air Force's reliability standards. Included as appendix IV is a schedule of UOR data items that did not meet the Air Force's reliability standards.

The following case illustrates our finding:

The UOR contains five information blocks which should identify, by use of coded data, the five most recent technical or flying training courses that officers have completed. These information blocks are used to identify those officers who have completed the specialized training that is a prerequisite for their selection for assignment to particular Air Force positions.

The Air Force reliability standards for these information blocks provides for a minimum accuracy rate of 90 percent. We found, however, that accuracy rates for these information blocks ranged from 51 to 77 percent. This high frequency of error could adversely affect the assignment of officers.

Uniform airman records

Our examination of 480 UAR's involving 25,180 applicable blocks of information showed that these records contained a total of 1,461 errors, or an error rate of 6 percent. Our analysis of the records showed that 457 of the 480 UAR's contained one or more errors. The number of errors on the UAR's examined averaged three for each record. More significantly, however, we found that the error rates for 47 percent of the critical data items and 39 percent of the noncritical data items did not meet the Air Force's reliability standards. Included as appendix V is a schedule of UAR data items which did not meet the Air Force's reliability standards.

The following case illustrates our finding:

One of the UAR data items classified as critical by the Air Force is date of rank (permanent grade). This date establishes the seniority of an individual compared with that of others in the same grade. The principal use of this item is to identify airmen who are eligible to be considered for promotion.

The Air Force reliability standard for this information block provides for a minimum accuracy rate of 99 percent. We found, however, that the accuracy rate for this information block was 98 percent. Because of this frequency of error, eligible airmen may not have been considered for promotion.

* * * * * *

Conclusion and agency actions

The personnel data system was designed to retain and provide to Air Force management officials information that they need to manage the service's personnel resources. Using the Air Force's reliability standards, we found that the information being retained in the system was not sufficiently reliable to effectively serve this purpose. Also we identified what we believed to be the basic management weaknesses that contributed to this condition.

On February 27, 1968, we brought our findings to the attention of the Secretary of Defense. The Assistant Secretary of the Air Force (Manpower and Reserve Affairs), by letter dated April 26, 1968, commented on our findings on behalf of the Department of Defense. (See app. VI.)

The Assistant Secretary informed us that the Air Force generally agreed with our findings and proposals and had taken action to correct the management weaknesses revealed by our review. (See pp. 34 to 40.)

The Assistant Secretary advised us that, although the Air Force generally agreed with our findings and proposals, it questioned the implication that the system was not providing personnel data of sufficient reliability to the various levels of command for use in the management of personnel resources. In this connection we were advised that the Air Force was able to use the data in the system to manage its personnel resources, particularly its Southeast Asia operations.

We based our opinion that the personnel data system was not providing personnel data of sufficient reliability to the various levels of command for use in the management of personnel resources on the following factors:

1. Fifty-two percent of the UOR critical data items and 47 percent of the UAR critical data items did not meet the Air Force's reliability standards.
2. The Department had designed the system to provide personnel managers with timely and accurate information for the efficient and effective management of Air Force personnel. Therefore, to the extent that erroneous data were being retained, we believed that the system was not meeting the objective for which it was designed.

The Assistant Secretary also pointed out that there were many checks and balances in the Air Force's overall management of its personnel that were designed to detect and correct decisions which may have been based on erroneous UOR and UAR data in its personnel data system. For example, the Assistant Secretary said that the assignment system had been designed to permit a reclama—an action in contest of a decision by a panel, committee, or the like to restore what has been taken away—when a review of manual records indicated that an individual was not qualified or was ineligible for reassignment.

We recognize that there are manual checks and balances in the Air Force's overall personnel management system that are designed to correct initial management decisions, such as reassignment of personnel, which are proved to be in error because of incorrect personnel data in the system. However, to the extent that additional management actions are required to correct errors caused by inaccurate data in the system, we believe that these actions are both time consuming and costly. Furthermore, it should be noted that, although manual checks may correct initial management decisions such as those relating to the reassignment of personnel, there may be other qualified individuals who have not been considered for reassignment because the inaccurate personnel data in the system precluded them from being considered eligible for reassignment.

The Assistant Secretary stated that the accuracy of the data within the Air Force's personnel system was paramount in the management and operation of the system and that the irreducible minimum or a 100-percent data accuracy rate was a major management objective of the Air Force personnel program. Moreover, the Assistant Secretary informed us that the Air Force had taken actions to increase data accuracy in the personnel data system and that these actions had resulted in a far-reaching data improvement program.

In view of the actions taken by the Air Force, we are making no recommendations at this time since these actions, if properly implemented and monitored, should result in improving the reliability of the data in the system.

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NATIONAL ACADEMY OF SCIENCES

Computer Science and Engineering Board

March 3, 1972

Mr. Kenneth Olsen, President
Digital Equipment Corporation
146 Main Street
Maynard, Massachusetts 01754

Dear Mr. Olsen:

At the request of Anthony G. Oettinger, I am enclosing legislation introduced by Congressman Jack Brooks on February 17, 1972.

Sincerely,

Karen M. Pastor

Karen M. Pastor

KMP/S

Enclosure:
As stated above.

Executive Support Staff, Room 840, Joseph Henry Building, Washington, D. C.
Phone (202) 961-1834

CODE

ANNOTATED

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U.S. Laws, Statutes, etc Codes

UNITED STATES CODE ANNOTATED

Title 40

Public Buildings, Property, and Works

§§ 301 to End

Comprising All Laws of a General and Permanent Nature
Under Arrangement of Official Code of the
Laws of the United States
With
Annotations from Federal and State Courts

ST. PAUL, MINN.
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Act Sept. 5, 1950, 1950 U.S.Code
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nited States §§ 36, 37, 62-64.

Notes of Decisions

1. Employment of personnel

Government agency was vested with authority to secure temporary or intermittent services of attorney by contract or appointment and authorized it to enter into independent contractor relationship with attorney as distinguished from employment status. Boyle v. U. S., 1962, 309 F.2d 399, 159 Ct.Cl. 230.

§ 759. Procurement, maintenance, operation and utilization of automatic data processing equipment—Authority of Administrator to coordinate and provide for purchase, lease and maintenance of equipment by Federal agencies

(a) The Administrator is authorized and directed to coordinate and provide for the economic and efficient purchase, lease, and maintenance of automatic data processing equipment by Federal agencies.

Procurement, maintenance and repair of equipment; transfer between agencies; joint utilization; establishment and operation of equipment pools and data processing centers; delegation of Administrator's authority

(b) (1) Automatic data processing equipment suitable for efficient and effective use by Federal agencies shall be provided by the Administrator through purchase, lease, transfer of equipment from other Federal agencies, or otherwise, and the Administrator is authorized and directed to provide by contract or otherwise for the maintenance and repair of such equipment. In carrying out his responsibilities under this section the Administrator is authorized to transfer automatic data processing equipment between Federal agencies, to provide for joint utilization of such equipment by two or more Federal agencies, and to establish and operate equipment pools and data processing centers for the use of two or more such agencies when necessary for its most efficient and effective utilization.

(2) The Administrator may delegate to one or more Federal agencies authority to operate automatic data processing equipment pools and automatic data processing centers, and to lease, purchase, or maintain individual automatic data processing systems or specific units of equipment, including such equipment used in automatic data processing pools and automatic data processing centers, when such action is determined by the Administrator to be necessary for the economy and efficiency of operations, or when such action is essential to national defense or national security. The Administrator may delegate to one or more Federal agencies authority to lease, purchase, or maintain automatic data processing equipment to the extent to which he determines such action to be necessary and desirable to allow for the orderly implementation of a program for the utilization of such equipment.

Automatic data processing fund; establishment; uses; report to Bureau of Budget and Congress

(c) There is hereby authorized to be established on the books of the Treasury an automatic data processing fund, which shall be available without fiscal year limitation for expenses, including personal services, other costs, and the procurement by lease, purchase, transfer, or otherwise of equipment, maintenance, and repair of such equipment by contract or otherwise, necessary for the efficient coordination, operation, utilization of such equipment by and for Federal agencies: *Provided*, That a report of equipment inventory, utilization, and acquisitions, together with an account of receipts, disbursements, and transfers to miscellaneous receipts, under this authorization shall be made annually in connection with the budget estimates to the Director of the Bureau of the Budget and to the Congress, and the inclusion in appropriation acts of provisions regulating the operation of the automatic data processing fund, or limiting the expenditures therefrom, is hereby authorized.

(1)

Capital of fund; credits; transfer of net income to Treasury

(d) There are authorized to be appropriated to said fund such sums as may be required which, together with the value, as determined by the Administrator, of supplies and equipment from time to time transferred to the Administrator, shall constitute the capital of the fund: *Provided*, That said fund shall be credited with ~~(1)~~ advances and reimbursements from available appropriations and funds of any agency (including the General Services Administration), organization, or contractor utilizing such equipment and services rendered them, at rates determined by the Administrator to approximate the costs thereof met by the fund (including depreciation of equipment, provision for accrued leave, and for amortization of installation costs, but excluding, in the determination of rates prior to the fiscal year 1967, such direct operating expenses as may be directly appropriated for, which expenses may be charged to the fund and covered by advances or reimbursements from such direct appropriations) and ~~(2)~~ refunds or recoveries resulting from operations of the fund, including the net proceeds of disposal of excess or surplus personal property and receipts from carriers and others for loss of or damage to property: *Provided further*, That following the close of each fiscal year any net income, after making provisions for prior year losses, if any, shall be transferred to the Treasury of the United States as miscellaneous receipts.

(A)

(B)

(2) INSERT (I) FROM BILL

Inapplicability of other inconsistent provisions of law

(e) The proviso following paragraph (4) in section 481(a) of this title and the provisions of section 474 of this title shall have no application in the administration of this section. No other provision of this Act or any other Act which is inconsistent with the

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June 30, 1949, c. 288, Title I
306, 79 Stat. 1127.

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References in Text. This Act,
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Scientific and technological advisory services by Secretary of Commerce; recommendations to President; research

(f) The Secretary of Commerce is authorized (1) to provide agencies, and the Administrator of General Services in the exercise of the authority delegated in this section, with scientific and technological advisory services relating to automatic data processing and related systems, and (2) to make appropriate recommendations to the President relating to the establishment of uniform Federal automatic data processing standards. The Secretary of Commerce is authorized to undertake the necessary research in the sciences and technologies of automatic data processing computer and related systems, as may be required under provisions of this subsection.

INSERT (II) FROM BILL.

Limitations on Authority of Administrator and Secretary of Commerce; notice and review of Administrator's determinations

(g) The authority conferred upon the Administrator and the Secretary of Commerce by this section shall be exercised subject to direction by the President and to fiscal and policy control exercised by the Bureau of the Budget. Authority so conferred upon the Administrator shall not be so construed as to impair or interfere with the determination by agencies of their individual automatic data processing equipment requirements, including the development of specifications for and the selection of the types and configurations of equipment needed. The Administrator shall not interfere with, or attempt to control in any way, the use made of automatic data processing equipment or components thereof by any agency. The Administrator shall provide adequate notice to all agencies and other users concerned with respect to each proposed determination specifically affecting them or the automatic data processing equipment or components used by them. In the absence of mutual agreement between the Administrator and the agency or user concerned, such proposed determinations shall be subject to review and decision by the Bureau of the Budget unless the President otherwise directs.

INSERT (III) FR BILL

June 30, 1949, c. 288, Title I, § 111, as added Oct. 30, 1965, Pub.L. 89-306, 79 Stat. 1127.

Historical Note

References in Text. This Act, referred to in text, is Act June 30, 1949, c. 288, 63 Stat. 378. Titles I-IV and VI-VIII thereof are classified to this chapter and chapter 10 of this title, and chapter 4 of Title 41, Public Contracts. Title V thereof was classified to former chapter 11 of Title 44, Public Printing and Documents, but was repealed by Pub.L. 90-620, § 3, Oct. 22, 1968, 82 Stat. 1309. The subject matter of such former Title V is now covered by chapters 21, 25, 27, 29, and 31 of Title 44.

Legislative History. For legislative history and purpose of Pub.L. 89-306, see 1965 U.S.Code Cong. and Adm.News, p. 3859.

Library References

United States ⇐60. C.J.S. United States § 83.

92d Congress
2d Session

Mr. Brooks

A B I L L

To amend the Federal Property and Administrative Services Act of 1949 to improve the quality of information available to Federal policymaking officials in matters involving data processing technology, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) section 111(d) of the Federal Property and Administrative Services Act of 1949 (40 U.S.C. 759(d)) is amended by inserting "(1)" after "(d)", and by adding at the end thereof the following new paragraph:

INSERT (1) TO ACT

"(2) The Administrator shall reimburse the Computer Board of the National Academy of Sciences from the fund, in an amount not to exceed $3,500,000 during any fiscal year, for costs incurred by the Computer Board (other than

any compensation paid to panel members) in conducting studies or evaluations, and in performing other services, which the Computer Board may undertake from time to time at the request or on behalf of a Federal agency, and which, in the judgment of the Computer Board, require the Board's unique capabilities and qualifications and could not be performed in an equally satisfactory manner by a Federal agency or an educational institution, or under Government contract. The recommendations and conclusions of the Computer Board shall be developed and submitted to appropriate Federal officials in such manner and form as to optimize their informational value but shall not be binding upon, or limit the responsibility or the authority of, any Federal official. With regard to studies, evaluations, and other services subject to reimbursement under this paragraph, it is the sense of the Congress that the National Academy of Sciences should select members to serve on the Computer Board and on the Board's panels on the basis of recognized capability and expertise in the relevant areas, with proper provision made for the reasonable development of conflicting philosophies, opinions, or points of view."

(b) Section 111(d)(1) of such Act (as redesignated by subsection (a) of this section) is amended by striking out "(1) advances" and inserting in lieu thereof "(A) advances" and by striking out "(2)" and inserting in lieu thereof "(B)".

INSERT II TO ACT

Sec. 2. Section 111(f) of such Act (40 U.S.C. 759(f)) is amended by adding at the end thereof the following new sentence: "There is authorized to be appropriated for the fiscal year ending June 30, 1973, and for each fiscal year thereafter, the sum of $100,000,000 to be expended under the guidance and direction of the Director of the National Bureau of Standards to support basic research in data processing technology."

Sec. 3. Section 111 of such Act is amended by adding at the end thereof the following new subsection:

INSERT III TO ACT

"(h) The Administrator is authorized to enter into contracts for periods not exceeding five years for the rental of computers, computer components, and related services which he is authorized to acquire for use of the Government under provisions of this section."

JACK BROOKS
9TH DISTRICT, TEXAS

COUNTIES:
CHAMBERS
GALVESTON
JEFFERSON

Congress of the United States
House of Representatives
Washington, D.C. 20515

COMMITTEES:
JUDICIARY
GOVERNMENT OPERATIONS
CHAIRMAN:
GOVERNMENT ACTIVITIES
SUBCOMMITTEE
JOINT COMMITTEE ON
CONGRESSIONAL OPERATIONS
CHAIRMAN

FOR IMMEDIATE RELEASE
Thursday, February 17, 1972

BROOKS INTRODUCES LEGISLATION TO IMPROVE FEDERAL POLICYMAKING REGARDING COMPUTERS

WASHINGTON, D.C.--"The United States must maintain world leadership in computer technology," Congressman Jack Brooks (D-Texas) declared today upon introduction of legislation aimed at improving Federal policymaking regarding computers and to expand basic research in computer technology.

"If the United States loses its leadership in computer technology -- if we become a second-rate computer power -- we will become at the same time a second-rate nation, both economically and militarily," Brooks declared.

"Broad segments of our economy and most of the nation's defense systems rely upon computers, and they offer vast potential in the solution of many of the extremely difficult social problems confronting the nation," the Congressman continued.

"The legislation I introduced today would provide limited funding to the Computer Board of the National Academy of Sciences to provide the highest level of expertise from the nation's computer community to fill the informational needs of government policymakers. In addition, the bill authorizes Federal expenditures of $100 million annually for basic research in computer technology to be administered by the Director of the National Bureau of Standards," Brooks explained.

"The bill also would amend Public Law 89-306 to allow the Administrator of General Services to enter into contracts for periods of up to five years in the leasing of computers and related services needed by the Federal Government. This authority, which has been recommended by the Comptroller General and the Administrator of General Services, can save the government millions of dollars annually."

In a statement on the Floor of the House, Brooks asserted, "To maintain our leadership in the field of computer technology, Federal policymaking officials must have available to them the most sophisticated and the highest quality information regarding computer technology that the American computer community can provide. We cannot endanger the nation's economic and military leadership by faulty computer policies.

"In such areas as East-West trade in computers, the patenting of computer software and matters involving individual privacy and security of information and in countless other areas in which the Government has a specific responsibility, the officials formulating the policies and making the decisions need the best information they can get," the Congressman concluded.

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over a high dam and through a reservoir, such as Nez Perce, with any assurance that they will be effective. The Commission concluded that construction of the Nez Perce Dam, with its reservoir extending 63 miles up the Salmon River, would adversely affect fish runs on that stream which is a principal spawning area of Columbia River salmon, as contrasted to the proposed High Mountain Sheep development on the upper Snake River, which would affect only the fish runs on the Snake River which are already impaired.

B. As a result of Commission action, changes have been made in two of the three fish ladders at the Rock Island Dam site (project No. 943) on the Columbia River in Washington, to avoid the adverse effects on fish runs that would otherwise result from the construction downstream of the Wanapum Dam (project No. 2114). The Commission also directed the licensees of both projects, in cooperation with representatives of the Department of Interior and the Washington State Department of Fisheries and Game, to develop a program for the study and evaluation of the further effects on fish passage at Rock Island Dam that may result from raising the water level downstream from that dam by construction and operation of the Wanapum project. At the Priest Rapids-Wanapum Dam developments of project No. 2114, the licensee was required to provide up to a total of $182,000, for studies of the extent and character of the fish and wildlife resources of the project area and to devise means and measures for mitigating losses to those resources.

C. The Commission has directed a licensee to construct, operate, and maintain fish hatchery and rearing facilities at the Iron Gate development on the Klamath River in California (project No. 2082), as requested by the State of California Department of Fish and Game, in order to compensate for spawning areas rendered inaccessible by construction of the dam.

D. In a recent decision involving the Turlock and Modesto Irrigation Districts, California (project No. 2299), the Commission included a license condition sought by the State of California and the Secretary of the Interior, requiring the maintenance of water releases necessary to sustain a specified minimum run of salmon in the Tuolumne River. In addition, the Commission required the applicant to cooperate in the submission of plans for undertaking continuing studies of the fish problem.

E. In three Columbia Basin projects, project Nos. 1971, 2145, 2030, upon recommendations of the Secretary of the Interior and the State fishery agencies, the Commission has ordered the construction of experimental facilities for anadromous fish passage and propagation in order to help protect and preserve the runs of fish. Since some of the facilities are experimental, evaluation studies have also been provided to determine if the facilities are giving the protection for which they were designed.

F. The cooperative study on the Susquehanna River to determine the feasibility of rehabilitating runs of shad in that river basin above four existing dams should be noted. These studies, now starting their third year, are being jointly and voluntarily financed by the licensees of the four dams, FPC project Nos. 405, 2268, 1025, and 1888, at a total estimated cost of $196,500. The U. S. Fish and Wildlife Service and the State fishery agencies of Pennsylvania, New York, and Maryland are conducting the studies. The Commission is being kept advised of the progress of this work.

In summary, the actions of this Commission in licensing matters show full awareness of and regard for the conservation of fish resources. The objectives of the several bills appear to be compatible with those of the Federal Power Act, and enactment of any one of the bills should greatly assist in attaining the conservation goal on a broad national scale. We have no objection to any of the proposed bills.

JOSEPH C. SWIDLER, *Chairman.*

AUTOMATIC DATA PROCESSING EQUIPMENT

For text of Act see p. 1133

House Report (Government Operations Committee) No. 802, Aug. 17, 1965 [To accompany H.R. 4845]

Senate Report (Government Operations Committee) No. 938, Oct. 22, 1965 [To accompany H.R. 4845]

Cong. Record Vol. 111 (1965)

DATES OF CONSIDERATION AND PASSAGE

House Sept. 2, 1965

Senate Oct. 22, 1965

The Senate Report is set out.

SENATE REPORT NO. 938

THE Committee on Government Operations, to which was referred the bill (H.R. 4845) to amend title I of the Federal Property and Administrative Services Act of 1949 to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies, having considered the same, reports favorably thereon without amendment and recommends that the bill do pass.

I. PURPOSES OF THE BILL

> The findings on the impact of ADP previously reported herein indicate that dynamic leadership of the ADP program of the Federal Government is a vital necessity. Passive, partial, or informal types of leadership have had their place, but have now outworn their usefulness.[1] *1959 Bureau of the Budget Automatic Data Processing Responsibilities Study.*

After 6 years, the type of leadership the Bureau of the Budget (BOB) recommended in this early automatic data processing (ADP) management study has yet to be realized. This legislation would establish the authority and provide the operational machinery needed for the effective and efficient management of this costly equipment.

[1] "Report of Findings and Recommendations Resulting From the Automatic Data Processing (ADP) Responsibilities Study, September 1958-June 1959." Bureau of the Budget, p. 20. Reprinted in hearings on H.R. 4845, 89th Cong., 1st sess., p. 590.

During the years following issuance of the BOB's 1959 ADP study, the Comptroller General has issued approximately 100 audit reports severely critical of Government ADP management. Over the years, he has continuously emphasized and demonstrated the need for Government-wide coordination in ADP management. Federal ADP expenditures now exceed $3 billion annually and the Comptroller General conservatively estimates with regard to the equipment coming within this management program that approximately $200 million a year can be saved through the use of long, recognized and accepted management techniques provided in this legislation.

This committee recommended similar legislation to the House on June 19, 1963 (H.Rept. 428, 88th Cong., 1st sess.), and that legislation, as amended (H.R. 5171), was approved July 18, 1963.

II. SUMMARY

The Federal Government is the largest user of ADP in the world with annual expenditures exceeding $3 billion or approximately 3 percent of the Federal budget. There are now an estimated 2,000 computer systems in use in the Federal Government.

What is ADP?

Automatic data processing (ADP) is the concept whereby a machine or computer can accept information or "input data," process the data according to a predetermined "program," and provide the results in a usable form.

Data processing computers are either analog, which measure "how much," or digital, which calculate numbers or compare nonnumerical data encoded in digital form. Most ADP in use is digital in design, and it is this type of equipment that is the principal concern of the legislation.

The heart of an ADP system is the processor or "main frame" which contains the complex electronic circuits which accept and process data. The processor in conjunction with input, output, and storage components such as a tape unit, a card punch, a memory component, a printer, and so forth, make up a computer system. The system is "designed" or "configured" by combining various of these mass produced components, the combination depending on the particular needs of the user. Most components are general purpose in design and the system can be programed to perform various functions. About 90 percent of the computers in Government are general purpose. In addition to the "hardware," the user must also obtain the instructions and procedures needed to operate the system. These are called "software" and often constitute a substantial portion of the cost of an ADP system.

The technological evolution of ADP has entered the third generation. The first generation equipment contained electronic vacuum tubes while the second generation equipment introduced solid state transistors. The third generation will integrate ADP with communications systems whereby central computers of high capacity will supply the needs of many users. Overall equipment costs will be substantially higher but unit processing costs to the individual user will be markedly reduced. As third generation time-sharing increases, the traditional agency-by-agency structure of the Government in terms of ADP management will become less apparent and less important and the costs of any deficiencies in Government ADP management will reach staggering proportions.

Current Government ADP management techniques

In the 1950's, existing management policies applicable to calculators, punched card, and other office equipment were extended to ADP. Bureau of the Budget (BOB) concern over ADP management was usually limited to the annual agencywide budget review processes. In 1958, however, BOB began a comprehensive Government "ADP Responsibilities Study" concluding that "dynamic leadership" in Government ADP management was a "vital necessity." The study recognized the need for specialized management of ADP, for Government-wide coordination, and for accurate up-to-date information for all levels of management. A subsequent BOB study in 1965 recognized many of these same deficiencies.

Despite recognition of this need for a change in the concept of ADP management as reflected in the 1959 BOB study, overall Government management was limited to the issuance of advisory "guidelines" to the various agencies by BOB. Guidelines and bulletins have been issued on ADP feasibility studies, lease versus purchase evaluations, inventory reports, and sharing programs.

Since 1959, the General Accounting Office (GAO) has issued about 100 audit reports revealing serious shortcomings in the acquisition and use of ADP in various departments and agencies as well as ADP acquired under cost reimbursable contracts at the expense of the Government. Most of the deficiencies constituted violations of BOB guidelines.

The need for Government-wide coordination in ADP management

Coordination is fundamental to good management, as has been proved in Government and business numerous times. The Secretary of Defense has applied this concept to a number of functions of DOD achieving significant improvements.

On four occasions, in 1958, 1960, 1963, and 1964, the GAO has submitted comprehensive ADP management studies to Congress illustrating the improvements that can be made through Government-wide coordination in ADP management. The studies, backed up by the specific findings of mismanagement as illustrated in almost 100 other audit reports, support the proposition as embodied in H.R. 4845 that certain aspects of Government ADP management be coordinated on a Government-wide basis. Through this approach, the Comptroller General conservatively estimates with regard to the ADP equipment that would come within this management program that savings of between $100 million and $200 million annually will be realized—without compromise in user agency selection or use of equipment.

Effective Government-wide management of ADP provided by H.R. 4845

H.R. 4845 delineates the responsibilities of BOB, GSA, and the Department of Commerce and provides a stronger organization plan for Government ADP management. The bill maintains BOB's traditional control over fiscal and policy matters. Action by any agency under this legislation would be subject to either approval or review by BOB.

GSA, in line with its traditional authority, is delegated operational responsibilities for coordinating Government ADP under H.R. 4845. GSA would administer an ADP "revolving fund" which should provide (1) more adequate management information, (2) optimum utilization, and (3) economic acquisition of Government ADP.

The National Bureau of Standards would offer technical support to the management program and will work toward ADP compatibility. The authority in this legislation would supplement the Government research effort in coordination with other Federal agencies.

H.R. 4845 would provide a continuous flow of recurring data needed for effective and efficient management

Presently BOB issues only an annual inventory report wholly inadequate for ADP management purposes. Inventory and fiscal information is needed to maintain policy and budgetary control, increase utilization, and provide more economical acquisition of equipment. Under this legislation, GSA would establish such a comprehensive inventory. This inventory coupled with the fiscal information flowing from the operations of the "revolving fund" would afford all levels of Government with more adequate information necessary for effective and efficient management. The availability of information on prospective Government requirements should also provide for fairer competition among all ADP manufacturers.

Optimum utilization of Government ADP

There is widespread waste in available but unused Government ADP equipment time. On June 16, 1964, BOB set up an ADP sharing program under GSA. This legislation would, however, substantially improve the effectiveness and efficiency of GSA's interagency coordinating efforts. GSA would also be authorized to establish multiagency service centers to furnish ADP capacity to several users.

More economic acquisition of ADP

This legislation would strengthen the Government's bargaining position in acquiring ADP. The Government now obtains no special advantages as a volume purchaser. Under the GSA supply schedules, price determinations and procurement are divorced. To obtain volume discounts, the Government must have volume procurement rather than a piecemeal agency-by-agency procurement.

The traditionally accepted solution to this type of problem has been the "single purchaser" concept. The Government would be in a stronger bargaining position were all its ADP purchase and lease money in "one pocket." Whenever feasible, general purpose components, including those used in specially designed ADP systems, would be acquired under a volume procurement program. Government software acquisition could also be subjected to more orderly procurement procedures.

The revolving fund would be used to consolidate volume acquisitions. GSA would acquire the ADP systems selected by the management of the agencies and, in effect, the agencies would then lease equipment from the GSA revolving fund reimbursing the fund periodically at rates reflecting the use value of the equipment. GSA could obtain direct appropriations covering overhead expenses incident to operating the revolving fund.

Useful life to the Government as a whole

In addition to volume procurement, Government-wide coordination would provide an effective means for making "lease versus purchase" evaluations on the basis of the benefit to the Government as a whole. Lease versus purchase evaluations should be made from the standpoint of the estimated useful life of the equipment to the Government as a whole rather than the estimated period of application of the initial user agency. At this time, lease payments generally equal the cost of ownership within 2½ to 4½ years although the useful life of most ADP equipment is estimated at between 5 and 10 years. The Government has countless needs for ADP and the GAO logically suggests that the estimated period of application by the initial acquiring agency may not constitute a realistic estimate of the economic useful life to the Government as a whole. It is not unrealistic that officials cognizant of Government inventories and needs could not, on a sound, businesslike basis, attribute secondary usage potential to selected systems which have long-range utilization within the Government. Too often, at present, the Government in a period of from 2 to 5 years pays rentals approximating or even exceeding the purchase price--but ends up not owning the equipment which might have considerable economic life in it. And, assuming that some further utilization did not develop, the Government could get the benefit of some return on investment through the sale of the equipment as surplus property.

The revolving fund would have other advantages. As an example, those systems with the highest comparative purchase advantage for the Government as a whole could be purchased while systems offering less purchase advantage could be leased. There may not always be sufficient capital for the Government to purchase all its ADP which should be purchased. Budgetary considerations and funding problems in the agencies should not interfere with the purchase on a priority basis of that equipment having the greatest purchase advantage.

Exemptions for national security and defense

H.R. 4845 is aimed at general purpose commercially available ADP systems and components. Specially designed components forming a part of tactical weapons or space systems which have no general purpose applicability are not involved in this program. However, general purpose commercially available ADP components used in conjunction with specially designed components and as parts of systems with unique scientific, cryptologic, or military applications would come within provisions of this legislation for acquisition, inventory control, and potential secondary usage although such components or systems might not be available for sharing.

The Administrator of GSA is authorized to exempt individual systems from provisions of this program to avoid compromise of our national security or defense and to assure economy and efficiency. As this entire management program would be under the policy control of the BOB and the express direction of the President, it is not necessary or advisable to authorize discretionary authority in agency heads to exempt equipment from the program. The Administrator is further authorized to delegate authority extended him under this legislation to the extent he considers necessary and desirable for the orderly implementation of the program.

This legislation is essential to effective Government ADP management. Based upon two comprehensive BOB ADP management studies, about 100 General Accounting Office audit reports, and 3 years of active investigation by this committee, the time has come for Congress to take reasonable but effective action to assure the establishment of efficient ADP management in Government.

III. DISCUSSION

The Federal Government is the largest user of automatic data processing in the world. Annual Federal ADP expenditures exceed $3 billion, or approximately 3 percent of the Federal budget. The taxpayers' present investment in ADP is unknown. But, at this time, ADP usage in the Government is doubling about every 3 years and is expected to increase indefinitely.

The first all-electronic computer was constructed during World War II and delivered to the Army Ordnance Corps in 1945. UNIVAC I, the first computer with general data processing capability, was installed at the Bureau of the Census in 1951. In 1954, there were 10 computer systems in operation within the Federal Government. By 1962, the number had increased to 1,000. There are now at least 2,000.[2] And, these figures do not include an estimated 1,000 to 2,000 systems contractors have either leased or purchased at the Government's expense. Nor do these totals include computer components forming a part of tactical weapons and defense systems or operational elements in missile and space vehicles which are not included under this management program.

A. WHAT IS ADP?

Automatic data processing is the concept whereby a machine or computer can accept information or "input data," process the data according to a predetermined "program," and provide the results in a usable form. In an automatic data processing system, the electronic computer is the heart or focal point of the system. An ADP system consists of a number of components including input, processing, storage, and output devices. Data processing computers are either analog or digital in design.

ANALOG COMPUTERS

Analog computers measure "how much." Analog computers use electric current coupled at times with mechanical devices to simulate the variable factors of some action, circumstance, or phenomenon which cannot be effectively measured or evaluated directly, or the factors of some hypothetical problem or mathematical equation. The analog computer correlates the relationship between these factors and furnishes a measure or magnitude (how much) of whatever resultant the computer operator seeks to obtain. In the past, analog computers have been principally used in scientific work and make up only a small percentage of the computers now in use.[3]

[2] 1964 Inventory of Automatic Data Processing Equipment in the Federal Government, Bureau of the Budget, July 1964.

[3] "The 'Assault' on Fortress IBM," Fortune, vol. LXIX, No. 6 (June 1964), p. 207: "There is the analog-computer industry, whose 1963 volume was around $45 million and whose sales are growing at better than 15 percent a year. The analog unlike the digital

DIGITAL COMPUTERS

Most computers are digital in design. Digital computers calculate, compare, and process information. They are essentially electronic, arithmetical, calculating machines with the additional capacity to compare, arrange, sort, store, and identify data. Digital computers can be used in any area of human endeavor where computations are required or information of any kind has to be processed or simulated. The basic concept of the digital computer has long been recognized and is relatively easy to understand, but the electronic circuitry and the manufacturing techniques implementing these concepts are new and exceedingly complex.

BINARY NUMBERS SYSTEM

Digital computers generally use the binary (base 2) numbers system rather than the decimal (base 10) system we normally consider as the only natural approach to arithmetic. Theoretically, a digital computer might be designed to any numbers base. However, the binary system is easiest. Only combinations of two symbols, "0" and "1", are needed to express any number —no matter how large. Under the decimal numbers system, 10 different symbols are used to represent the series of magnitudes from zero to nine. Then for magnitudes of 10 and above, these same unique number symbols are simply repositioned. The binary system follows the same approach except that the reuse of symbols begins with "2" rather than "10", as follows:

Decimal:	*Binary*
0	0
1	1
2	10
3	11
4	100
5	101
6	110
7	111
8	1000
9	1001
10	1010
11	1011

The advantage of the binary system is also that the "0" and the "1" tie in neatly with the mechanical and electronic concepts around which the computer and its satellite components are designed.

ADP SYSTEM MADE UP OF COMPONENTS

Various components make up an ADP system. The principal component of the digital computer is the processor or "main frame." The processor contains complex electronic circuits which can accept and process digital information. In simplest terms, each of these electric circuits contains a switch. The switch may be closed or open, and depending on the position, electric current flows or does not flow through the circuit. The position

computer does not count sequentially and has no memory, but it compares many quantities simultaneously, and so provides a swift way of looking at a complex system all at once, in 'real time.' It is indispensable in such jobs as military fire control, and is much used in simulation. The IBM of the analog-computer industry is Electronics Associates of Long Branch, N.J., which last year earned about $2,200,000 on $29 million sales. Some others in the field are Beckman Instruments, Veeder-Root, and Westinghouse."

of the switch and the flow of current correspond to the "0" and the "1" of the binary numbers system.

The processor or main frame accepts "input" information usually fed into it from punched cards or magnetic tape components. On the punched cards at predetermined locations there is either a hole through which an electric contact can be made, or there is the absence of a hole so no electric contact can be made. Similarly, on magnetic tape there is either a magnetized spot or the absence of such a spot. On both the card and the tape, the presence or absence of a hole or magnetized spot corresponds to the binary numbers system symbols, "0" and "1," and, therefore, the open or closed circuit described above.

The processing unit, having received the information, processes the information according to the programed arrangement of the electronic circuitry. This program of instructions, together with part of the data to be processed, is stored in the computer system's memory component. In the most popular type of memory component, tiny ferro-magnetic cores are used. These are either positively or negatively magnetized, depending upon the direction in which electricity passes through them. As in the case of the other components described above, these two conditions likewise correspond to the "0" and the "1" in the binary numbers system.

One informational channel consisting of one series of these units—that is, a single circuit, one memory core, or one position on a card or tape—would have practically no processing potential. But use of a group of these informational channels, in parallel, provides this potential. With the addition of every informational channel in the processor, a large digital number can be handled. The combinations possible through the use of several parallel channels are sufficient to encode each of the letters of the alphabet. As a result, large numbers and words can be fed into and processed in the computer. Furthermore, in a memory component, hundreds of thousands of cores can be arranged to store and retrieve vast amounts of digital data or encode first letters, then words, and thereafter long progressions of information.

After processing, the information obtained is transferred to another computer unit, the "output" component, which may be a tape unit, a card punch, a printer, or some type of visual display. If necessary, this unit can translate the information from binary terms into words, the decimal system, or some other usable form. Or, rather than "reading out" its results, the digital computer can be a part of a control system wherein information is fed into the processor on a "real time" basis and the results almost instantly transferred to some control mechanism.

Certain digital computer components are also used in conjunction with special scientific elements of unique design for scientific studies and investigations. Also, computers, or components thereof, may be coupled with cryptologic devices in security or intelligence work.

MASS PRODUCED COMPONENTS

ADP manufacturers mass produce the various components that make up a computer system. ADP systems are "configured" [4] (attached by cables and essentially "plugged" together) by combining the mass produced components previously described necessary to meet the requirements of a particular user. The task to be performed determines the arrangement, number, and type of components that make up a computer system. For economic and competitive reasons, only the smallest systems are designed and manufactured as a single unit. Since a system is made up of separate components, the customer is not asked to pay for punched card, tape, memory, printer, or other components or capacity not needed in his particular application.

[4] The term "design" is sometimes used to denote what is really configuration. A component is "designed" by the manufacturer to operate in a certain manner. A system is "configured" by combining the components into an arrangement for a particular application.

GENERAL PURPOSE COMPONENTS

Most ADP components are general purpose in design and can be used in a variety of applications. Most digital computer systems can be programed to perform a wide variety of functions—administrative and technical. That equipment designed to be used in these various systems for the performance of different functions is known as "general purpose" equipment. About 90 percent of the computers in Government are general purpose. * * * Specially designed equipment for unique scientific and technical purposes has been decreasing. Computer manufacturers constantly strive for flexibility in the design of their components in order to give them as broad a potential application as possible.

Under the concept of "general purpose" equipment, the combination of mass produced components can be easily altered to perform any task within the basic system's maximum capacity without rebuilding the processor or internally modifying the individual component parts even though the system may have been originally configured to perform one particular narrow function. If additional memory is needed for a new application, additional memory components can usually be added. If additional reading capacity is required, additional punched card or tape units can be obtained. Similarly, unnecessary components can be easily discarded.

SOFTWARE

Once a user has acquired an ADP system, complexities arise relating to its use. ADP systems require complex instructions to operator and machine. Operations must be charted in proper sequence and the system set up or programed to perform the necessary functions to achieve the desired result. To fulfill the needs of many users there are also "canned" programs written for general application which often require only minor revisions for any particular application. The ancillary techniques and aids needed for proper utilization of an ADP system are commonly referred to as "software." In most instances, manufacturers' sale and lease prices include software. The costs attributable to software in the case of some ADP equipment may exceed that of the "hardware" or, in other words, of the components of the system.

DOMINATION OF ADP INDUSTRY BY IBM

There have been some 23 American ADP manufacturers, of which about 20 are currently manufacturing equipment which has been ordered. There are approximately 25,000 computers [5] of American manufacture in use in

[5] "Monthly Computer Census," Computers and Automation (April 1965), p. 56.

great that full utilization of one system's maximum capability is sufficient to fit the needs of scores of potential users. And, the use of the maximum potential of a third generation system under conditions of optimum efficiency can result in a phenomenal reduction in ADP costs to individual users. This greater potential and lower cost cannot be ignored by either business or Government.

As third generation time-sharing increases, the traditional agency-by-agency structure of the Government in terms of ADP management, will become less apparent and less important. Systems design will depend more upon the functional requirements of the users than their identity or jurisdiction. The need for Government-wide evaluations as to acquisition and utilization of equipment will become so pronounced as to make any narrower approach prohibitive. The waste inherent in unused potential and errors in application or equipment selection will be staggering.

B. CURRENT GOVERNMENT ADP MANAGEMENT TECHNIQUES

At this time, ADP has many varied applications in the Federal Government. As classified by the Bureau of the Budget,[11] present applications fall into the following general categories: material, facilities, financial, personnel, and natural resources management; operations; operations control and support; scientific; and engineering. For the most part, the Government ADP listed in the nontechnical categories is used to perform cumbersome, routine administrative tasks involving large volumes of data. Without considering any classified applications in defense and security agencies, comparatively little Government ADP is part of advanced management systems directly involved in the decisionmaking process.

During the 1950's, existing management policies applicable to calculators, punched card, and other office equipment were extended to ADP. BOB concern over ADP management was usually limited to the annual agency-wide budget review processes.

BOB policy responsibility for department and agency management falls within two distinct though closely related areas. First, under the Budget and Accounting Act of 1921, as amended,[12] and the Budget and Accounting Procedures Act of 1950, as amended,[13] the BOB is authorized to "* * * assemble, correlate, revise, reduce, or increase the requests for appropriations of the several departments or establishments." In other words, the Bureau of the Budget maintains the power of the "purse strings;" and, collaterally, has responsibilities to investigate, coordinate, and improve the management of the various departments and agencies.

ADP MANAGEMENT STUDY BY BOB IN 1958

In 1958, BOB took note of the many specific problems inherent in ADP management. In September of that year an "ADP Responsibilities Study" was begun, to be completed in June the following year. The findings and recommendations in this 1959 BOB ADP study, portions of which are quoted throughout this report,[14] constituted a realistic evaluation of what

[11] 1964 Inventory of Automatic Data Processing (ADP) Equipment in the Federal Government, Bureau of the Budget, July 1964.
[12] 42 Stat. 20; 31 U.S.C. 1.
[13] 64 Stat. 832; 31 U.S.C. 1.
[14] For the complete text of the "Report of Findings and Recommendations Resulting from the Automatic Data Processing (ADP) Responsibilities Study, September 1958 to June 1959 (conducted under the direction of the Bureau of the Budget)" see hearings on H.R. 4845, p. 567.

was wrong with Government ADP management at that time and what had to be done. The study recognized the need for specialized management of ADP, for Government-wide coordination, and the fundamental importance of accurate, up-to-date information for all levels of management. "Dynamic leadership" in Government ADP management was found to be a "vital necessity." And, as long ago as 1959, this BOB study concluded that "passive, partial or informal types of leadership have had their place but have now outworn their usefulness." [15]

Unfortunately, the concept of "dynamic leadership" envisaged in this early report never came about. To a significant degree, the recommendations in this 1959 study were to be repeated in a subsequent study BOB undertook almost 6 years later.[16] The principal reason why the management

[15] 1959 BOB ADP study, p. 20.
[16] The 1959 BOB study contemplated that BOB would undertake the following:
"The Bureau of the Budget with the advice and assistance of agencies will assert broad, general leadership and coordination of the ADP program in the executive branch. This will involve Government-wide responsibility for the following:
"(1) Using established lines of communication, existing organizational relationships and its membership on the Policy Committee for the Joint Accounting Improvement Program and other such groups to insure effective internal and Government-wide coordination of the ADP program with related programs and activities.
"(2) Formulating and promulgating policy, criteria, and planning guidance for the ADP program of the Government.
"(3) Planning and coordinating the implementation of Government-wide ADP orientation and training.
"(4) Establishing Government-wide formulas for costing ADP applications and reviewing and analyzing summary cost data in terms of dollars and of manpower utilization.
"(5) Fostering, promoting, and coordinating the interagency sharing of ADP equipment.
"(6) Developing specific plans for an experimental computer service center and, if deemed feasible, taking action to assure the creation and operation of the same.
"(7) Coordinating ADP research and development programs of the Government.
"(8) Providing leadership in a Government-wide effort to alleviate the problems of incompatibility of ADP equipment.
"(9) Fostering and promoting studies which will lead to minimizing the vulnerability of ADP equipment to sabotage, enemy attack, or natural disaster.
"(10) Operating a Government-wide ADP Information Exchange.
"(11) Sponsoring the continuation of the Interagency Committee on ADP and assuring its effective utilization.
"(12) Reviewing and assessing progress of ADP programs in selected agencies and for the Government as a whole.
"(13) Fostering and promoting desirable standardization in ADP systems which are common to all agencies.
"(14) Using existing information sources and obtaining such additional summary information as may be essential to the effective performance of the responsibilities assigned" (1959 BOB ADP study, p. 4; hearings on H.R. 4845, p. 574).
The 1965 BOB study contained the following recommendations relative to the BOB:

CHAPTER 1

"In the development and application of policies, guidelines, and criteria, the Bureau of the Budget will use a classification system which recognizes the essential differences among computer installations. The pattern of classification suggested by the analysis made during this study will serve as the basis for developing this system."

CHAPTER 2

"1. The Bureau of the Budget will develop a broadly based program of continuous evaluation of computer systems, to provide an assessment of accomplishments and to serve as a recurring source of information for the development or revision of policies and guidelines. The responsibility for conducting evaluations and preparing appropriate reports will rest with the agency heads, in accordance with their normal management responsibilities.
"2. The Bureau of the Budget will develop criteria to assist in evaluating both systems design and various aspects of system performance."

CHAPTER 3

"1. The Bureau of the Budget will establish an interagency group to study and develop cost principles to be applied uniformly by agencies in establishing prices for shared computer time and services.
"2. The Bureau of the Budget will continue its evaluation of the service center concept to determine a proper course of action to be taken.
"3. The Bureau of the Budget will, with the assistance of the major agencies concerned, undertake a study of the problems associated with the use of contractor organizations for providing services related to electronic data processing activities, with a view

concepts in the 1959 BOB study were not fully implemented was the need for legislation. The study recognized, but did not emphasize, the possibility that legislation might be necessary. Those making the study were perhaps unrealistically optimistic in believing that a program of the magnitude they envisaged involving all agencies of Government and billions in tax funds could be brought about without statutory definition of the "clear delineation of responsibilities and [the] organization plan" they considered essential. The 1959 BOB ADP study was strong and clear as to what had to be done, but relatively weak and ineffective as to how to do it.

BOB MANAGEMENT GUIDELINES

BOB has issued ADP management "guidelines." In March 1960, BOB issued Bulletin 60–6 entitled "Guidelines for Studies To Precede the Acquisition of Automatic Data Processing Equipment."[17] These guidelines generally conformed to the contents of a letter the Comptroller General had addressed to the various executive departments and agencies in September 1957. This information concerning the need for and the nature of ADP feasibility studies was undoubtedly of value to the various agencies. But, Bulletin 60–6 made it clear that the guidelines were advisory and that there was no requirement that agencies contemplating the acquisition of ADP follow this recommended evaluation procedure.

Some 18 months later, in October 1961, the BOB issued Circular A–54 outlining "Policies on Selection and Acquisition of Automatic Data Processing (ADP) Equipment."[18] The principal factors discussed in this circular were:

1. The desirability of selecting on the basis of exact system specifications.
2. That equal opportunity and appropriate consideration should be afforded all manufacturers who offer equipment capable of meeting systems specifications.
3. That two primary factors should be considered in the selection of equipment: (*a*) its capability to fulfill system specifications, and (*b*) its overall costs.
4. The need for effective lease versus purchase evaluations.

On March 14, 1962, the BOB directed agencies to furnish annual reports on their ADP inventories as well as limited information as to ADP utilization. In August 1963, BOB published Circular A–61, essentially a more comprehensive statement of the Bureau's ADP management guidelines and consisting substantially of the earlier guidelines referred to above.[19]

Subsequently, BOB has issued other circulars relating to ADP concerning matters other than management policy—the establishment of an experimental sharing exchange and computer service center (Bulletin 64–9, Jan. 2, 1964),[20] and an ADP sharing program (Circular A–27, June 15, 1964) under the responsibility of the Administrator of General Services.[21]

Also, in February 1965, the BOB submitted a "Report to the President on the Management of Automatic Data Processing in the Federal Government,"[22] surveying some of the more serious ADP management problems and containing a series of recommendations to deal with them. On March 6, 1965, BOB issued Circular A–71 implementing these recommendations and delineating the responsibilities for ADP management as between the BOB, the GSA, and the National Bureau of Standards.[23]

INEFFECTIVENESS OF GUIDELINES

Since 1958, up to the time of the hearings on H.R. 4845, the GAO had issued approximately 100 audit reports to agencies, congressional committees, and to Congress revealing serious shortcomings in the manner in

toward developing policies, guidelines, or actions that the study may indicate are needed."

CHAPTER 4

"1. The Bureau of the Budget will provide for the publication of criteria, guidelines, or regulations covering the selection of electronic data processing equipment. It will do this through new issuances or by expanding upon current issuances, covering the following subjects:
"a. The preparation of system specifications, including benchmark problems, to be furnished equipment suppliers in requests for proposals.
"b. Evaluation of suppliers' proposals.
"c. Compatability considerations.
"d. Consideration of excess and surplus equipment.
"e. Distinctions to be made between additions, replacements, and modifications when selection policies and criteria are applied.
"f. Interagency sharing of experiences in the selection and performance of equipment."

CHAPTER 7

"1. The Bureau of the Budget will assume overall leadership of an executive branch program for the standardization of automatic data processing equipment and techniques for its use. In the fulfillment of this responsibility the Bureau will:
"a. Establish standardization policies and objectives.
"b. Insure that the American Standards Association program for the development of voluntary American standards for automatic data processing equipment and techniques receives more adequate support by the Federal Government.
"c. Provide for appropriate Government use of American ADP standards approved by the American Standards Association, when it is in the best interests of the Government and the Nation to take this action.
"d. Provide for the approval and implementation of Federal ADP standards in those instances in which the needs of the Government would not be served by adoption of voluntary American standards approved by the American Standards Association, or interim standards are needed pending adoption of an American standard."
"3. The Bureau of the Budget will assume overall leadership of a program for the standardization of data elements in common use in the Government and the codes used to represent those elements. In the fulfillment of this responsibility the Bureau will:
"a. Invite agencies to submit information and recommendations concerning data elements in common use that should be considered for standardization.
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"c. Make provision for the approval and implementation of standard data elements and codes, the use of which involves two or more agencies.
"d. Make provision for the revision of standard data elements and codes when circumstances justify this action."

CHAPTER 9

"1. The Bureau of the Budget will revise its current policies to provide that (a) established criteria with respect to the purchase or rental of automatic data processing equipment shall be applied in determining costs to be reimbursed under cost-reimbursement type contracts, and (b) agencies will include equipment operated by their cost-reimbursement type contractors in intra-agency sharing arrangements.
"2. The Bureau of the Budget, in cooperation with the Department of Defense, National Aeronautics and Space Administration, Atomic Energy Commission, General Services Administration, and other agencies will undertake the development of reporting procedures to obtain an inventory, together with related data on costs, of automatic data processing equipment and services provided under cost-reimbursement type contracts. This information should be incorporated in the ADP management information system recommended in chapter 10."

CHAPTER 10

"The Bureau of the Budget will undertake the development of a broadly based ADP management information system as a matter of high priority, and will seek the advice and assistance of those agencies most vitally concerned, including agencies with Government-wide responsibilities, such as the General Services Administration and the Civil Service Commission."

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which specific agencies acquired and/or utilized ADP equipment.[24] The major deficiencies cited in these reports have been:

(a) Inadequate feasibility studies.
(b) Uneconomical and ineffective equipment utilization.
(c) Overpayments resulting from inadequate management practices.
(d) Uneconomical procurement of equipment.

Excluding the 29 reports dealing with inefficiencies in the manner in which ADP equipment has been acquired by certain Government contractors, most of the deficiencies outlined in this series of reports constituted violations of BOB guidelines, or otherwise demonstrated the need for a more effective management system based upon a broader Government-wide coordinated approach. These reports, aimed specifically at the independent operations of individual user agencies, have demonstrated that guidelines of an advisory nature and without provisions for effective review or "feedback" of information as to agencies' compliance or the need for policy changes do not meet the Government's ADP management needs.

C. THE NEED FOR GOVERNMENT-WIDE COORDINATION IN ADP MANAGEMENT

COORDINATION FUNDAMENTAL TO GOOD MANAGEMENT

There are countless examples of the benefits of coordination in business and Government. In recent years, for example, the Secretary of Defense has achieved significant improvements in operations and large savings in tax funds by consolidating the management of defense logistics and other defense support functions. On January 29, 1962, in hearings before the House Subcommittee on Defense Appropriations, Secretary McNamara said:

> One of the most productive fields for the economic application of centralized management is in the provision of common supplies and related services to all the military departments.
>
> After a rather comprehensive study of this entire problem, we came to the conclusion that considerable economy and efficiency could be gained, if all common supply management activities were consolidated in a single agency.[25]

This philosophy has been applied to a number of functions in the Defense Department, including intelligence, communications, and, under the Defense Supply Agency, the coordination among the services of approximately $3 billion of industrial-type production equipment which the Government owns and furnishes defense contractors for use in Government work.

On March 28, 1963, in hearings before the Joint Economic Committee, the Secretary pointed out that the concept of consolidated management need not be limited to the Defense Department:

> The basic principle that there should be a single agency to procure and manage common items of supply or services for all users is, as this committee has repeatedly pointed out, as valid for the Government as a whole as it is for the Department of Defense.

[24] In app. B of the hearings on H.R. 4845 is a summary of the most significant of these reports.
[25] Testimony of Secretary of Defense McNamara, House Subcommittee on Defense Appropriations, Jan. 29, 1962, p. 153; reprinted in hearings on H.R. 4845, p. 205.

> Therefore, in our own efforts to obtain greater efficiency through the consolidation of common logistics support activities, we should not restrict ourselves to Defense agencies alone. Whenever we find that it is more economical to use the capabilities or facilities of other Government agencies, with no loss in military effectiveness, and at the same or less cost, we should not and have not hesitated to do so.[26]

General purpose ADP is a "common item" throughout the Federal Government. While the coordinated Government-wide management system provided in H.R. 4845 may not provide the same degree of centralized management of ADP as the Secretary has applied in the various defense support areas referred to above, the same principles apply. For this reason, there is no legitimate reason why the Government should not obtain the benefits inherent in a Government-wide coordinated approach to ADP management.

GOVERNMENT-WIDE COORDINATION RECOMMENDED BY GAO IN 1958

Concern over our present disjointed agency-by-agency approach to ADP management is no recent development. On June 27, 1958, the Comptroller General issued the first of four comprehensive Government wide ADP management reports.[27] This early report outlined the tremendous potential of ADP but stressed concern over certain trends in ADP acquisition and use which he believed would inevitably lead to costly inefficiencies. Concern was expressed over the practice of substituting ADP for less sophisticated equipment rather than integrating ADP into agency procedures and functions on a systematic basis. But, most important, this report pointed out that there was no single agency of the Government responsible for directing and coordinating continuing developments in this field. Accordingly, the report stressed as a principal recommendation the need to establish an effective coordinated ADP program of joint effort by the various user agencies in Government.

COMPTROLLER GENERAL RECOMMENDATIONS IN 1960 AND 1963

On December 30, 1960, the GAO issued a second Government-wide audit report.[28] Aside from urging greater ADP utilization in certain defense functions readily adaptable to ADP, this report again emphasized the need for Government-wide coordination in ADP management. The report endorsed the 1959 BOB ADP study but again called attention to the lack of positive central planning of a long-range nature within the executive branch to promote the maximum degree of efficiency, economy, and effectiveness in ADP use.

On March 6, 1963, a third Government-wide audit report was issued.[29]

[26] Statement of Secretary of Defense McNamara, hearing before the Joint Economic Committee, Mar. 28, 1963, p. 20; reprinted in hearings on H.R. 4845, p. 205.
[27] "Summary of Progress and Trend of Development and Use of Automatic Data Processing in Business and Management Control Systems of the Federal Government as of December 1957," Comptroller General of the United States (June 1958), GAO file No. B-115369.
[28] "Review of Automatic Data Processing Developments in the Federal Government," by the Comptroller General of the United States (December 1960), GAO file No. B-115369.
[29] "Study of Financial Advantages of Purchasing Over Leasing of Electronic Data Processing Equipment in the Federal Government," by the Comptroller General of the United States (March 1963), GAO file No. B-115369.

fiscal control. Under H.R. 4845, "fiscal and policy" control over ADP management remains in the BOB. Thus, the bill does not violate or compromise the traditional policymaking and fiscal control functions of this staff office of the President. Any action of any agency, under authority of this legislation, would be subject either to approval or review at BOB.

Also, BOB would not be delegated any operational responsibilities of the ADP management program. As time passes, countless important Government management problems must be dealt with at the BOB level. The assumption of operational responsibilities incident to the solution of these problems could hamper BOB's ability to fulfill its primary mission as a staff office of the President dealing with policy and fiscal matters.

GENERAL OPERATIONAL RESPONSIBILITY IN GSA

H.R. 4845 extends to the Administrator of General Services the primary operational responsibility for coordinating Government ADP management subject to BOB policy and fiscal control. This delegation, as in the case of the BOB, is in line with the traditional delegation of authority to GSA. H.R. 4845 is an amendment to the basic statute which created this Government-wide service organization. This delegation would augment specific ADP management functions, such as ADP procurement, presently within the scope of GSA responsibilities.

To carry out this function, GSA is authorized and directed to coordinate ADP management and to administer an ADP "revolving fund." This fund, used in conjunction with the coordinating authority, would afford an effective means of (*a*) providing the Government with more adequate management information, (*b*) achieving optimum utilization, and (*c*) attaining economic acquisition of Government ADP equipment.

Through the use of the revolving fund, GSA would acquire by lease or purchase the ADP needed to fulfill requirements of the agencies. Agencies would obtain annual appropriations from Congress necessary to reimburse the revolving fund. Although the Comptroller General normally does not approve of revolving funds, he specifically endorses the use of such a funding arrangement in this instance.

In addition to the fiscal and policy control of the BOB, the bill expressly limits GSA's authority. Agencies would maintain their present independence in the determination of ADP requirements. Agencies would be free from any interference from GSA as to the manner in which ADP equipment is used. They would be advised of all significant decisions affecting their ADP operations and would have the right to appeal to BOB. The bill limits GSA's authority to "operate" ADP (other than its own in-house equipment) under this management program to those instances where multiple agency usage of equipment is involved.

TECHNICAL SUPPORT OF THE NATIONAL BUREAU OF STANDARDS

The technical aspects of this coordinated management program remain with the National Bureau of Standards in the Department of Commerce. Again, this delegation is in accordance with the traditional responsibilities of the agency. The Bureau of Standards has done considerable ADP research in the past and has made many contributions to the "state of the

art." The Bureau of Standards would offer technical support to the BOB and GSA and would also act in an advisory capacity to the various agencies and other users when requested. Aside from these routine reponsibilities, the Bureau of Standards would undertake whatever research and development is necessary to the interests of the Government, supplementing similar efforts underway in various user agencies.

Among the more serious problems confronting the Government in ADP utilization is the lack of compatibility in equipment. Standardization has been a problem in Government almost from the time this equipment was introduced. For the past several years, various user agencies, the Bureau of the Budget, and this and other committees have been concerned over the lack of compatibility in equipment which has seriously compromised the Government's overall ADP potential. This problem was discussed in an earlier report of this committee in 1963 [35] in conjunction with the activities of the Bureau of Standards. At that time, it was recognized that, to a large degree, progress in the standardization of equipment must come from ADP manufacturers. The manufacturers have the technical know-how to evaluate the alternatives and they would design and build the equipment.

It has also been recognized, however, that the Government's dominant role as the world's largest ADP user requires that there be a continuous source of Government interest and concern in the achievement of greater standardization. Under H.R. 4845, the National Bureau of Standards is expressly extended the responsibility for representing the Government in this standardization effort and submitting to the President any recommendations for further Government action as may be necessary.

It is not the intent of this legislation to authorize the Bureau to structure a broad research and development program without regard to the work of the various other agencies or in a futile effort to overtake the research and development capacity of the industry. The authority in this legislation is aimed at supplementing the Government research effort in coordination with other Federal agencies and monitoring developments in the industry for the specific purposes provided in the legislation.

E. HOW THE AUTHORITY DELEGATED IN H.R. 4845 WOULD BE USED TO IMPROVE GOVERNMENT ADP MANAGEMENT

H.R. 4845 is aimed primarily at filling three vital management needs at this time. These are (1) more adequate management information, (2) optimum utilization through sharing and multiple use, and (3) economic acquisition. Realization of an economical ADP acquisition program, in turn, involves three principal factors:

(a) Improving the Government's bargaining position through volume acquisitions;

(b) Basing lease versus purchase evaluations, whenever possible, on the long-term value of the equipment to the Government as a whole; and

(c) Selecting that equipment for purchase which, on a Government-wide basis, offers the largest purchase advantage.

[35] H. Rept. 456, 88th Cong., 1st sess. (1963).

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art." The Bureau of Standards would offer technical support to the BOB and GSA and would also act in an advisory capacity to the various agencies and other users when requested. Aside from these routine reponsibilities, the Bureau of Standards would undertake whatever research and development is necessary to the interests of the Government, supplementing similar efforts underway in various user agencies.

Among the more serious problems confronting the Government in ADP utilization is the lack of compatibility in equipment. Standardization has been a problem in Government almost from the time this equipment was introduced. For the past several years, various user agencies, the Bureau of the Budget, and this and other committees have been concerned over the lack of compatibility in equipment which has seriously compromised the Government's overall ADP potential. This problem was discussed in an earlier report of this committee in 1963 [35] in conjunction with the activities of the Bureau of Standards. At that time, it was recognized that, to a large degree, progress in the standardization of equipment must come from ADP manufacturers. The manufacturers have the technical know-how to evaluate the alternatives and they would design and build the equipment.

It has also been recognized, however, that the Government's dominant role as the world's largest ADP user requires that there be a continuous source of Government interest and concern in the achievement of greater standardization. Under H.R. 4845, the National Bureau of Standards is expressly extended the responsibility for representing the Government in this standardization effort and submitting to the President any recommendations for further Government action as may be necessary.

It is not the intent of this legislation to authorize the Bureau to structure a broad research and development program without regard to the work of the various other agencies or in a futile effort to overtake the research and development capacity of the industry. The authority in this legislation is aimed at supplementing the Government research effort in coordination with other Federal agencies and monitoring developments in the industry for the specific purposes provided in the legislation.

E. HOW THE AUTHORITY DELEGATED IN H.R. 4845 WOULD BE USED TO IMPROVE GOVERNMENT ADP MANAGEMENT

H.R. 4845 is aimed primarily at filling three vital management needs at this time. These are (1) more adequate management information, (2) optimum utilization through sharing and multiple use, and (3) economic acquisition. Realization of an economical ADP acquisition program, in turn, involves three principal factors:

(a) Improving the Government's bargaining position through volume acquisitions;

(b) Basing lease versus purchase evaluations, whenever possible, on the long-term value of the equipment to the Government as a whole; and

(c) Selecting that equipment for purchase which, on a Government-wide basis, offers the largest purchase advantage.

[35] H. Rept. 456, 88th Cong., 1st sess. (1963).

CONTINUOUS FLOW OF RECURRING DATA PROVIDED BY H.R. 4845

Timely, pertinent, accurate information is indispensable to the management concept. In a sense, management cosists of the collection and assimilation of data needed to predict as many imponderables as possible so as to afford the manager as many options or alternatives as a particular problem or circumstance permits. Sound decisionmaking is synonymous with good management and is inseparable from the quality of the information on which the decisions are based. Information thus minimizes the guesswork in decisionmaking and creates the opportunity for more effective and efficient management.

A basic problem in Government ADP management up to this time has been the lack of accurate management information. BOB, the executive agency having overall management policy responsibilities for ADP, has not had the information needed to properly coordinate and oversee the Government's ADP affairs. In the 1959 ADP management study, BOB recognized the need for adequate management information. The report contained a finding that:

> No provision has been made to assemble Government-wide factual data on ADP utilization in the executive branch on a recurring basis.
>
> Recent studies of ADP utilization, or certain of its aspects, have highlighted the continuous need for selected current factual data on a Government-wide basis in the ADP program.
>
> The responsibility for leadership, coordination, or review of ADP utilization at the agency level, or on a Government-wide basis, can be discharged adequately only if certain essential information is continuously available.[36]

Following this finding, the 1959 report recommended that provisions be made for the supply of adequate information needed for ADP management. Unfortunately, this recommendation was never fully implemented. On March 14, 1962, BOB directed agencies to furnish annual ADP inventory reports which also contained limited information on ADP utilization and whether the equipment was leased or purchased. Additional information was requested as of November 1963, but this was for use in the preparation of the 1965 BOB ADP study. As Circular A–55 pointed out:

> Some of the changes, particularly those that require new and additional information, have been instituted to provide information for use in a special study of ADP policies and practices recently directed by the President, and therefore will not necessarily be continued in future years.[37]

Reporting on an annual basis was continued, which means that the Government has never had up-to-date inventory information. Nor has there been any systematic consolidation of fiscal data. Most Government-wide fiscal data is in the form of estimates, some of which are highly speculative. ADP appropriations are scattered throughout the Federal budget.

[36] 1959 Bureau of the Budget ADP study, p. 12; hearings on H.R. 4845, p. 582.

[37] Bureau of the Budget Circular No. A-55, revised, Nov. 15, 1963; hearings on H.R. 4845, p. 316.

AUTOMATIC DATA PROCESSING

Whatever BOB has done or has been able to do has been woefully inadequate compared to the need. Annual printed inventories containing meager information, months out of date, unaccompanied by any comprehensive, accurate fiscal data as to investment, expenditures, or costs, are wholly inadequate for ADP management purposes. It is ironic that ADP with such potential for data control has not been used extensively in ADP management. Certainly a basic requirement for any effective Government ADP management program is the constant availability of comprehensive, accurate, up-to-date inventories and fiscal information as to Government equipment as well as prospective requirements.

This information is needed for a number of purposes. First, the President and the Congress require overall inventory and fiscal data to maintain policy and budgetary control over ADP expenditures. Furthermore, those Federal officials with policymaking, fiscal, or operational responsibilities for ADP require this information to do their jobs. As the 1959 BOB study suggested:

> * * * if there is to be objective leadership and coordination of the ADP program of the Government, the leaders and coordinators must be informed.[38]

As discussed above, BOB has in the past relied upon policy guidelines which have been permissive and subject to agency avoidance without notice or explanation. Even if lack of compliance with existing policy is wholly justifiable in isolated instances, those with policy enforcement responsibilities must be kept informed. They must have some form of informational "feedback" to keep them advised of what is going on. Otherwise, their policymaking activity has little impact. Officials with coordinating authority also require all the reliable, pertinent, up-to-date information they can get to take advantage of the options or alternatives this information reveals to them to increase the utilization or provide for the more economical acquisition of equipment.

H.R. 4845 would provide the means by which readily available, recurring data essential to effective management could be collected and made available to those officials in the Government requiring it. Under this legislation, GSA would establish a comprehensive inventory to maintain carefully selected data needed for Government ADP management. Use of ADP would make it possible for such information to be available on a continuing basis. Collateral to the inventory would be the information stemming from the operations of the revolving fund which would afford the necessary flow of up-to-date, accurate, detailed information on investment, disbursements, and costs.

It is contemplated that this information, particularly as it relates to prospective agency ADP requirements, would be made generally available to ADP manufacturers upon request. Extending to all manufacturers the most advanced information available on prospective Government ADP requirements would permit more extended periods of time in which the manufacturers could evaluate Government specifications and refine the proposals they submit. General availability of information on prospective Government requirements should provide for fairer competition among all the various ADP manufacturers, some of whom at this time it is suspected do not "get the word" on some Government procurements until it is too

Under this procedure, price determination and procurement are divorced. The various manufacturers have no guarantee that the Government will lease or purchase any particular volume of their equipment. As a result, some manufacturers' representatives characterize the GSA price schedule as simply a "hunting license." Agreement to a schedule of prices with GSA permits them to embark upon the more formidable task of hunting for agencies in the Government desirous of leasing or purchasing their equipment. Under these circumstances, it is somewhat understandable why manufacturers have generally responded with a remarkable degree of disinterest in price cutting in GSA contract price schedule negotiations.

GSA, with no alternate course of action, has been forced to extend price negotiations in many instances well beyond the beginning of the fiscal year to which the schedules apply in an effort to obtain better terms and conditions. These delays in themselves have caused administrative problems.

VOLUME DISCOUNTS FROM VOLUME PROCUREMENT

To obtain volume discounts, the Government must have volume procurement. The "open end" supply contract simply is not the most suitable arrangement for ADP procurement. The basic problem is that this form of contract procedure does not afford the Government any advantage corresponding to the volume of equipment leased or purchased. A specialized approach to Government ADP procurement is needed. As the 1959 BOB study suggests:

> It is most unusual to promulgate Government-wide policies on specific equipments. However, as the General Accounting Office has already recognized, the use of ADP equipment has now demonstrated that its impact is such as to warrant specialized attention.[42]

The 1965 BOB study recognizes this problem but offers an inadequate solution. Under the BOB approach, negotiation deadlines would be established and manufacturers failing to agree to terms would be precluded from Government procurement activities. Although the 1965 BOB study offers this deadline concept as a principal solution, the study also recognizes its limitations. As an example, in the report it is stated:

> On both sides, maneuverability is curtailed if an impasse [in negotiations] is reached. The Government is faced with the possibility that the contractor may remove rented equipment from the premises if a contract is not executed by July 1 (although realistically he would probably not resort to such drastic action in view of the financial impact). The manufacturer, on the other hand, is faced with the possibility that the Government may release the rented equipment on July 1 (although realistically it could not do this in view of the extensive work and cost involved in changing to another manufacturer's equipment). Consequently, both parties must proceed toward a final agreement, despite the length of time involved.[43]

This "deadline" approach unrealistically assumes that the agencies can arbitrarily be deprived of the equipment of a particular manufacturer even

[42] 1959 BOB ADP study, p. 21; hearings on H.R. 4845, p. 591.
[43] 1965 BOB ADP, study, p. 42.

though it may be needed in critical Government programs. But, fundamentally, the problem is that the deadline approach applies with equal force to both the Government and the manufacturers. The Government's relative position is not improved by the application of a deadline to negotiations. There must be a relative improvement in the Government's position as contrasted to that of the manufacturer. And, to demand volume discounts, the Government must in fact procure ADP in volume rather than on a piecemeal agency-by-agency basis.

SINGLE PURCHASER CONCEPT

The traditionally accepted solution to this type of problem has been the "single purchaser" concept. Were all ADP purchase and lease money in "one pocket," the Government would be in a stronger bargaining position in dealing with manufacturers. The purchase or lease of equipment and the price to be paid would be part of the same negotiation. Whenever feasible, the Government could "raise the stakes" by coordinating the acquisition of as much equipment of one particular manufacturer at one time as possible. Furthermore, whenever alternative systems of different manufacture would be equally acceptable in satisfying agency requirements, teams of Government negotiators, made up of GSA officials and procurement specialists from the agencies involved, could pit one manufacturer against another until competitive prices were obtained.

ACQUISITION OF GENERAL PURPOSE COMPONENTS OF UNIQUE SYSTEMS UNDER A VOLUME PROCUREMENT PROGRAM

The mass-produced, commercially available, general purpose components of "unique," "tailor made," "specially designed," ADP systems can be effectively acquired under a volume procurement program. Arguments against sole source procurement and the possibility of the Government's obtaining price concessions incident to volume acquisitions center upon the proposition that each ADP system is unique, "tailor made," and designed for one particular application. As the 1965 BOB study discussed the matter:

> When the possibility of discounts has been discussed, manufacturers have indicated that discounts from list prices cannot be made solely on the basis of the number of units sold. The reason is that the price covers more than just the equipment itself; it includes the provision of all supporting services, such as computer programs, compilers, special-purpose routines, and specialized training and systems aids—all of which vary and tend to be custom-tailored for each installation. Because of these variances, the costs incurred by the manufacturer to support each installation are substantially the same and are not reduced by virtue of many installations.[44]

These "custom-tailored" items referred to by BOB relate to "software" and not the mass-produced, general purpose "hardware" components making up these specially designed ADP systems. As pointed out earlier in this report, these mass-produced components can be arranged in varying combinations to meet the particular application of the user. Inherently, all

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[44] Ibid., p. 44.

commercially available, general purpose ADP systems except those of the most unique application have a basic capability which can be applied to many uses in agencies throughout the Government. And, even when a system has been designed to meet a particular narrow application, additional components can be easily added to broaden its use. Changes of this kind are considered routine.

Under this legislation, GSA is not charged with either the selection or the use of equipment. The agencies would determine their individual requirements and use the equipment as they see fit. GSA would be furnished a shopping list of commercially available general purpose ADP system components. Once other aspects of this coordinating system have been fully implemented so that adequate information is available, GSA could coordinate ADP acquisition and schedule as large a volume of acquisitions as agency requirements permit. To the agency, the system may be complex, specially designed and tailor made to fill some particular application critical to its operations. But, to GSA, as far as hardware procurement is concerned, these complex, highly specialized systems would only be a list of mass-produced, commercially available general purpose components.

Although software procurement would present a more complex problem, there is no reason that these complexities should interfere with the establishment of a single purchaser concept as provided in H.R. 4845. Software procurement offers great potential for savings. Under this coordinated Governmentwide ADP management program, Government expenditures for these goods and services would be closely defined. Once properly identified, there could be more effective management of software procurement either directly by the agencies or by GSA in conjunction with hardware acquisition. There is no reason why Government software acquisition cannot be subjected to more systematic and orderly procurement procedures. There is also greater potential competition in software procurement, since software does not necessarily have to be furnished by the manufacturer of the equipment.

USE OF REVOLVING FUND PROVIDED IN H.R. 4845 TO OBTAIN VOLUME ACQUISITIONS

The revolving fund concept provided in H.R. 4845, as discussed above, as needed to provide the Government with an accurate, up-to-date flow of fiscal information and to facilitate optimum ADP utilization through sharing and joint use of equipment. But, the most compelling need for the revolving fund is in establishing the single purchaser concept in Government ADP acquisition.

Under this arrangement, GSA would have all of the Government's general purpose ADP acquisition money in its pocket and would be in a position, once all aspects of the coordinating program have been fully implemented so that adequate information of prospective Government agency requirements is available, to offer ADP manufacturers firm contracts for specific amounts of ADP equipment. In turn, GSA could reasonably expect to receive some reduction in purchase and lease prices reflecting the magnitude of the Government's acquisition.

The revolving fund established under H.R. 4845 would be primed with capital appropriated directly by Congress and augmented by the unamortized value of the general purpose equipment now in Government agencies which the Government has purchased. GSA would use these funds to acquire by lease or purchase the ADP needed to fulfill the requirements of the various agencies.

Essentially, all Federal agencies would lease equipment from the GSA revolving fund. So far as the agencies are concerned, only the budgetary personnel would know the difference. GSA would acquire the ADP systems selected by the management of the agencies. The agencies would use the equipment as long as they wished, in any manner they saw fit, subject to the general policy and fiscal control of the Bureau of the Budget, the President, and the Congress as normally applied to all agency operations.

In practice, GSA would bill the agencies periodically at rates reflecting the use value of the equipment with the aim that the fund break even at the end of each fiscal year. The agencies in turn would obtain annual appropriations to reimburse the revolving fund for the use of the equipment selected by and assigned to them. GSA could obtain direct appropriations covering all overhead expenses incident to operating the revolving fund, except that direct expenses incurred in operating multiagency centers would be prorated among the user agencies in their reimbursements. This is a matter, however, which the committee leaves to the discretion of the Appropriations Committees.

OTHER ADVANTAGES PROVIDED BY VOLUME PROCUREMENT

Aside from the establishment of a single purchaser concept and simplifying the interagency transfer of equipment, the coordination of equipment has a number of other advantages, two of which are of particular importance. First, this approach would provide an effective means for making essential lease versus purchase, evaluations on the basis of the benefit to the Government as a whole. Second, consolidated acquisition would allow the Government to purchase on a priority basis those ADP systems with the greatest purchase advantage.

LEASE VERSUS PURCHASE EVALUATIONS ON A GOVERNMENT-WIDE BASIS UNDER H.R. 4845

H.R. 4845 would provide an effective means for making essential "lease versus purchase" evaluations on the basis of the benefit to the Government as a whole. BOB Circular A-54 [45] issued in October 1961, provided that agencies should make ADP lease versus purchase evaluations in anticipation of equipment acquisition. The March 1963 GAO report recommended that lease versus purchase evaluations be made from the standpoint of the estimated useful life of the equipment to the Government as a whole rather than the estimated period of application of the initial user agency.

This estimate of economic useful life is an essential element in the lease versus purchase evaluation. Generally, it is the comparison of the projected lease payments over the period of useful life as compared with the purchase price and maintenance costs (less the equipment's residual value) that determines the comparative advantages of these two modes of acquisition. When the lease payments over the period of the estimated useful

[45] Hearings on H.R. 4845, p. 280.

life exceed the purchase price and maintenance costs, this concept of evaluation indicates purchase is the most economical approach. The shorter the estimated period of useful life, the more likely the evaluation will favor the lease of equipment.

Ideally, competitive forces should push lease rates toward the cost of ownership (purchase price plus maintenance plus interest on capital investment) over the equipment's useful life. But conditions in the ADP industry are far from ideal. At present, the lease payments for most ADP components equal the cost of ownership in a relatively short period, seldom exceeding 45 to 50 months,[46] although the useful life of most ADP equipment is estimated at between 5 and 10 years.[47] In a recent study, the Department of Defense estimated that the lease payments on most ADP equipment equal the purchase price within 2½ to 4½ years.[48] Whatever the reasons may be and any justification that can be attached to them, ADP manufacturers in the case of most components are accelerating the amortization of the capital invested in leased equipment to the serious economic disadvantage of those leasing it for any extended period.

As a result, at this time agencies and other users leasing equipment pay out in a relatively short period in the form of lease payments an amount equivalent to a substantial portion of the purchase price. Thus, even in those instances where the initial acquiring agency does not foresee an estimated period of application of a duration sufficient for the projected lease payments to equal the purchase price, the Government should nevertheless evaluate the potential savings inherent in purchase. The additional investment in many cases would be a relatively minor portion of the purchase price. Weighed against the additional investment would be use of the equipment with only maintenance costs for the remainder of its useful life.

The GAO logically suggests that the estimated period of equipment application by the initial acquiring agency may not constitute a realistic estimate as to the economic useful life of the equipment to the Government as a whole. The Government has countless needs for ADP equipment of varying degrees of sophistication. Some of the most costly ADP with the greatest capacity and speed is used in defense, space, and intelligence. In these areas, there is a continuing need for the most advanced equipment. Yet throughout the Government there are other agencies with less demanding requirements that can use this equipment on a secondary basis. Under these circumstances, it is wholly unrealistic for various agencies acquiring costly, highly sophisticated ADP systems to make the necessary lease versus purchase evaluations based upon estimated periods of application limited to their own requirements. The 1965 BOB study rejected the GAO recommendation on Government-wide lease versus purchase evaluation, and some agencies, notably the Defense Department, concurred. In the Department's report on H.R. 4845, the argument against Government-wide evaluations is stated as follows:

> It has been stated that a principal advantage of centralized procurement of ADPE is that lease/purchase decisions could be made

[46] Fortune, op. cit., p. 207.
[47] Financial Advantage of Purchasing Over Leasing, Comptroller General (March 1963), p. 15.
[48] Contract Support Service Project, Department of Defense, Project Staff Report (Mar. 31, 1965), p. 79.

> on the basis of the total Government requirement for the equipment over its useful lifespan rather than on the basis of estimated use by the acquiring organization. The Department of Defense position, based upon extensive experience with this type of equipment, is that it is practically impossible for a single agency to determine potential secondary users within the agency at the time of initial acquisition and that it is completely unrealistic to assume that any agency can make such determinations for the Government as a whole.[49]

The GAO has never suggested that Government-wide evaluations depend upon the specific identity of secondary users and their requirements at the time of equipment acquisition. And, were the identity of secondary users essential, the Defense Department's arguments could preclude lease versus purchase evaluations based upon the projected Government-wide use of equipment. It is reasonable that competent officials fully cognizant of Government ADP inventories and applications and knowledgeable of the capacities of the various systems the Government acquires could on a sound, businesslike basis attribute secondary usage potential to certain selected systems which in their judgment have long-range utilization within the Government.

Several of the agencies, and particularly the Department of Defense, have expressed concern over the possibility of acquiring a large volume of excess Government-owned equipment with its accompanying administrative and storage expenses. However, there is no reason to anticipate such a problem. It is not the policy of the Government to store excess equipment for long periods of time, but to sell it as surplus in such a manner that the Government receives the fair market value of the property. Purchasing under these circumstances would be on a highly selective basis. In those instances when the Government did purchase a system, and no secondary utilization developed at the time it became excess to the initial using agency, the equipment would be relatively new and the residual value correspondingly high.

PRIORITY OF PURCHASE OF SYSTEMS WITH GREATEST PURCHASE ADVANTAGE UNDER CONSOLIDATED PROCUREMENT

Government ADP use is expected to increase indefinitely. Increasing billions in tax funds will be involved. It may not always be possible for the President and the Congress to allocate sufficient capital to the revolving fund to cover the purchase of all ADP systems which careful agency and Government-wide evaluations dictate should be purchased rather than leased. If the Government is to receive the most value for its dollar, those systems with the greatest purchase advantage to the Government as a whole should be purchased with the funds available. Budgetary considerations and funding problems in the various agencies should not preclude the Government from purchasing ADP equipment on a priority basis.

This problem was recognized in the 1965 BOB study and was discussed in connection with "Budget Considerations":

> Decisions with respect to the purchase or rental of a computer inevitably become involved in budget considerations. In most

[49] Hearings on H.R. 4845, pp. 546-547.

cases, budgets can be prepared or adjusted to accommodate either decision. In other cases, an administrator with limited funds available to perform his mission may find it undesirable to devote a substantial portion of his funds to a capital investment if doing so will force him to forego an essential element of his operating program. In these cases, the choice reflects a decision on whether the purchase of equipment will yield a return in the form of long-range savings that is greater than the return to be obtained by devoting the funds to another purpose. In Government—unlike most industries where similar judgments must be made—this decision often cannot be validated by agencies because the benefits resulting from public service functions usually can be measured only by value judgments. Although it is recognized that budget considerations may, at times, cause a temporary deferral of a decision to purchase, the circumstances should be fully documented to show justification for such action, and steps should be taken to effect the budget adjustments which would permit purchase as early as practicable.[50]

At this time an agency with budgetary problems may well have to postpone the purchase of ADP equipment. Yet, at the same time, another agency may acquire another system requiring a comparable outlay of capital in which the advantage of purchase over lease is substantially less. Under the present agency-by-agency approach, not only can individual agency budgetary problems arbitrarily interfere with the Government's purchase of equipment which lease versus purchase evaluations indicate should be purchased but, more important, there is no simple and effective means for the sytematic purchase of that equipment which on a priority basis offers the Government as a whole the greatest purchase advantage. Under H.R. 4845 through the use of the revolving fund, GSA could very easily apply available ADP capital to the purchase of that equipment offering the highest purchase advantage.

G. H.R. 4845 AUTHORIZES EXEMPTIONS AND PERMITS GSA TO DELEGATE AUTHORITY TO AGENCIES IN THE ACQUISITION OF EQUIPMENT

As previously discussed in this report, general-purpose ADP systems are made up of various combinations of mass-produced, commercially available components. It is these general-purpose, mass-produced, commercially available ADP components and the systems created from them that come within the confines of this legislation. Digital and analog components forming a part of tactical weapons or space systems which have no general-purpose applicability would be wholly excluded from this program. Procurement of this latter equipment would remain the complete responsibility of the Defense Department and other agencies that have requirements in these areas.

General-purpose, mass-produced, commercially available ADP components used in conjunction with specially designed components and as parts of systems with unique scientific, cryptological, or military applications of a strategic nature would also come within provisions of this legislation for

[50] 1965 BOB ADP study, p. 33.

acquisition, inventory control, and potential secondary usage although such components or systems might not be available for sharing. Generally, there is no justification for exempting such components simply because the equipment is initially applied to some highly specialized application or used under conditions which preclude sharing. Once the components selected by the agency are acquired by GSA, they would be turned over to the agency to be used in whatever specialized application the agency had planned with no further participation by GSA except inventory reports until the component becomes surplus.

Examples of equipment coming within this category would be the ADP used "in line" to control space vehicles in flight and the backup or redundant systems which must be available for this purpose. Also, equipment used in highly sensitive security work by agencies such as the Federal Bureau of Investigation and the Central Intelligence Agency (CIA), which offer no potential for sharing, could readily be acquired under a general Government acquisition program and used for other purposes when surplus to the initial acquiring agency.

Although the ADP to be included under this management program could be more closely defined at this time, the committee is concerned that rapidly shifting developments in the interrelated fields of defense, space, communications, and ADP could make any presently acceptable distinctions obsolete. And, as this legislation involves the internal operations of the Government, there is no pressing need for strict statutory definitions. As in keeping with the general concept of H.R. 4845, the specific definition of general-purpose ADP equipment is left to the BOB and GSA and the issuance of appropriate regulations.

EXEMPTION OF INDIVIDUAL SYSTEMS FOR REASONS OF NATIONAL SECURITY OR DEFENSE OR ECONOMY AND EFFICIENCY

As backup to avoid compromise of our national security or defense and to assure economy and efficiency, the Administrator of General Services is authorized to exempt individual systems from provisions of this program. It is of paramount importance that agencies with intelligence or secret responsibilities maintain their security in line with appropriate Federal statutes and as the President might direct under provisions of this bill.

EXEMPTION OF EQUIPMENT BY AGENCY HEADS

The Department of Defense strongly recommends that language be included in the bill affording the agency heads the discretion of exempting equipment from provisions of this management program. The DOD's recommended amendment is in such broad terms as to permit the Department, in the discretion of the Secretary of Defense, to exclude all Defense Department ADP.[51] As the Comptroller General has so strongly recommended, any exclusion of an entire agency from this management program would be wholly inadvisable. Realistically, such discretion in agency heads might soon exclude all Government ADP which otherwise would come within this program.

[51] Hearings on H.R. 4845, pp. 179, 230-233.

In view of the authority extended the Administrator of GSA to exempt specific systems from the program for reasons of either national security and defense or economy and efficiency, the committee does not believe that any general exemption, such as the DOD recommends, would be appropriate. Furthermore, as expressly provided in the bill, should GSA make any decision which the user feels is adverse to his interests, the appropriate agency would have the right to appeal to the BOB, and, if the problem was of sufficient magnitude, to the White House. Under H.R. 4845, this entire management program would be under the express direction of the President. Exclusionary authority such as the DOD suggests is therefore unnecessary and inappropriate.

GRADUAL IMPLEMENTATION OF MANAGEMENT PROGRAM

Implementation of the coordinated ADP management program provided in H.R. 4845 would be gradual. Subsection 111(b) (2) expressly provides that the Administrator may delegate authority extended to him under provisions of this legislation to the extent he considers such action "necessary and desirable for the orderly implementation of a program for the utilization of such equipment." Utilizing this authority, the Administrator would implement this more effective management program on an orderly step-by-step basis so as to avoid the disastrous disclocations that would undoubtedly accompany any attempt to completely alter management of ADP overnight.

Upon approval of this program, an initial step would be to establish a comprehensive inventory system carefully designed by experts so that necessary recurring information needed for all levels of Government ADP management would become routinely available. Collateral to the establishment of this inventory, GSA would seek appropriations from Congress to set up the ADP revolving fund and work out with representatives of the various agencies the most acceptable methods by which the agencies would reimburse the fund for equipment use. After the revolving fund is established, GSA could provide for the transfer of presently held general purpose ADP components to the fund.

Once accurate, up-to-date information on available capacity and prospective requirements became available, a more advanced sharing program could be developed. Using ADP equipment, GSA could examine various sharing alternatives and fully exploit available, but unused, Government capacity in meeting the Government's requirements. Essentially, GSA, with adequate information, could place Government sharing under positive direction.

After the inventory system and the revolving fund have both been set up and other aspects of the program have been implemented, GSA would then begin to coordinate Government acquisitions to achieve a larger volume of purchases and leases or combinations thereof. The savings inherent in this management program do not require compromise in the selection or the use of the equipment. If an agency has an unexpected need for ADP or if an agency deadline must be met, these delivery requirements must not be ignored to achieve greater volume acquisitions. However, if agencies keep GSA's inventory system fully apprised of future requirements through a system of long-range planning and forecasting this

information can be used to coordinate and bring about volume acquisitions and more reasonable purchase and lease prices.

H. CONCLUSION

This legislation is essential to effective Government ADP management. Constituting a broad perimeter of authority to BOB, GSA, and the Department of Commerce, it provides the management techniques which have heretofore been lacking in Government ADP management. The bill emphasizes the need for adequate information in effective management and Government-wide coordination. The bill also recognizes the desperate need to improve the Government's bargaining position in equipment acquisition.

Numerous ADP management problems remain to be resolved. Although H.R. 4845 does not extend to agency equipment selection, everyone concerned agrees that there is a critical problem in this area. Equipment compatibility and "input and output" standardization must also be dealt with in substantive terms. They cannot be solved directly through legislation. But if the Government's ADP management is put in order through the establishment of this Government-wide coordinated management system, these other costly and difficult problems can be more easily isolated and resolved and the Government's use of ADP made more effective. At this time, most Government ADP applications fall within the more routine data processing capabilities of this equipment. The Government's checkbook is kept balanced through ADP, but ADP, though it has the potential, is not widely used in evaluating the most efficient manner in which Federal funds should be spent. During the years to come, ADP will be used more and more in the decisionmaking process and the Government ADP equipment costs will surpass any sum we can now imagine.

During the course of this committee's consideration of ADP legislation over the past 3 years, numerous agencies have been skeptical of the need for legislation as well as certain provisions of this particular bill. The committee does not expect this program to be implemented without difficulty. But the difficulties that might be met after passage of H.R. 4845 are much preferred over those which at this time and in years past unnecessarily cost the taxpayers hundreds of millions annually. Based upon two comprehensive BOB ADP management studies, about 100 General Accounting Office audit reports, and 3 years of active investigation by this committee, the time has come for Congress to take reasonable but effective action to assure the establishment of efficient ADP management in Government.

IV. COMMITTEE AMENDMENTS

The committee recommends the adoption of six amendments to H.R. 4845:

First, the language "or at the expense of" is deleted from subsection 111 (a) of the bill on page 2, line 1, so as to exclude ADP equipment needed to meet the requirements of Government contractors and others acquired at the Government's expense. For this purpose, the phrases "and other users", page 5, line 22, and "or user", page 6, line 1 are also stricken.

During the past 3 years the committee has received 29 General Accounting Office audit reports outlining serious deficiencies in the manner in which

Government cost-type contractors acquired ADP equipment. The 1965 BOB study recommended that effective lease versus purchase evaluations be made regarding contractor equipment acquired at the Government's expense. On June 9, 1965, the Secretary of Defense approved a report recognizing that a serious problem existed in this area and recommended improvements in DOD management of this equipment.

Aerospace Industries Association of America, representing most Government contractors with ADP equipment that would be affected by this legislation, has expressed concern over the possible impact on their operations of extending this Government-wide inventory and acquisition coordinating system to ADP used in the fulfillment of space and defense contracts. For this reason, it is concluded that a more appropriate course of action at this time would be to provide for this management system limited to in-house Government ADP. As this new management system is implemented within the Government, the success of the recently announced improvements in the Defense Department management of contractor ADP equipment could be evaluated. It is the committee's intention to follow developments closely so that appropriate action can be recommended should developments indicate that inclusion of contractor equipment, acquired at the expense of the Government, under this coordinated Government inventory and acquisition system is needed for the protection of the taxpayers' interest.

Subsection 111(b) (1) provides that—

> * * * In carrying out his responsibilities under this section the Administrator is authorized to transfer automatic data processing equipment between Federal agencies, to require joint utilization of such equipment by two or more Federal agencies, and to establish and operate equipment pools and data processing centers for the use of two or more such agencies when necessary for its mos efficient and effective utilization.

Authorizing the Administrator to "require" joint utilization of equipment as provided above might be interpreted to conflict with provisions in subsection 111(g) which provide that the Administrator of GSA shall have no authority to interfere with the determination by the agencies of their individual ADP equipment requirements. To forestall any possible contradictions in the subsections, the committee recommends that H.R. 4845 be amended to authorize the Administrator to "provide for" joint utilization of such equipment.

Another amendment would provide for a comprehensive annual report to Congress on the ADP management program established by this legislation. In addition to an account of receipts, disbursements, and transfers to miscellaneous receipts as required in subsection 111(c), the Administrator would be required to submit an annual report of "equipment inventory, utilization, and acquisitions."

The other amendment would provide a more specific meaning to the term "requirements" as used in subsection 111(g) of the bill. The amendment would add the phrase "including the development of specifications for and the selection of the types and configurations of the equipment needed" to the second sentence in subsection 111(g).

The Controller of the AEC strongly recommends this additional language as a clearer manifestation of the committee's intent that GSA not come

between the manufacturer and the user in the determination of requirements or selection or use of equipment.

The committee's confidence in the Administrator of GSA is manifested in the broad authority extended him under this legislation. The committee is not concerned that H.R. 4845, without this amendment, would cause any disruption in user agency responsibilities in these areas. However, as the additional language fully reflects the committee's intent, it is recommended that this clarification as to what is meant by the term "requirements" be added to the bill. It should constitute a further assurance to the agencies that it is neither the purpose nor the intent of this legislation that their responsibilities in the selection and use of ADP equipment be compromised in any way.

V. SECTION-BY-SECTION ANALYSIS OF H.R. 4845

H.R. 4845 would add section 111 to the Federal Property and Administrative Services Act of 1949 (63 Stat. 377), extending responsibility to the Administrator of General Services, subject to overall direction by the President and fiscal and policy control by the Bureau of the Budget, for the economic and efficient purchase, lease, and utilization of automatic data processing equipment necessary to meet the requirements of the Federal Government. The proposed new section is divided into seven subsections. Subsections (a) and (b) provide the basic authority to be exercised by the Administrator of GSA. Subsection (c) authorizes the establishment of a revolving fund to finance the activities undertaken by the Administrator in pursuance of this authority. Subsection (d) provides for the administration of this fund, and subsection (e) prescribes that other provisions of law which are inconsistent with the provisions of this section shall not be applicable in the administration of this section. Subsection (f) authorizes the Secretary of Commerce to undertake necessary research and to provide scientific and technological advisory services relating to the use of automatic data processing in the Government. Subsection (g) provides that the authority conferred by this section shall be exercised subject to direction by the President and by the Bureau of the Budget.

Subsection (a) authorizes and directs the Administrator to coordinate and provide for the purchase, lease, and maintenance of automatic data processing equipment to meet the requirements of Federal agencies.

Subsection (b) authorizes the Administrator to provide automatic data processing equipment suitable for efficient and effective use by Federal agencies through purchase, lease, or transfer of equipment between Federal agencies, to provide for joint use of equipment by two or more agencies, and to establish and operate equipment pools and data processing centers when such action in his opinion is necessary for the economical and efficient utilization of such equipment on a Government-wide basis. The Administrator is also authorized to provide for the maintenance and repair of such equipment by contract or otherwise.

Subsection (b) further allows the Administrator to delegate authority under this section to Federal agencies to lease, purchase, and maintain individual systems or specific units of equipment when, in his discretion, such action is either necessary for economy and efficiency of operations, or when such action is essential to national defense or security. Authority

may also be delegated in such circumstances to an agency to operate ADP equipment pools and processing centers. Solely on an interim basis, the Administrator is further authorized to delegate authority on a general basis in his discretion to the extent necessary or desirable to allow for the orderly implementation of this coordinated Government-wide management program.

The term "Federal agency" as used in this section 111, is defined in the Federal Property Act to which H.R. 4845 is an amendment. The term extends to "any executive agency or any establishment in the legislative or judicial branch of the Government (except the Senate, the House of Representatives, and the Architect of the Capitol and any activities under his direction)."

Subsection (c) authorizes the establishment of an automatic data processing fund. This is to be a fund without fiscal year limitation to be used to finance expenses incident to the Government-wide data processing program provided for in this section. Such expenses include those incurred for personal services, purchases, rentals, maintenance and repair, and direct operation costs of ADP service centers, as well as other related costs. Following receipt of advice of agency requirements and appropriate evaluations as to the availability of currently held equipment, the Administrator would, when necessary, purchase equipment through use of capital in the fund, or if more advantageous, lease equipment through use of such funds.

To keep the capital of the revolving fund intact, the user agency would reimburse the Administrator for the use of the equipment on an annual or other periodic basis in sums as determined under subsection (d). Periodic payments would be made for regular, recurring services, and individual payments for specific intermittent services. User agencies would include in their budgets requests for funds necessary to meet these charges. However, to provide for the additional capital to cover equipment purchases during the period of initial implementation of the program, and to cover future increases in capital fund requirements (reflecting greater Government-wide utilization of such equipment), the Administrator would make requests in the budget of the General Services Administration for capital to be placed in the revolving fund.

The language of subsection (c) is sufficiently broad to include the cost of administration of the program if it appears at a later date that such costs should be paid from the revolving fund. However, in order to avoid confusion during the initial period of implementation of the program, the committee feels that such costs should at least temporarily be provided for by direct appropriation as is provided in subsection (d). Depending upon later developments, these costs would then be paid from direct appropriations or from the revolving fund at the discretion of the appropriations committees of Congress.

Subsection (c) further provides that a report of receipts, disbursements, and transfers from the fund shall be made annually in connection with the budget estimates to the Director of the Bureau of the Budget and to the Congress. Incident to these reports, general estimates of expected expenditures for the next fiscal year would be furnished the appropriations and other congressional committees upon request as a further assurance of congressional control and supervision of this program. Subsection (c) also contains a provision for the inclusion in appropriations acts of provisions

regulating the operation of the ADP fund or limiting expenditures from the fund. The purpose of this provision is to assure that the appropriate control over the expenditure of funds by a Federal agency remains in the Congress.

Subsection (d) authorizes appropriations to the revolving fund in such amounts as may be required. It is further provided that sums so appropriated, together with the value of supplies and equipment transferred to the Administrator, shall constitute the capital of the fund. The fund is also to be credited with advances and reimbursements from appropriations and the payments of any agency, organization, or contractor utilizing or receiving services from equipment. Rates for use of the equipment or for services received therefrom are to be fixed by the Administrator so as to approximate the cost charged to the fund, including depreciation and accrued leave, the amortization of installation costs, direct costs of operating service centers, as well as other items of expense recognized and acceptable from the standpoint of sound accounting practices. Prior to fiscal year 1967, it is contemplated that appropriations will be provided for certain direct operating costs. Provision is made in subsection (d) to avoid inclusion of such items in the determination of the rates charged user agencies. The indirect administrative costs of operating the fund would in later years be included in rates charged the user agencies only if the congressional appropriations committees determine that such costs should be paid out of the revolving fund as provided in subsection (c).

Finally, refunds or recoveries resulting from operations, such as net proceeds of disposal of fund property as excess or surplus and moneys received in settlement of loss or damage claims, are to be credited to the fund. After the close of each fiscal year net income not required to offset prior year losses is to be transferred to the Treasury as miscellaneous receipts.

Subsection (e) provides for the inapplicability of other provisions of law which otherwise would limit the authority of the Administrator under this proposed amendment to the Federal Property and Administrative Services Act of 1949, and specifically, the proviso following paragraph (4), section 201(a) of that act extending certain authority to the Secretary of Defense to exempt the National Military Establishment from provisions of the Property Act, as well as provisions of section 602(d) of this act granting exemptions to the Atomic Energy Commission, TVA, and others.

The Secretary of Commerce is authorized in subsection (f) to provide scientific and technological advisory services relating to ADP to the agencies and particularly to the Administrator of General Services in exercising the authority delegated in this legislation. The Secretary of Commerce is further authorized to make recommendations to the President relating to the establishment of uniform Federal ADP standards. This subsection also delineates the authority of the Secretary of Commerce to undertake research in the sciences and technologies of automatic data processing systems. It is not intended that activities carried out under this authority duplicate or preclude research being done by other Government agencies or private industry.

Subsection (g) provides that the authority conferred upon both the Administrator of General Services and the Secretary of Commerce by this amendment shall be exercised subject to direction by the President and to

fiscal and policy control by the Bureau of the Budget. The Administrator is specifically precluded from impairing or interfering with the determinations by the agencies of their ADP requirements. Under this program the user would develop the specifications for and select the type and configuration of equipment needed. The Administrator would then procure the selected equipment and supply it to the users. The Administrator is further precluded from interfering with or attempting to control in any way the use of equipment or components furnished to the agencies out of the fund. The Administrator is required to give adequate notice to all agencies and other users of any proposed determination specifically affecting them or equipment used by them. If the user concerned and the Administrator fail to agree on the proposed determination, the issue shall be subject to review and decision by the Bureau of the Budget, or as the President may otherwise direct.

VI. AGENCY REPORTS ON H.R. 4845

(The agency reports and comments received on H.R. 4845 follow:)

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D. C., March 22, 1965.

Hon. WILLIAM L. DAWSON:
Chairman, Committee on Government Operations,
House of Representatives.

DEAR MR. CHAIRMAN: Reference is made to your letter of February 19, 1965, and letter of February 26, 1965, from the chairman of your Government Activities Subcommittee requesting our comments on H.R. 4845. This bill would provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by, or at the expense of, Federal departments and agencies.

In our letter to you of May 15, 1963 (B–151204), we submitted our views regarding H.R. 5171, 88th Congress, a similar bill to H.R. 4845, 89th Congress. Also, by letter of August 4, 1964, we made a report to the chairman of the Senate Committee on Government Operations on a proposed amendment of H.R. 5171 in the nature of a substitute that was prepared in an effort to meet objections of the Federal agencies to the provisions of H.R. 5171 as passed by the House of Representatives. In our comments on H.R. 5171 and the amendment to H.R.5171, we expressed the belief that enactment of the bill would be in the interest of the Government and would result in considerably more economical procurement and utilization of automatic data processing equipment.

In commenting on H.R. 5171 and on the proposed amendment in the nature of a substitute for H.R. 5171, we included the following statement which we feel reflects our views on this matter:

"In our report to the Congress dated March 6, 1963 (B–115369), on the 'Financial Advantages of Purchasing over Leasing of Electronic Data Processing Equipment in the Federal Government,' we pointed out that there is need in the Federal Government for an effective mechanism to coordinate and control the purchase, lease, maintenance, and utilization of EDP equipment. Accordingly, we recommend to the President of the United States that he establish such an office in his organization. We are of the opinion that overall policy guidance and direction of the Government's data processing programs can be most effectively accomplished through the efforts of a small, highly placed central management office in the executive branch of the Government. However, we recognize that there are various ways in which central control can be exercised over the procurement and utilization of this type of equipment. H.R. 5171 provides such an alternate method. We are not opposed to the method set forth in H.R. 5171; however, we feel that the mechanism proposed in

H.R. 5171 for carrying out the detailed operations of coordination and control needs to be subject to the policy guidance and overall direction of the Office of the President."

We note that the proposed bill, H.R. 4845, provides in paragraph (g) that the authority conferred upon the Administrator and the Secretary of Commerce by this legislation shall be exercised subject to direction by the President and to fiscal and policy control exercised by the Bureau of the Budget.

In our report to the Congress dated April 30, 1964 (B–115369), on the "Review of Problems Relating to Management and Administration of Electronic Data Processing Systems in the Federal Government," we reviewed several problems pertaining to the management of EDP systems in the Federal Government. We commented that these problems have arisen largely because of the decentralized system of management used whereby each using agency makes its own decisions on the procurement and utilization of EDP equipment without regard to the economies available from considering overall Government needs. We further commented that our review of these problems and the manner in which they can be resolved to the maximum financial advantage of the Federal Government has reinforced our earlier conclusion that an effective central management organization with appropriate authority and responsibility is needed to exercise control over the procurement and use of data processing facilities and related costs being incurred by the Government.

In addition to our March 6, 1963, and April 30, 1964, Government-wide reports, we have issued 64 reports to the Congress covering reviews made of selected aspects of individual agency or Government contractor automatic data processing systems. These reports have contained numerous examples of deficient management of automatic data processing equipment and of potential savings through more effective and centralized management of these facilities.

With reference to the policies and procedures set forth in the bill, we offer the following comments for consideration:

1. We suggest that the following sentence in subsection 111(g), pages 5 and 6, be deleted: "The Administrator shall not interfere with, or attempt to control in any way, the use made of automatic data processing equipment or components thereof by any agency or user."

This provision would place undue restrictions on the Administrator of General Services which would preclude the attainment of the most effective and economical procurement and use of automatic data processing equipment. We believe that this provision conflicts with other authorities granted the Administrator.

Furthermore, we believe that this provision could negate the authority granted in section 111(b) (1) to the Administrator to require joint utilization of automatic data processing equipment by two or more agencies or to establish and operate equipment pools and data processing centers for the use of two or more agencies if those agencies are unwilling to operate in such manner.

2. The bill provides that a report of receipts, disbursements, and transfers to miscellaneous receipts relating to the automatic data processing funds be made annually to the Director of the Bureau of the Budget and to the Congress. The type of report called for is somewhat limited and we would recommend that the bill require a more complete financial report. Accordingly, we suggest that the words "a report of receipts, disbursements, and transfers to miscellaneous receipts, under this authorization" be deleted and the following substituted: "appropriate reports on the financial operations of the fund in accordance with the regularly established requirements of the Bureau of the Budget."

3. We suggest that the bill provide that, after a date determined upon, based on recommendation of the Administrator, existing appropriations and, unless specifically so provided, future appropriations of the agencies concerned, other than appropriations to the fund, shall not be available for the purchase or lease of automatic data processing equip-

ment of the types taken over by the Administrator or for obtaining similar automatic data processing services by contract.

4. We note the term "organization" appearing on page 4, lines 5 and 6 of the bill. If by use of this term it be intended to authorize the Administrator to make equipment available for, or otherwise supply services to, private organizations, which would constitute an exception to section 3678, Revised Statutes, 31 U.S.C. 628, requiring the application of appropriations solely to the objects for which made and no other, in the absence of specific authority to the contrary, then adding the word "private" before the word "organization" would obviate any doubt in the matter.

5. We suggest that a provision be added to the bill to provide that no executive agency shall be exempt from the provisions of the bill except under extraordinary circumstances.

6. With regard to the applicability of this legislation to Government contractors, we understand the reference on page 2 of the bill, "or at the expense of, Federal agencies" is intended to extend authority of the Administrator over contractor equipment under negotiated contracts.

We have taken the position that, to the maximum extent practicable, data processing equipment or systems required by contractors in the performance of negotiated contracts with the Federal agencies, where the whole or a substantial part of the cost of such equipment or systems would become a part of Government contract prices, should be furnished by the Government with title or leasehold interest remaining in the Government subject substantially to the same laws and regulations applicable to in-house Government equipment.

We believe the enactment of the bill would be in the interest of the Government and will result in considerably more economical procurement and utilization of electronic data processing equipment. Therefore, and subject to the changes suggested above, we favor enactment of the proposed legislation.

We will be available to testify at the proposed hearings and we will be pleased to assist the committee in any respect with regard to this matter.

Sincerely yours,

JOSEPH CAMPBELL, *Comptroller General.*

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D. C., March 11, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives,
Washington, D. C.

DEAR MR. CHAIRMAN: This will acknowledge your letter of February 19, 1965, inviting the Bureau of the Budget to comment on H.R. 4845, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data-processing equipment by the Federal departments and agencies.

President Johnson transmitted to the Congress on March 2, 1965, a report on Federal policy and practices in the acquisition and utilization of electronic computers in Government. The report, prepared by the Bureau of the Budget, is based on the results of a year-long study. It proposes a broad program to achieve increased effectiveness, coupled with greater economy, in the expanding use of automatic data-processing equipment. In a letter transmitting the report to the Congress, the President indicated that the policies and suggestions for improvement outlined in the report had his approval.

Under the policies approved by the President, agency heads are held [illegible] actions to assure the most efficient [illegible]

economic administration and management of their ADP activities. Within that framework of responsibility, the President expects the central agencies—the Bureau of the Budget, the General Services Administration, and the Civil Service Commission—to develop policies and guidelines for the improved management and utilization of ADP and to exercise leadership in promoting interagency cooperation, coordination, sharing arrangements, and other measures to assure that the Government's ADP requirements are met effectively and at minimum cost.

To carry out the recommendation made in the Bureau's report, no significant changes would be required in existing organizational arrangements or in the assignment of responsibilities to the Bureau of the Budget, General Services Administration, Civil Service Commission, Department of Commerce, or the departments and agencies. We believe, however, that there is a clear need to strengthen the resources devoted to the management of automatic data processing within both the central agencies and the line departments. In addition, enactment of legislation specifically addressed to the management of automatic data processing in the executive branch of the Federal Government is considered desirable to reinforce and amplify the broad general authorities now vested in the Bureau of the Budget, General Services Administration, and the Department of Commerce. The report concludes that the lack of specific legislation now "creates unnecessary handicaps to the most effective management of ADP."

Accordingly, the report recommends the enactment of general legislation (1) providing an expression of congressional policy on the acquisition and use of ADP equipment, and (2) giving a specific directive to the Bureau of the Budget and the General Services Administration, within the areas of their presently assigned responsibilities, to take necessary actions to assure the most economic and effective use of ADP. The report also recommends that explicit legislative authority be provided (1) for the establishment of a revolving fund to facilitate the establishment of service centers, equipment pools, and time-sharing arrangements, (2) to provide authority to develop, measure, test, and make provision for the approval and implementation of Federal standards for ADP equipment and techniques and Federal standard data elements and codes, and (3) to provide specific authority and direction to the Secretary of Commerce to establish a centralized research center on computer sciences and technology and to provide advisory and consultative services to Government agencies on computer systems development and related scientific and technical problems.

It is the view of the Bureau of the Budget that enactment of H.R. 4845 would assist materially in carrying out the policies and suggestions for improving the acquisition and utilization of electronic computers which have been approved by the President. Accordingly, the Bureau of the Budget recommends that your committee give favorable consideration to H.R. 4845.

Sincerely yours,

PHILLIP S. HUGHES,
Assistant Director for Legislative Reference.

GENERAL SERVICES ADMINISTRATION,
Washington, D. C., March 15, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: Your letter of February 19, 1965, requested the views of the General Services Administration on H.R. 4845, 89th Congress, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

The bill would add a new section 111 to title 1 of the Federal Property and Administrative Services Act of 1949, 63 Stat. 377, as amended, which would centralize GSA control over all electronic data processing equipment required by Federal agencies. Financing would be provided by a revolving fund established by the section. Original capitalization of the fund would be by appropriation and transfer of assets, which would be reimbursed through user charges.

The bill would provide legislation needed to supplement existing statutory authorities, remove any doubt as to the authority for functions presently being performed, and provide a clear statement of congressional policy respecting ADP matters.

General Services Administration endorses the views set forth in the letter of March 11, 1965, from the Director, Bureau of the Budget, to the chairman, House Committee on Government Operations, in support of H.R. 4845.

Accordingly, the General Services Administration recommends that your committee give favorable consideration to H.R. 4845.

The Bureau of the Budget advises that, from the standpoint of the administration's program, there is no objection to the submission of this report to your committee.

Sincerely yours,

ROBERT T. GRIFFIN,
Acting Administrator.

THE SECRETARY OF DEFENSE,
Washington, D. C., March 18, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of the Department of Defense on H.R. 4845, 89th Congress, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

The Department of Defense concurs in the desirability of setting forth in legislation an expression of policy by the Congress on the acquisition and use of automatic data processing equipment by Federal agencies. Such an expression of policy by the Congress would be of assistance to the Bureau of the Budget and the General Services Administration in coordinating the management of ADPE throughout the Government.

As you know, the Bureau of the Budget and the General Services Administration have already initiated actions which should materially improve the management of ADPE. A Government-wide reutilization program has been initiated within the last year which has been implemented throughout the Department of Defense. Under guidance provided by the Bureau of the Budget, ADPE sharing exchanges are being established by the General Services Administration and these actions are being fully supported by the Department of Defense. Recently, the Bureau of the Budget issued Circular A–71 which is designed to further improve the management of ADPE within the Government and which specifically identifies the responsibilities of all agencies in this regard. This circular is intended to implement recommendations contained in the Bureau of the Budget Report to the President on the Management of Automatic Data Processing in the Federal Government which the President approved and transmitted to the Congress on March 2, 1965.

The Bureau of the Budget Report expressed certain conclusion on the matter of procurement and use of automatic data processing equipment. It recommended that Government agencies retain their present responsibilities for making decisions in this area, rather than have a

separate central office empowered with authority to make these decisions. The latter course, the report concluded, will dilute the responsibility of agency heads for the management of their organizations and automated systems; and would serve to divorce ADP management from the arrangements established by Bureau of the Budget Circular A–71 with respect to Presidential surveillance over the overall management of the executive branch. It would also interfere with direct Government agency-contractor relationships.

With respect to the establishment of a centralized revolving fund for the acquisition and utilization of ADPE, the Bureau of the Budget report, as approved by the President, limited its recommendations on the use of such a fund to those situations involving the establishment of service centers, equipment pools, and time-sharing arrangements or where it would be advantageous for appropriate Federal agencies on a permissive basis to finance the acquisition and utilization of ADPE.

There is contained in H.R. 4845 certain language which might be construed to require, on a mandatory basis, Federal agencies and their contractors to obtain their individual ADPE requirements through the Administrator of General Services. The Administrator would purchase, lease, or transfer from other Federal agencies the equipment to meet these requirements. Exceptions would be permitted only at the discretion of the Administrator. Regardless of which agency procured the equipment, the bill could be interpreted to require the use of the centralized revolving fund provided for in subsection 111(c) in all cases.

Use of such a fund on a mandatory basis would result in imposing another step in the procurement of ADPE. Moreover, there would be extra costs to Federal agencies resulting from surcharges necessary to reimburse the General Services Administration for costs of operating the fund. In addition, it could discourage second and third users of the equipment since they would be paying rentals to General Services Administration for older and perhaps less efficient equipment that might be as high or higher than what they would pay for the most modern equipment. Under existing procedures for the utilization of equipment excess to one agency by another agency, there is a clear financial incentive to utilize such equipment. If it is Government-owned, it can generally be acquired at no cost except for transportation, packing, and dismantling charges. If the equipment will do the job, the economic advantage over new equipment is obvious. Even with leased equipment, the agency can usually obtain it at a substantial discount from the new price. Since the General Services Administration could charge rentals as long as the equipment is in use (and would have to until it is amortized), the incentive to use older, perhaps outmoded, equipment is lost. The General Services Administration may then find itself eventually in the position of having a large inventory of unused equipment in warehouses or directing agencies to use this equipment even though newer, more efficient equipment is available at equal or lower cost. For the above reasons, the Department of Defense does not consider the establishment of a revolving fund for acquisition of all ADPE as desirable.

The views of this Department with respect to ADPE in the hands of Government contractors have been made known to the Bureau of the Budget, the General Accounting Office, and to various committees of Congress. The General Accounting Office has issued a series of reports on this matter, favoring Government ownership for ADPE in Government contractor plants. Detailed comment to the Comptroller General on his recommendations in this area were supplied to him on May 21, 1964, a copy of which is attached.

Department of Defense procurement policy is to place maximum responsibility on contractors for contract performance, including the responsibility for facilities acquisition to perform those contracts. This would include ADPE. The Department's policies of contractor responsibility go hand in hand with increased emphasis on the use of fixed-price contracts and contracts with wide-ranging incentives which are

designed to insure the utmost in sound contract management by Government contractors. Acceptance of a principle which would provide all ADPE to contractors as Government-furnished equipment carries with it substantial penalty because (1) it represents increased Government control and intervention in private enterprise and management initiative; (2) it poses the extreme likelihood of the creation of a substantial inventory of idle ADPE; (3) the administration and caretaking of such an equipment inventory will be extremely costly; and (4) it overlooks the alternative that the contractor can purchase ADPE in many cases with better advantages to the Government.

It has been stated that a principal advantage of centralized procurement of ADPE is that lease/purchase decisions could be made on the basis of the total Government requirement for the equipment over its useful lifespan rather than on the basis of estimated use by the acquiring organization. The Department of Defense position, based upon extensive experience with this type of equipment, is that it is practically impossible for a single agency to determine potential secondary users within the agency at the time of initial acquisition and that it is completely unrealistic to assume that any agency can make such determinations for the Government as a whole. We are in full support of the objectives of purchasing computers on the basis of proven economic advantage over leasing for the known application of the equipment. Lease/purchase analysis is made when the equipment is acquired and continually thereafter if the equipment is leased to assure that changed situations have not altered the original decision. The Department now purchases in all cases where the economic advantage is proven, based upon the known use of the equipment and if the funds are available. The equipment is then assured of full amortization by the initial requiring agency and, as previously mentioned, reutilization of the equipment by a secondary user is helped by an ability to transfer the equipment at no cost. This procedure allows selected purchase of equipment where economy is assured and facilitates its reutilization, but at the same time prevents a costly buildup of owned equipment which may or may not have further use to the Government.

In view of the foregoing, it is recommended that in line 8, page 1 of the bill, the words "and provide for" be deleted; in line 4, page 2, the word "shall" be changed to "may"; in line 7, page 2, the words "and directed" be deleted; in line 12, page 2, the word "require" be changed to "provide for"; and in lines 13, 14, and 15, page 3, the words "for the efficient coordination, operation, utilization of such equipment by and for the Federal agencies" be deleted and substitute in lieu thereof the words "to establish and operate equipment pools and data processing centers by or for the use of two or more Federal agencies or to finance at the request of a Federal agency the acquisition and utilization of such equipment."

The chairman of the Subcommittee on Government Activities in his statement on the floor of the House of Representatives on February 11, 1965 (p. 2586, Congressional Record), at the time H.R. 4845 was introduced, stated that the bill contained exceptions necessary for reasons of security and defense and that it was not intended that the legislation cover any specialized scientific or specially designed military APD system components.

Virtually all specially designed ADPE developed for military purposes such as weapons fire control, tactical military field operations, scientific and engineering, missile and satellite tracking, weapons development, command and control, and communications operations are procured as integral parts of weapons and support systems. It should be further noted that commercial general purpose equipment is selected for these systems when it can perform satisfactorily. Selection of specific equipment, however, must always be related to the total system and its interface requirements. The Department of Defense also makes extensive use of ADPE for intelligence and other highly classified purposes. In-

formation essential to the selection and acquisition of this equipment is highly classified and its dissemination restricted accordingly. Certain agencies of the Department of Defense make extensive use of ADPE in accomplishing urgent cryptologic missions. Design or selection, production, testing, and updating of ADP equipment and the urgency and sensitive classified nature of the data to which the ADP applications are made require that the most rigid security measures and time schedules be applied. It is considered essential that determinations with respect to ADPE of the types described above involving the national defense and national security be made by the Secretary of Defense. Accordingly, the following additional amendment is recommended for incorporation in the bill commencing on page 2, line 16:

"This section shall not be construed to apply to specially designed automatic data processing equipment for scientific, military or cryptologic uses and the head of a Federal agency is authorized to determine when any automatic data processing equipment should be excluded from the provisions of this section for reasons of national defense or national security."

In conclusion, the Department of Defense supports the enactment of H.R. 4845 if it is amended to include the suggestions set forth above. It concurs in those provisions of H.R. 4845 pertaining to responsibilities to be vested in the Secretary of Commerce. The Department of Defense is engaged in extensive scientific research and development activities in the ADPE field primarily with respect to our military requirements. However, it believes that there is a definite requirement on a Government-wide basis for the type of services which the Secretary of Commerce would provide under this bill. It is understood that the authority vested in the Secretary of Commerce by subsection 111(f) is not intended to curtail or restrict Department of Defense research and development activities in this field.

We will be happy to provide any further information that your committee may request. Further, the Department welcomes the opportunity to testify at hearings to be held on H.R. 4845.

The Bureau of the Budget advises that from the standpoint of the administration's program, there is no objection to the submission of this report to the committee.

Sincerely,

CYRUS R. VANCE,
Deputy Secretary of Defense.

OFFICE OF THE POSTMASTER GENERAL,
Washington, D. C., March 29, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This is in reply to your request for a report on H.R. 4845, to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

The Post Office Department is already accomplishing many of the purposes of this legislation. During the past year, ADP activities of our 15 regional offices have been consolidated into 6 data processing centers, which resulted in an increased utilization of equipment, and an estimated cost reduction of over $3 million a year.

We have actively participated in the Bureau of the Budget's experimental ADP sharing program in Philadelphia, where a member of the Department's regional office staff served as chairman of the regional sharing program. Since the completion of this experiment we have taken advantage, as far as possible, of equipment sharing opportunities.

In 1964, for example, the Department arranged to use the Treasury Department's larger capacity computer for sorting employee earnings records of a quarterly basis to meet Internal Revenue requirements. This arrangement provided measurable time and financial advantage to both Departments. Sharing has also been advantageous in the audit of postal money orders. The Treasury Department now performs the reconciliation function on a joint-use arrangement utilizing their equipment. This is saving the Post Office Department an outlay of over $500,000 a year.

It is noted that section 111(b) (2) provides that the Administrator of General Services may delegate to an agency authority to lease, purchase, or maintain individual ADP systems or specific units of equipment when he determines such action to be necessary for economy and efficiency of operations. He may also delegate to an agency authority to lease, purchase, or maintain ADP equipment "to the extent to which he determines such action to be necessary and desirable to allow for the orderly implementation of a program for the utilization of such equipment." With respect to these provisions, it is our belief that management decisions as to when and where ADP will be used are the prerogative of the agency concerned. More importantly, we believe that the General Services Administration does not have the expertise to make judgments respecting complicated postal operations, or the relationship of ADP equipment to such operations, in terms of efficiency and economy.

Looking to the future, it is evident that ADP will become increasingly important to us in our day-to-day operations in various phases of the handling and transportation of mail as well as in the management. Through the use of a comprehensive data-gathering network, we anticipate that sectional center workload forecasts will in time be provided for use by postal managers in planning more precisely transportation and manpower requirements. Air and surface transportation schemes are in the process of being developed automatically with a view to optimizing transportation routings in terms of time and cost. We have an experimental project presently underway which indicates the practicability of developing essential management information in such areas as production scheduling and work measurement, with payroll data being obtained as a by-product from the overall process. Our research and development efforts involve the use of ADP and related equipment as control components for mail processing transport equipment.

We are actively studying and testing a variety of new applications of ADP involving mail processing operations on workroom floors. Until these applications have been designed, developed, tested, and proved, the kind of equipment needed, the number of installations, and the location of equipment cannot be determined. Here, as in the other areas outlined above, the expertise of postal engineers is required for efficient procurement, operation, and maintenance of ADP equipment.

Computer technology, as we know it today, is advancing at a rapid rate, and it is reported that computer equipment becomes obsolete in 40 months or less. With this in mind, and with the General Services Administration passing on our requests for ADP, it can reasonably be assumed that delay will necessarily result in the acquisition and cause increase in procurement leadtime. Such delay can be lengthy and result in reducing the value of the equipment being acquired.

The Department agrees with the general design of the legislation to achieve a program of greater economy and increased effectiveness in the use of ADP equipment. The proposed sharing arrangements in the utilization of such ADP equipment, as recommended by the President, we believe will contribute greatly in meeting Government-wide ADP requirements at minimum cost, and help to establish commendable guidelines in ADP administration-management activities. We are mindful, however, that the Post Office Department must operate within a framework of responsibility requiring a day-to-day method of operation, which in many respects differs from other agencies, and requires different operational procedures. It is hoped, therefore, that while we are in

accord with the overall Federal policy intended, restrictive requirements will not be employed which would hamper or delay our normal activities.

In this connection we feel clarification should be made as to subsection (b) of the legislation which authorizes the General Services Administrator to make determinations and to require transfers and joint utilizations of ADP equipment by the agencies. The extent of this authority is not clear when read with the language of subsection (g) of the bill which restricts the authority of the General Services Administration where it impairs or interferes with agency determinations.

The Bureau of the Budget has advised that from the standpoint of the administration's program there is no objection to the submission of this report to the committee.

Sincerely yours,

JOHN A. GRONOUSKI,
Postmaster General.

DEPARTMENT OF AGRICULTURE,
Washington, D. C., March 15, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives.

DEAR MR. CHAIRMAN: This is in reply to your request of February 19, 1965, for a report on H.R. 4845, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

In the Department of Agriculture significant improvements have been made in our program operations by using automatic data processing equipment. We feel that the Department's policies in the acquisition and use of automatic data processing equipment are in accordance with the objectives of H.R. 4845. We have computers of four manufacturers installed or on order. Three departmental data processing centers are now using large computers. Digital and analog computers are used as research tools in our laboratories. Small and medium computers are used where the workload warrants. A Department staff provides overall leadership and coordination of Department-wide activities pertaining to the management and use of automatic data processing equipment.

Section 111(g) of the proposed legislation relates specifically to the relationship of the General Services Administration to the agencies and other users of automatic data processing equipment. The report on the management of automatic data processing in the Federal Government, which was transmitted by the President to the Congress on March 2, 1965, contained the following recommendation:

"In summary, we have concluded that the establishment of a separate office empowered with authority and responsibility to make decisions on the procurement and utilization of ADP equipment would dilute the responsibility of agency heads for the management of their organizations, that it would serve to divorce ADP management from the established arrangements for Presidential surveillance over the overall management of the executive branch, and that it would interfere with direct Government agency-contractor relationships unnecessarily."

We feel that this affirmative statement of policy clarifies the intent of this section.

The Bureau of the Budget issued Circular No. A–71 on March 6, 1965, assigning appropriate responsibility for the administration and management of automatic data processing activities to the Bureau of the Budget, General Services Administration, Department of Commerce, Civil Service Commission, and to the heads of executive agencies. This

specific assignment of responsibilities to executive agencies should facilitate the efficient and economical management of ADP activities.

We believe that H.R. 4845 will facilitate our efforts to achieve further economies, particularly by the additional services to be available from the Bureau of the Budget, the General Service Administration, and the Department of Commerce and the provisions for the automatic data processing fund for the procurement of automatic data processing equipment. Accordingly, the Department of Agriculture recommends that your committee give favorable consideration to H.R. 4845.

The Bureau of the Budget advises that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely yours,

ORVILLE L. FREEMAN,
Secretary.

THE GENERAL COUNSEL OF THE TREASURY,
Washington, D. C., March 12, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of this Department on H.R. 4845, to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

The proposed legislation would authorize the Administrator of the General Services Administration to coordinate and provide for purchase, lease, maintenance, and transfer of automatic data processing equipment; to require joint utilization of such equipment; to establish and operate equipment pools and data processing centers; and to delegate such authority to other Federal agencies. It would also provide for establishment of automatic data processing funds, authorize the Secretary of Commerce to provide scientific and technological advice on and to recommend standards for automatic data processing, and place certain limits on the authority of the Administrator and Secretary in carrying out its provisions.

The Treasury Department supports the underlying objectives of the proposed legislation. While much can be accomplished in the economic and efficient use of automatic data processing equipment and techniques within the framework of existing legislation, regulations, and administrative arrangements, there may be certain advantages to be gained in the enactment of legislation dealing with this significant, and relatively new, management resource.

Some portions of the proposed legislation, however, may need clarification. H.R. 4845 would add to the Federal Property and Administrative Services Act of 1949, as amended, a new section 111 of which subsection (b) (1) states in part that "Automatic data processing equipment suitable for * * * use by Federal agencies shall be provided by the Administrator through * * * transfer of equipment from other Federal agencies * * *." The Department interprets this provision to mean that equipment so transferred would have first been declared excess by the using agency and thereby preclude possible interference with the ability of the using agency to carry out its program responsibilities.

Subsection (b) (1) would also provide that the Administrator is authorized, "to *require* joint utilization of such equipment by two or more Federal agencies." This provision is in apparent conflict with the provision of subsection (g) of section 111 which would provide that "Authority so conferred upon the Administrator shall not be so construed as to impair or interfere with the *determination by agencies* and

other users of their individual automatic data processing equipment requirements." [Italic supplied.]

The Department suggests that the language "to *facilitate* joint utilization" would be preferable and would preclude a possible misinterpretation leading to interference with an agency's responsibility to give priority to its assigned programs.

Subsection (b) (2) of section 111 would provide that "the Administrator may delegate to one or more Federal agencies authority to operate automatic data processing equipment pools and automatic data processing centers * * *." The Department considers that it is the intent of this provision to enable establishment of such pools and centers for use by two or more agencies under conditions not heretofore authorized by law.

The Department further believes that subsection (b) (2) of section 111, along with the provision in the last sentence in subsection (e), should not be so construed as to preclude the operation by the head of an agency of pools or centers now in existence or to be established within an agency under existing or future law. A contrary construction would seem to be inconsistent with that part of subsection (g) which provides "the Administrator shall not interfere with, or attempt to control in any way, the use made of automatic data processing equipment or components thereof by any agency or user."

Subsection (b) (2) would also provide that the "Administrator may delegate to one or more Federal agencies authority to * * * lease, purchase, or maintain individual automatic data processing systems or specific units of equipment * * *" under various conditions. The Department, under present practice, first attempts to acquire the automatic data processing equipment it has determined is needed, and for which funds have been provided by law, either under the provisions of Federal supply contracts the General Services Administration has negotiated with commercial suppliers or from the excess equipment of other Federal agencies, whichever is the most advantageous. Other sources are not used unless either a contract is not already available for the equipment needed or the equipment available under existing contracts can be obtained more economically by negotiating a separate contract. Assuming that the provision cited above can be construed to confirm this practice, the Department would have no objection.

Subsections (c) and (d) of section 111 would establish an "automatic data processing fund, which shall be available without fiscal year limitation for expenses, including personal services, other costs, and the procurement by lease, purchase, transfer, or otherwise of equipment, maintenance, and repair of such equipment by contract or otherwise, necessary for the efficient coordination, operation, utilization of such equipment by and for Federal agencies * * *."

The intent of this provision is not fully clear to the Department which believes that the existing provisions of the Federal Property and Administrative Services Act of 1949, as amended, already authorizes a fund which the Administrator of General Services may use to procure and maintain equipment for the use of executive agencies in the proper discharge of their responsibilities.

It is assumed, however, that the proposed fund would additionally provide for the funding of necessary automatic data processing centers as proposed in subsections (b) (1) and (b) (2), discussed above, and, further, could be used by agencies to finance the procurement of personal services, such as automatic data processing systems design and programming services where existing authority is inadequate. The Department would not object to this interpretation, provided that, the provisions of subsection (e) notwithstanding, agencies would not be precluded from using existing authorities to provide similar services.

The Treasury Department believes that subsection (f) would authorize the expansion of the currently limited efforts of the Department of Commerce in providing scientific and technological advisory services and

proposing standards in the automatic data processing field. The Department believes that such an expansion of efforts is needed and fully supports this provision.

The Department has been advised by the Bureau of the Budget that there is no objection from the standpoint of the administration's program to the submission of this report to your committee.

Sincerely yours,

FRED B. SMITH,
Acting General Counsel.

GENERAL COUNSEL OF THE
DEPARTMENT OF COMMERCE,
Washington, D. C., March 22, 1965.

Hon. JACK BROOKS,
Chairman, Government Activities Subcommittee, Committee on Government Operations, House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This letter is in reply to your request for the views of this Department on H.R. 4845, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

We are in accord with the objectives of the bill and believe most of its provisions would be helpful in advancing the development, effective application, and economic use of automatic data processing throughout the executive branch. In particular, we believe that subsection 111(c) of the bill authorizing the establishment of a revolving fund for equipping and operating automatic data processing centers to serve Federal agencies should enable some Federal agencies more readily and economically to exploit computer technology in their operations.

Subsection 111(f) recognizes important responsibilities in the Department of Commerce. Under that subsection, the Secretary of Commerce would be authorized to provide Federal agencies with scientific and technological advisory services related to automatic data processing and related systems, to submit recommendations to the President on uniform Federal automatic data processing standards, and to undertake in connection with the above necessary research in the sciences and technologies of computer and related systems.

The Department of Commerce is a pioneer in the development of automatic data processing technology and systems and under existing authority has provided an important part of the Federal research and development in this area. While the Department's existing authority is very broad, we think it is appropriate in any legislation on central management of automatic data processing equipment, for specific functions to be assigned to the Secretary of Commerce. Such an assignment is desirable because it makes clear the relationship between the various agencies concerned with this very important subject. We do not construe subsection 111(f) as limiting in any way this Department's broad authority for scientific research.

The Bureau of the Budget's recent report on the management of automatic data processing in the Federal Government, which the President transmitted to the Congress on March 2, 1965, recommended, among other things:

"In order to improve the state of the art and to provide a source of expertise to the Government agencies we recommend legislation to provide specific authority and direction to the Secretary of Commerce to establish a centralized research center on computer science and technology and to provide advisory and consultative services to Government agencies on computer systems development and technical problems."

Bureau of the Budget Circular No. A-71, issued March 6, 1965, assigns

data processing activities. The specific responsibilities of the Department of Commerce under the circular are as follows:

"The Department of Commerce is responsible for aiding in the achievement of increased cost effectiveness in the selection, acquisition and utilization of automatic data processing equipment, and in this connection will perform the following functions:

"(a) Provide advisory and consultative services to executive agencies on the methods for developing information systems based on the use of computers and the programing and languages thereof.

"(b) Undertake research on computer sciences and techniques, including system design, oriented primarily toward Government applications.

"(c) Provide day-to-day guidance and monitorship of an executive branch program for supporting the development, measurement, and testing of voluntary commercial standards for automatic data processing equipment, techniques, and computer languages.

"(d) Improve compatibility in automatic data processing equipment procured by the Federal Government by recommending Uniform Federal standards for automatic data processing equipment, techniques, and computer languages."

We believe the language of subsection 111(f) of the bill provides adequate legislative recognition for these responsibilities.

Subsection 111(b) of the bill places certain central functions with respect to ADP equipment in the Administrator of General Services Administration. In the report President Johnson recently transmitted to the Congress, the following conclusion was stated:

"We have concluded that the establishment of a separate office empowered with authority and responsibility to make decisions on the procurement and utilization of ADP equipment would dilute the responsibility of agency heads for the management of their organizations, that it would serve to divorce ADP management from the established arrangements for Presidential surveillance over the overall management of the executive branch, and that it would interfere with direct Government agency-contractor relationships unnecessarily."

Construing subsection 111(b) together with subsection 111(g), we believe it is clear that the central role of GSA would be subject to the direction and policy guidance of the President and the Bureau of the Budget in accordance with the report the President recently transmitted to the Congress and that the agencies would determine their own needs for ADP equipment. Subsections 111(b) and 111(g) could be considered ambiguous, however, with respect to who shall make the final determination concerning the kinds of specifications of ADP equipment needed to meet stated agency requirements effectively and economically.

Agency heads are charged with the responsibility for the proper and efficient conduct of their programs and need to have authority commensurate with this responsibility. This is particularly important when it relates to decisions about the kinds of ADP equipment needed to meet agency requirements. In many agencies ADP equipment has become a major resource on which program operations and the management structures of those agencies are vitally dependent. It is not practicable to expect the Administrator of the General Services Administration to make or review decisions about agency ADP equipment needs that necessarily involve agency program and management judgments. Consistent with this understanding, we construe subsection 111(g) as a limitation on the authority of the Administrator and as leaving to each agency the final determination with respect to the kinds or specifications of ADP equipment needed for meeting the agency requirements effectively and economically.

Subject to these understandings, the Department would favor enact-

We have been advised by the Bureau of the Budget that there would be no objection to the submission of this report from the standpoint of the administration's program.

Sincerely,

ROBERT E. GILES,
General Counsel.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
March 25, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This letter is in response to your request of February 19, 1965, for a report on H.R. 4845, a bill "to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies."

The bill would provide for the Administrator of General Services to coordinate and control the purchase, lease, and maintenance of automatic data processing equipment by, or at the expense of, Federal agencies. It would also establish an automatic data processing fund on the books of the Treasury for the payment of costs incident to management of such equipment.

We are in general agreement with the provisions of this bill. We specifically approve of the provisions reserving the right of the executive departments and agencies to establish their own requirements. The agency responsible for the administration of operating programs must have the authority to select the equipment it needs in order to carry out its programs and it should not be restricted in its utilization of equipment. We believe that section 111(g) of the bill contains adequate safeguards to permit effective and efficient administration of agency programs without undue interference.

We believe the establishment of a central data processing fund to finance the acquisition and maintenance of automatic data processing equipment will permit more economical decisions as to whether equipment should be leased or purchased. Under present circumstances, an agency must lease the equipment even though longrun savings would result from purchase only because budget funds are not available. The central data processing fund will permit immediate purchase if all other factors indicate it would be more economical to do so.

In summary, we approve of the bill so long as the bill clearly reserves to the executive departments and agencies the right to determine their own requirements.

We are advised by the Bureau of the Budget that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely,

WILBUR J. COHEN,
Assistant Secretary.

DEPARTMENT OF STATE,
Washington, D. C., March 12, 1965.

Hon. WILLIAM L. DAWSON,
House of Representatives.

DEAR MR. CHAIRMAN: The Department of State appreciates the opportunity to comment on the bill, H.R. 4845, "to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies."

The Department's view of the proposed legislation is that it is consistent with the report to the President on "The Management of Automatic Data Processing in the Federal Government," which was approved by the President and submitted to the Congress on March 2, 1965; and that administration of the bill would be in accordance with the provisions of Bureau of the Budget Circular No. A–71, March 6, 1965, on the subject of responsibilities for the administration and management of automatic data processing activities.

The Department is pleased to observe that the bill does not place in another agency any management authority necessary to the successful attainment of its plans for extending the use of data processing systems which are designed to cope with continuing workload increases without corresponding increases in personnel.

The Bureau of the Budget advises that from the standpoint of the administration's program there is no objection to the submission of these comments.

Sincerely yours,

DOUGLAS MACARTHUR II,
Assistant Secretary for Congressional Relations
(For the Secretary of State).

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., March 22, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. DAWSON: This reponds to your request for the views of this Department on H.R. 4845, a bill "To provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data-processing equipment by Federal departments and agencies."

We recommend enactment of the bill.

The bill reflects the recommendations made in the report entitled "The Management of Automatic Data Processing in the Federal Government," which was transmitted to the Congress by the President on March 2, 1965. We concur, therefore, with the report on H.R. 4845 made to your committee by the Bureau of the Budget, which was sent to you on March 11, 1965.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely yours,

GEORGE E. ROBINSON,
Deputy Assistant Secretary of the Interior.

DEPARTMENT OF LABOR,
Washington, May 7, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This is in response to your request for our views on H.R. 4845, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

Shortly after receiving H.R. 4845 for comment, we received Bureau of the Budget Circular No. A–71, entitled "Responsibilities for the Administration and Management of Automatic Data Processing Activities." This circular establishes a Government-wide program for the coordina-

ation of ADP activities carried on by the Federal Government. It clearly prescribes the responsibilities of the Bureau of the Budget, the General Services Administration, and other agencies with regard to ADP administration and operations.

It appears that Circular No. A–71 accomplishes the objectives of H.R. 4845 and, accordingly, enactment of this measure seems to be unnecessary at this time. However, we would have no objection to its enactment if the Congress considers it advisable.

The Bureau of the Budget advises that there is no objection to the submission of this report from the standpoint of the administration's program.

Sincerely,

W. WILLARD WIRTZ,
Secretary of Labor.

VETERANS' ADMINISTRATION,
OFFICE OF THE ADMINISTRATOR OF VETERANS' AFFAIRS,
Washington, D. C., March 23, 1965.

Hon. JACK BROOKS,
Chairman, Government Activities Subcommittee, Committee on Government Operations, House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This refers to your request for a report by the Veterans' Administration on H.R. 4845, 89th Congress, a bill "To provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies."

H.R. 4845 would amend the Federal Property and Administrative Services Act of 1949 to authorize the Administrator of the General Services Administration to coordinate and provide for the economic and efficient purchase, lease, and maintenance of automatic data processing equipment by Federal agencies. As part of his responsibility, he would be authorized to transfer such equipment between Federal agencies, to require joint utilization of the equipment, and to establish and operate equipment pools and data processing centers.

An automatic data processing fund would be established for the procurement and maintenance or repair of ADP equipment. Provision is made for appropriations to such fund and for the crediting of advances and reimbursements from available appropriations and funds of other agencies, organizations, or contractors utilizing the equipment.

This bill would also authorize the Secretary of Commerce to provide agencies with scientific and technological advisory services relating to automatic data processing, to make recommendations to the President relating to the establishment of uniform Federal standards, and to conduct research in connection with this new form of science or technology. The bill also provides that the authority conferred upon the Administrator of the General Services Administration shall not be construed as to impair or interfere with determinations by agencies concerning their individual ADP requirements nor shall he interfere with, or attempt to control, the use of such equipment by agencies.

We in the Veterans' Administration are very much aware of the significant role that automatic data processing equipment and related systems have played in increasing effectiveness and improving productivity in Government operations. We have made a most determined effort to integrate the tools of data processing with the services we are responsible for providing and have made them an integral part of our major program operations. As a result, decisions concerning the procurement of this type of equipment, and the manner in which it is to be used, are directly related to the success or failure of such programs. Flexibility and discretion in making these decisions are absolutely necessary for the effective administration of the programs involved.

During the past few years the Executive Office of the President, and the General Services Administration, have issued a series of bulletins and circulars which prescribe methods of selection, acquisition, and use of automatic data processing equipment.

(*a*) Bureau of the Budget Bulletin 60–6, March 1960, prescribed guidelines for studying the feasibility of using ADP equipment.

(*b*) Bureau of the Budget Circular A–54, October 1961, provided guidelines for selecting equipment and deciding whether to purchase or lease.

(*c*) Bureau of the Budget Circular A–55, November 1963, is the basis for an annual inventory of ADP equipment use, costs, personnel, and applications.

(*d*) Bureau of the Budget Circular A–61, August 1963, is an aid for agencies to assess their ADP programs.

(*e*) Bureau of the Budget Circular A–27, June 1964, creates ADP sharing exchanges in the major cities of the country.

(*f*) GSA Regulation No. 36, April 1964, deals with the reuse or disposition of equipment which exceeds a user's needs.

The Veterans' Administration has complied with all of these directives and the desired economies have been achived. We have purchased all of our 13 computers. Utilization of our major systems is extremely high; for example, the two large 7080 systems were utilized 1,443 hours out of a possible 1,488 hours (97 percent) in January 1965. We are participating fully in the GSA sharing exchange program both in Washington and throughout the country. (For further facts, see enclosure.)

We are, of course, aware of the report to the President on the management of automatic data processing in the Federal Government, which has just been completed by the Bureau of the Budget and was transmitted to the Congress on March 2, 1965. That report took the position that the existing organizational arrangements with respect to automatic data processing in the Federal Government are basically sound. Such report, however, indicated a need to strengthen the resources devoted to the management of ADP. General legislation was therefore recommended which would (1) provide an expression of congressional policy on the acquisition and use of automatic data processing equipment; and (2) give a specific directive to the Bureau of the Budget and the General Services Administration, within the areas of their presently assigned responsibilities, to take necessary actions to assure the most economic and effective use of automatic data processing. In addition, a specific legislation was recommended (1) to provide for the establishment of a revolving fund to facilitate the establishment of service centers, equipment pools, and time-sharing arrangements; (2) to develop, measure, test, and make provisions for the approval and implementation of Federal standards for ADP equipment and techniques; and (3) to provide specific authority and direction to the Secretary of Commerce to establish a centralized research center on computer sciences and technology, and to provide advisory and consultative services on computer systems development and related scientific and technical problems. We note that certain of these recommendations have been incorporated in H.R. 4845.

Although this bill would give broad authority to the Administrator of the General Services Administration to coordinate the procurement and utilization of ADP equipment by Federal agencies (including authority to transfer such equipment between Federal agencies or to require its joint utilization), such authority is tempered by the provision that it should not be construed as to impair or interfere with determinations by agencies concerning their individual ADP requirements, nor interfere with, or attempt to control, the use of such equipment by agencies. Moreover, we note that the President has approved the recommendations contained in the Bureau of the Budget study of the management of automatic data processing, and we further note the statement of

the Bureau of the Budget in its report of March 11, 1965, to your committee that the legislation proposed will assist in carrying them out.

Under the circumstances set forth above, we would have no objection to the favorable consideration of H.R. 4845 by your committee.

We are advised by the Bureau of the Budget that there is no objection from the standpoint of the administration's program to the presentation of this report to your committee.

Sincerely,

W. J. DRIVER, *Administrator.*

Annual savings derived from purchase of ADP equipment, calculations based on January 1965 use

Location	Type system (IBM)	Date of purchase	Purchase price, net	Amortization completed date [1]	Annual savings [2]
Philadelphia data processing center.	1401	June 1962	$244,000	June 1964	$125,000
	1401	November 1962	289,000	November 1964	149,000
	7080-2(C)	do	2,073,000	August 1965	772,000
	Additional 80K for 7080.	June 1964	307,000	August 1967	128,000
	1403	December 1965	22,000	February 1969	7,000
Hines data processing center.	1401	June 1962	235,000	September 1964	107,000
	1401	July 1963	205,000	September 1965	98,000
	7080-2(C)	June 1962	2,109,000	December 1964	866,000
	Additional 80K for 7080.	September 1964	391,000	June 1967	143,000
	1403	July 1965	22,000	September 1968	7,000
St. Paul data processing center.	1401	November 1962	384,000	June 1965	149,000
	1401	July 1963	285,000	December 1965	119,000
	1401 printer added.	April 1964	86,000	June 1967	27,000
Los Angeles data processing center.	1401	July 1963	172,000	April 1967	46,000
Washington data processing center.	1401	July 1963	235,000	October 1965	107,000
	Additional memory; 2 features.	May 1964	66,000	August 1967	30,000
	2 tape drives	October 1964	44,000	May 1969	10,000
Hines Veterans' Administration hospital.	1620	do	59,000	December 1967	18,500
Little Rock Veterans' Administration hospital.	1620	do	55,000	September 1967	19,000
Omaha Veterans' Administration hospital.	1620	October 1961	55,000	November 1965	13,500
	1622	March 1964	18,000	July 1967	5,500
Total costs and estimated annual savings.			7,449,000		2,946,500

[1] Amortization completion date determined by dividing the purchase price by the annual savings.
[2] Annual savings derived by estimating the rental charges if the equipment were not purchased and subtracting the annual maintenance costs from the result. Estimates of annual rental costs are based on current utilization of the equipment.

ATOMIC ENERGY COMMISSION,
Washington, D. C., March 16, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. DAWSON: This is in reply to your request for the views of the Atomic Energy Commission on H.R. 4845, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by the Federal departments and agencies.

As you are aware, President Johnson transmitted to the Congress on March 2, 1965, a report on Federal policy and practices in the acquisition and utilization of electronic computers in Government. The Atomic Energy Commission was represented on the Advisory Committee to the Bureau of the Budget and on the project staff with respect to the study which resulted in this report to the Congress. We agree with the objectives of H.R. 4845 and believe that they are consistent with the

the administration and management of automatic data processing equipment outlined in this report. We feel, however, that it would be desirable to clarify certain language presently appearing in the bill. For example, section 111(a) authorizes and directs the GSA Administrator to coordinate and provide for the economic and efficient purchase, lease, and maintenance of automatic data processing equipment. This authority could be interpreted so broadly as to include the selection and acquisition of equipment or it might be interpreted so narrowly to include only the negotiation of Federal Supply Service contracts. We believe that the functions to be performed by central agencies should involve primarily the issuance of policies, procedures, and guidelines for use by the various departments and agencies and that the presently recognized responsibilities of individual departments and agencies in managing their own ADP resources within such policies and guidelines should continue substantially unchanged. Accordingly, the AEC believes that the GSA Administrator's responsibilities should be clearly defined and limited in the manner we have suggested. Another source of concern to us is the apparent absence in the bill of a clear statement of whether GSA or individual agencies would have responsibility for budgeting and financing the acquisition of ADP equipment.

We have been advised by the Bureau of the Budget that there is no objection from the standpoint of the administration's program to the transmittal of this letter.

Sincerely yours,

JOHN V. VINCIGUERRA
(For General Manager).

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
OFFICE OF THE ADMINISTRATOR,
Washington, D. C., March 29, 1965.

Hon. JACK BROOKS,
Chairman, Government Activities Subcommittee, Committee on Government Operations, House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This refers to your request for a report by the National Aeronautics and Space Administration on H.R. 4845, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

As we understand the legislation, it is designed to provide the necessary executive authority and responsibility for the economical and efficient acquisition and management of automatic data processing equipment. It is primarily directed to the processing of administrative types of data, such as payrolls, inventories, and personnel records. It would accomplish this by assigning certain general powers to the Administrator of the General Services Administration. The National Aeronautics and Space Administration has studied those provisions and feels that they are well designed to carry out the purposes of the bill, particularly the provisions which would establish a revolving fund for the acquisition and sharing of equipment. In the area of administrative use we feel that the proposed legislation presents no problem to this agency.

The National Aeronautics and Space Administration is a specialized user of certain highly technical automatic data processing equipment. The newest and more complicated machines are made integral parts of space experiments. The management of research automatic data processing equipment, particularly as it applies to space exploration, is highly sophisticated and must remain exclusively in the experimenting agency.

We feel that the bill adequately protects the research agencies in that it not only provides that the Administrator's powers are not to be con-

other users of their automatic data processing equipment requirements, it affirmatively permits the Administrator to delegate to Federal agencies authority to maintain individual automatic data processing systems when that action is necessary for the economy and efficiency of operations, the national defense or security, or for the orderly implementation of overall programs for the utilization of such equipment.

Additionally, we note with approval that the bill authorizes the Secretary of Commerce to provide scientific and technological advisory services relating to automatic data processing matters and to recommend to the President uniform Federal standards in that field.

For the foregoing reasons, the National Aeronautics and Space Administration recommends that the bill, H.R. 4845, be favorably considered.

The Bureau of the Budget has advised that, from the viewpoint of the program of the President, there is no objection to the submission of this report to the Congress.

Sincerely yours,

RICHARD L. CALLAGHAN,
Assistant Administrator for Legislative Affairs.

FEDERAL AVIATION AGENCY,
OFFICE OF THE ADMINISTRATOR,
Washington, D. C., March 15, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: This is in response to your letter of February 19, 1965, and to Subcommittee Chairman Brooks' letter of February 26, 1965, requesting our views on H.R. 4845, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

We are in agreement with the general objectives of the proposed bill insofar as they would provide for the economic and efficient acquisition and utilization of Government automatic data processing equipment. The challenge will be in attaining the objectives without undermining the responsibilities of the individual agencies for their operations and the application of automatic data processing thereto.

The FAA is at the present time installing an automated air traffic control system utilizing computer systems. Those systems have attached to them specially designed equipment to work in conjunction with the computers. This highly specialized equipment is built to specifications which are required to satisfy the unique operational requirements for control of movement of aircraft in the air. These computer systems are used 24 hours a day and every day of the year in a real time environment. It is essential that we retain effective control over the design, installation, maintenance and utilization of these and other specialized systems used in our technical operations. They cannot be available for joint use with other agencies. To transfer our control of these systems to GSA would seriously hamper our efforts to carry out our air safety responsibilities. It would further be uneconomic as it would require a staff at GSA matching the size and technical competence of the staff already operating at FAA. We expect therefore that full responsibility for these specialized systems will be delegated to FAA if H.R. 4845 is enacted.

I appreciate Chairman Brooks' invitation to testify at the March 23 hearing to be held by the Government Operations Subcommittee. I am advised that the Bureau of the Budget intends to arrange presentation of the views of the executive branch at that hearing and I do not see anything I could add to that presentation other than what has been stated in this letter.

The Bureau of the Budget has advised that there is no objection from the standpoint of the administration's program to the submission of this report to your committee.

Sincerely,

N. E. HALABY, *Administrator.*

CENTRAL INTELLIGENCE AGENCY,
OFFICE OF DEPUTY DIRECTOR OF CENTRAL INTELLIGENCE,
Washington, D. C., April 8, 1965.

Hon. WILLIAM L. DAWSON,
Chairman, Committee on Government Operations,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: We wish to submit the views of this Agency on H.R. 4845, 89th Congress, a bill to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

We endorse H.R. 4845's objective to achieve economic and effective use of automatic data processing equipment. Guidance, support, and standardization are extremely important goals in the automatic data processing field. Further, we appreciate the problem of drafting such legislation to assure that the authorities and responsibilities are sufficient to the task, without impairing the effectiveness of Federal agencies.

As is the case with many other agencies, the Central Intelligence Agency regards automatic data processing equipment as an invaluable and indispensable aid in the performance of its responsibilities. Such equipment has enhanced our capability to coordinate, correlate, and evaluate the vital and complicated security data and intelligence information which we are receiving in ever-increasing quantities.

CIA uses both specialized and general commercial equipment in its automatic data processing program. In both cases, however, utilization is inextricably involved in the security responsibilities of the Director of Central Intelligence.

For your information, the National Security Act of 1947, as amended, provides, in part, as follows:

"* * *, That the Director of Central Intelligence shall be responsible for protecting intelligence sources and methods from unauthorized disclosure; * * *" (50 U.S.C. 401).

Although we wholeheartedly support the basic objective of the bill, compliance by the Director of Central Intelligence with the full scope of the authorities and responsibilities of the Administrator, GSA, raises a serious question of conflict with the Director's statutory responsibility to protect intelligence sources and methods and data relating to the organization of this Agency.

We are informed that there is no intent to subordinate the security responsibilities of the Director of Central Intelligence to the provisions of the bill. This was also indicated in the hearings and floor discussion on H.R. 5171, a similar bill introduced in the 88th Congress, where we find numerous references to intelligence as an example of the type of activities the Administrator would or should exempt from the provisions of the proposed law.

While H.R. 4845 provides the Administrator with similar authority to grant exceptions from the full scope of the bill, we feel that the potential for statutory conflict on this matter warrants clarification in the bill itself. Therefore, we recommend that there be added to the sentences which ends on line 3, page 5, the following proviso:

":*Provided*, That where a head of a federal agency determines that compliance will require the disclosure of national security information for which he has responsibility, pursuant to law, to protect from unauthorized disclosure, the provisions of this section shall not apply."

We will be happy to provide any additional information that your committee may request.

The Bureau of the Budget has advised, that from the standpoint of the administration's program, there is no objection to the submission of this report.

Faithfully yours,

MARSHALL S. CARTER,
Lieutenant General, U. S. Army, Deputy Director.

FOREIGN SERVICE ANNUITY ADJUSTMENT ACT OF 1965

For text of Act see p. 1136

House Report (Foreign Affairs Committee) No. 500,
June 10, 1965 [To accompany H.R. 4170]
Senate Report (Foreign Relations Committee) No. 631,
Aug. 19, 1965 [To accompany H.R. 4170]
Cong. Record Vol. 111 (1965)

DATES OF CONSIDERATION AND PASSAGE

House Aug. 2, Oct. 20, 1965
Senate Aug. 30, 1965

The Senate Report is set out.

SENATE REPORT NO. 631

THE Committee on Foreign Relations, to which was referred the bill (H.R. 4170), to provide for adjustment in annuities under the Foreign Service retirement and disability system, having considered the same, reports favorably thereon without amendment and recommends that the bill do pass.

MAIN PROVISIONS OF BILL

H.R. 4170 covers the following three groups of Foreign Service officers who retired before October 16, 1960, and who were married at the time of their retirement:

1. Those who at the time of their retirement elected survivor annuities of $2,400 or more. They will have their annuities computed under the more liberal provisions of the law now in effect, thus giving them the same annuity at a reduced cost. According to the Department of State, 78 retired officers are in this category.

2. Those who provided a survivor annuity of less than $2,400. They may elect to bring their survivor annuity up to $2,400 at a cost of $300 annually, or may keep their smaller annuity and pay the reduced cost for such an annuity computed under present law. Records indicate that 91 annuitants would take advantage of this provision.

3. Those who made no provision for a surviving widow. They will be permitted to purchase a $2,400 survivor annuity for $300, the amount it would cost under present law. They will, however, be required to pay an additional $300 per year for the period October 16, 1960, to the date they purchase the annuity under this bill. It is estimated that 131 officers in this category will elect a survivor annuity.

H.R. 4170 also covers 27 known cases where foreign service officers (now deceased) did not provide their widows with annuities. Each of these widows would be provided with an annual sum of $2,400. In addition, the bill provides that the annuities of 12 widows who are now receiving less than $2,400 will be increased to $2,400.

A more detailed explanation of the provisions of H.R. 4170 is contained in the section-by-section analysis prepared by the Department of State which is reprinted as an appendix to this report.

BACKGROUND

Prior to the enactment of Public Law 86-723, which became effective October 16, 1960, the Foreign Service retirement system provided that the annuity payable to a surviving widow could not exceed 25 percent of a retired Foreign Service officer's average basic salary for the 5 years next preceding his retirement. Moreover, the annuity which he received was reduced by 50 percent of the amount of the annuity which he elected to provide for his widow.

Public Law 86-723, however, provided that the annuity payable to a surviving widow could be as much as 50 percent of the amount which the retired Foreign Service officer received as an annuity. In addition, the annuity of the retired Foreign Service officer who elects to provide an annuity for a widow survivor is reduced by 2½ percent of any amount up to $2,400, plus 10 percent of any amount over $2,400, which he specifies as the base for the survivor benefit.

To illustrate, according to the formula in effect for those who retired prior to October 16, 1960, a Foreign Service officer whose so-called high-five average salary was $12,000 a year would, on the basis of 30 years' service, receive an annuity of $7,200 (2 percent×30×$12,000=$7,200). The maximum annuity he could provide for his surviving widow was 25 percent of $12,000, or $3,000. The cost to him for such a widow survivor annuity was $1,500, or one-half of the annuity provided for her. His reduced annuity would then be only $5,700 ($7,200−$1,500=$5,700).

On the basis of the same figures set forth in the preceding paragraph, under the new formula in effect since October 16, 1960, the maximum annuity a Foreign Service officer may elect to provide for his surviving widow is $3,600, or one-half of his annuity of $7,200. The cost to him for such an annuity is 2½ percent of $2,400, or $60, plus 10 percent of $4,800 ($7,200−2,400=$4,800), or $480, for a total cost of $540. Thus, a Foreign Service officer who retires under the present law is entitled to receive an annuity of $6,660 ($7,200−$540=$6,660), while a Foreign Service officer who retired under the old law may receive an annuity of only $5,700. Or, to put it another way, the Foreign Service officer who retires today may purchase a $3,600 annuity for his surviving widow for only $540, while a Foreign Service officer who retired prior to October 16, 1960, must pay

Assembly Bill No. 1381

CHAPTER 1473

An act to amend Sections 3020, 7017, and 19432 of the Business and Professions Code, to amend Sections 15490 and 16480.1 of the Government Code, to amend Section 11770.5 of the Insurance Code, to add Section 10207 to, and Chapter 3.5 (commencing with Section 6250) to Division 7 of Title 1 of the Government Code, and to repeal Sections 1208, and 20473 of the Agricultural Code, Sections 2122, 2713.5, 2852.5, 4013, 4809.1, 5014, 6307.5, 7207.5, 7611, 8010, 8919.2, 9009.5, 9536, 9936, 10060, 18626.7, and 19035.10 of the Business and Professions Code, Article 1 (commencing with Section 1887) of Chapter 3 of Title 2 of Part 4 of, and Sections 1892, 1893, and 1894 of the Code of Civil Procedure, Sections 113, 13867, 23607, 24156, 26008 and 31008 of the Education Code, Sections 105, 732, 1326, and 14107 of the Fish and Game Code, Sections 1227, 8013, 8340.8, 8440.8, 10207, 13913, 15487, 20137, and 65020.10 of the Government Code, Sections 1153.2, 1262, 1356, 1711, and 3805 of the Harbors and Navigation Code, Sections 103.2, 431.4, 1110.2, 13141.2, 17940, and 18917 of the Health and Safety Code, Sections 71.2, 137, 147, and 3092 of the Labor Code, Sections 538, 638, 666, 4567, 9065.2, and 9072 of the Public Resources Code, Section 21209 of the Public Utilities Code, Sections 2605 and 3009 of the Vehicle Code, Sections 13008 and 20034 of the Water Code, and Chapter 842 of the Statutes of 1959, relating to public records.

[Approved by Governor August 29, 1968. Filed with Secretary of State August 30, 1968.]

The people of the State of California do enact as follows:

SECTION 1. Section 1208 of the Agricultural Code is repealed.

SEC. 3. Section 20473 of the Agricultural Code is repealed.

SEC. 4. Section 2122 of the Business and Professions Code is repealed.

SEC. 5. Section 2713.5 of the Business and Professions Code is repealed.

SEC. 6. Section 2852.5 of the Business and Professions Code is repealed.

SEC. 7. Section 3020 of the Business and Professions Code is amended to read:

3020. The board shall keep an accurate inventory of all property of the board and of the state in the possession of

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the board and it shall obtain a receipt therefor from its successor.

SEC. 8. Section 4013 of the Business and Professions Code is repealed.

SEC. 9. Section 4809.1 of the Business and Professions Code is repealed.

SEC. 10. Section 5014 of the Business and Professions Code is repealed.

SEC. 11. Section 6307.5 of the Business and Professions Code is repealed.

SEC. 12. Section 7017 of the Business and Professions Code is amended to read:

7017. The board, in addition to the usual periodic reports, shall within 30 days prior to the meeting of the general session of the Legislature submit to the Governor a full and true report of its transactions during the preceding biennium including a complete statement of the receipts and expenditures of the board during the period.

A copy of the report shall be filed with the Secretary of State.

SEC. 13. Section 7207.5 of the Business and Professions Code is repealed.

SEC. 14. Section 7611 of the Business and Professions Code is repealed.

SEC. 15. Section 8010 of the Business and Professions Code is repealed.

SEC. 16. Section 8919.2 of the Business and Professions Code is repealed.

SEC. 17. Section 9009.5 of the Business and Professions Code is repealed.

SEC. 18. Section 9536 of the Business and Professions Code is repealed.

SEC. 19. Section 9936 of the Business and Professions Code is repealed.

SEC. 20. Section 10060 of the Business and Professions Code is repealed.

SEC. 21. Section 18626.7 of the Business and Professions Code is repealed.

SEC. 22. Section 19035.10 of the Business and Professions Code is repealed.

SEC. 23. Section 19432 of the Business and Professions Code is amended to read:

19432. The secretary shall keep a full and true record of all proceedings of the board, preserve at the board's general office all books, documents, and papers of the board, prepare for service such notices and other papers as may be required of him by the board, and perform such other duties as the board may prescribe.

SEC. 24. Article 1 (commencing with Section 1887) of Chapter 3 of Title 2 of Part 4 of the Code of Civil Procedure is repealed.

SEC. 25. Section 1892 of the Code of Civil Procedure is repealed.

SEC. 26. Section 1893 of the Code of Civil Procedure is repealed.

SEC. 27. Section 1894 of the Code of Civil Procedure is repealed.

SEC. 28. Section 113 of the Education Code is repealed.

SEC. 29. Section 13867 of the Education Code is repealed.

SEC. 30. Section 26008 of the Education Code is repealed.

SEC. 31. Section 23607 of the Education Code is repealed.

SEC. 32. Section 24156 of the Education Code is repealed.

SEC. 33. Section 31008 of the Education Code is repealed.

SEC. 34. Section 105 of the Fish and Game Code is repealed.

SEC. 35. Section 732 of the Fish and Game Code is repealed.

SEC. 36. Section 1326 of the Fish and Game Code is repealed.

SEC. 37. Section 14107 of the Fish and Game Code is repealed.

SEC. 38. Section 1227 of the Government Code is repealed.

SEC. 39. Chapter 3.5 (commencing with Section 6250) is added to Division 7 of Title 1 of the Government Code, to read:

CHAPTER 3.5. INSPECTION OF PUBLIC RECORDS

6250. In enacting this chapter, the Legislature, mindful of the right of individuals to privacy, finds and declares that access to information concerning the conduct of the people's business is a fundamental and necessary right of every citizen of this state.

6251. This chapter shall be known and may be cited as the California Public Records Act.

6252. As used in this chapter:

(a) "State agency" means every state office, officer, department, division, bureau, board, and commission or other state agency, except those agencies provided for in Article IV (except Section 20 thereof) or Article VI of the California Constitution.

(b) "Local agency" includes a county; city, whether general law or chartered; city and county; school district; municipal corporation; district; political subdivision; or any board, commission or agency thereof; or other local public agency.

(c) "Person" includes any natural person, corporation, partnership, firm, or association.

(d) "Public records" includes all papers, maps, magnetic or paper tapes, photographic films and prints, magnetic or punched cards, discs, drums, and other documents containing information relating to the conduct of the public's business prepared, owned, used, or retained by any state or local agency regardless of physical form or characteristics.

6253. Public records are open to inspection at all times during the office hours of the state or local agency and every citizen has a right to inspect any public record, except as hereafter provided. Every agency may adopt regulations stating the procedures to be followed when making its records available in accordance with this section.

6254. Nothing in this chapter shall be construed to require disclosure of records that are:

(a) Preliminary drafts, notes, or interagency or intra-agency memoranda which are not retained by the public agency in the ordinary course of business, provided that the public interest in withholding such records clearly outweighs the public interest in disclosure;

(b) Records pertaining to pending litigation to which the public agency is a party, or to claims made pursuant to Division 3.6 (commencing with Section 810) of Title 1 of the Government Code, until such litigation or claim has been finally adjudicated or otherwise settled;

(c) Personnel, medical, or similar files, the disclosure of which would constitute an unwarranted invasion of personal privacy;

(d) Trade secrets;

(e) Geological and geophysical data, plant production data and similar information relating to utility systems development, or market or crop reports, which are obtained in confidence from any person;

(f) Records of complaints to or investigations conducted by, or records of intelligence information or security procedures of, the office of the Attorney General and the Department of Justice, and any state or local police agency, or any such investigatory or security files compiled by any other state or local agency for correctional, law enforcement or licensing purposes;

(g) Test questions, scoring keys, and other examination data used to administer a licensing examination, examination for employment, or academic examination;

(h) The contents of real estate appraisals, engineering or feasibility estimates and evaluations made for or by the state or local agency relative to the acquisition of property, or to prospective public supply and construction contracts, until such time as all of the property has been acquired or all of

the contract agreement obtained, provided, however, the law of eminent domain shall not be affected by this provision;

(i) Information required from any taxpayer in connection with the collection of local taxes which is received in confidence and the disclosure of the information to other persons would result in unfair competitive disadvantage to the person supplying such information;

(j) Library and museum materials made or acquired and presented solely for reference or exhibition purposes; and

(k) Records the disclosure of which is exempted or prohibited pursuant to provisions of federal or state law, including, but not limited to, provisions of the Evidence Code relating to privilege.

(*l*) In the custody of or maintained by the Governor or employees of the Governor's office employed directly in his office, provided that public records shall not be transferred to the custody of the Governor's office to evade the disclosure provisions of this chapter.

(m) In the custody of or maintained by the Legislative Counsel.

Nothing in this section is to be construed as preventing any agency from opening its records concerning the administration of the agency to public inspection, unless disclosure is otherwise prohibited by law.

6255. The agency shall justify withholding any record by demonstrating that the record in question is exempt under express provisions of this chapter or that on the facts of the particular case the public interest served by not making the record public clearly outweighs the public interest served by disclosure of the record.

6256. Any person may receive a copy of any identifiable public record or shall be provided with a copy of all information contained therein. Computer data shall be provided in a form determined by the agency.

6257. A request for a copy of an identifiable public record or information produced therefrom, or a certified copy of such record, shall be accompanied by payment of a reasonable fee or deposit established by the state or local agency, or the prescribed statutory fee, where applicable.

6258. Any person may institute proceedings in any court of competent jurisdiction to enforce his right to inspect or to receive a copy of any public record under this chapter. The times for responsive pleadings and for hearings in such proceedings shall be set by the judge of the court with the object of securing a decision as to such matters at the earliest possible time.

6259. Whenever it is made to appear by verified petition to the superior court of the county where the records or some

part thereof are situated that certain public records are being improperly withheld from a member of the public, the court shall order the officer or person charged with withholding the records to disclose the public record or show cause why he should not do so. The court shall decide the case after examining the record in camera, if permitted by subdivision (b) of Section 915 of the Evidence Code, papers filed by the parties and such oral argument and additional evidence as the court may allow.

If the court finds that the public official's decision to refuse disclosure is not justified under the provisions of Section 6254 or 6255, he shall order the public official to make the record public. If the judge determines that the public official was justified in refusing to make the record public, he shall return the item to the public official without disclosing its content with an order supporting the decision refusing disclosure. Any person who fails to obey the order of the court shall be cited to show cause why he is not in contempt of court.

6260. The provisions of this chapter shall not be deemed in any manner to affect the status of judicial records as it existed immediately prior to the effective date of this section, nor to affect the rights of litigants, including parties to administrative proceedings, under the laws of discovery of this state.

SEC. 40. Section 8013 of the Government Code is repealed.

SEC. 41. Section 8340.8 of the Government Code is repealed.

SEC. 42. Section 8440.8 of the Government Code is repealed.

SEC. 42.3. Section 10207 of the Government Code is repealed.

SEC. 42.5. Section 10207 is added to the Government Code, to read:

10207. The Legislative Counsel shall maintain the attorney-client relationship with each Member of the Legislature with respect to communications between the member and the Legislative Counsel except as otherwise provided by the rules of the Legislature. All materials arising out of this relationship, including but not limited to proposed bills and amendments, analyses, opinions and memoranda prepared by the Legislative Counsel, are not public records, except as otherwise provided by the rules of the Legislature or when released by the member for whom the material was prepared. When he determines that the public interest so requires, the Legislative Counsel may release any material arising out of the attorney-client relationship with a former Member of the Legislature who is not available to execute a release.

SEC. 43. Section 13913 of the Government Code is repealed.

SEC. 44. Section 15487 of the Government Code is repealed.

SEC. 45. Section 15490 of the Government Code is amended to read:

15490. (a) There is in the state government the State Allocation Board, consisting of the Director of Finance, the Director of General Services, and the Superintendent of Public Instruction. Two Members of the Senate appointed by the Senate Committee on Rules, and two Members of the Assembly appointed by the Speaker, shall meet and, except as otherwise provided by the Constitution, advise with the board to the extent that such advisory participation is not incompatible with their respective positions as Members of the Legislature.

(b) The members of the board and the Members of the Legislature meeting with the board shall receive no compensation for their services but shall be reimbursed for their actual and necessary expenses incurred in connection with the performance of their duties.

(c) The Director of General Services shall provide such assistance to the board as it may require.

SEC. 46. Section 16480.1 of the Government Code is amended to read:

16480.1. There is hereby created a Pooled Money Investment Board, which shall consist of the Controller, Treasurer and Director of Finance. The Pooled Money Investment Board shall meet at least once in every three months and shall designate at least once a month the amount of money available under this article for investment in securities authorized by Article 1 of this chapter, or in bank accounts, or in loans to the General Fund and the type of investment or deposit.

For the purpose of this article, a written determination signed by a majority of the members of the Pooled Money Investment Board shall be deemed to be the determination of the board. Notwithstanding the provisions of Sections 7.5 and 7.6 of this code, the members of the board shall personally make the determinations under this article, and may not authorize a deputy to act for them.

SEC. 47. Section 20137 of the Government Code is repealed.

SEC. 48. Section 65020.10 of the Government Code is repealed.

SEC. 49. Section 1153.2 of the Harbors and Navigation Code is repealed.

SEC. 50. Section 1262 of the Harbors and Navigation Code is repealed.

SEC. 51. Section 1356 of the Harbors and Navigation Code is repealed.

SEC. 52. Section 1711 of the Harbors and Navigation Code is repealed.

SEC. 53. Section 3805 of the Harbors and Navigation Code is repealed.

SEC. 54. Section 103.2 of the Health and Safety Code is repealed.

SEC. 55. Section 431.4 of the Health and Safety Code is repealed.

SEC. 56. Section 1110.2 of the Health and Safety Code is repealed.

SEC. 57. Section 13141.2 of the Health and Safety Code is repealed.

SEC. 58. Section 17940 of the Health and Safety Code is repealed.

SEC. 59. Section 18917 of the Health and Safety Code is repealed.

SEC. 59.5. Section 11770.5 of the Insurance Code is amended to read:

11770.5. The provisions of Article 9 (commencing with Section 11120) of Chapter 1 of Part 1 of Division 3 of Title 2 or Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code shall not apply to the Board of Directors of the State Compensation Insurance Fund.

SEC. 60. Section 71.2 of the Labor Code is repealed.

SEC. 61. Section 137 of the Labor Code is repealed.

SEC. 62. Section 147 of the Labor Code is repealed.

SEC. 63. Section 3092 of the Labor Code is repealed.

SEC. 64. Section 538 of the Public Resources Code is repealed.

SEC. 65. Section 638 of the Public Resources Code is repealed.

SEC. 66. Section 666 of the Public Resources Code is repealed.

SEC. 67. Section 4567 of the Public Resources Code is repealed.

SEC. 68. Section 9065.2 of the Public Resources Code is repealed.

SEC. 69. Section 9072 of the Public Resources Code is repealed.

SEC. 70. Section 21209 of the Public Utilities Code is repealed.

SEC. 71. Section 2605 of the Vehicle Code is repealed.

SEC. 72. Section 3009 of the Vehicle Code is repealed.

SEC. 73. Section 13008 of the Water Code is repealed.

SEC. 74. Section 20034 of the Water Code is repealed.

SEC. 75. Chapter 842 of the Statutes of 1959 is repealed.

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APR 10 RECD

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY RONALD REAGAN, Governor

DEPARTMENT OF PUBLIC HEALTH
2151 BERKELEY WAY
BERKELEY 94704

April 8, 1969

Warren C. House, Executive Secretary
Computer Science & Engineering Board
National Academy of Sciences
2101 Constitution Avenue
Washington, D.C. 20418

Dear Mr. House:

Last August, you were in correspondence with Mr. Lance J. Hoffman of Stanford University regarding the activities in California in the privacy field. The Bill he sent you at that time was subsequently amended and I am enclosing the statute as it now stands. I am also enclosing some guidelines on File Security Procedures that are being considered by the Board. One of our problems is that the legislation which established the California Intergovernmental Board on Electronic Data Processing was not specific with respect to the powers of the Board. It is not clear at this time whether the Board has the authority to impose such guidelines on government in California or whether legislative action would be necessary for this. Our Legislature will be studying the problem of computers and privacy this year in hopes of developing legislation which would be presented in 1970.

If you become aware of any other activities on the development of legislation in this area, I would be most appreciative of learning of these.

Sincerely yours,

Stephen F. Gibbens

Stephen F. Gibbens, Chairman
Subcommittee on Privacy & Confidentiality

Intergovernmental Board on Electronic
Data Processing

SFG:rt
Encls.

INTERGOVERNMENTAL BOARD ON ELECTRONIC DATA PROCESSING
COMMITTEE ON PRIVACY AND CONFIDENTIALITY

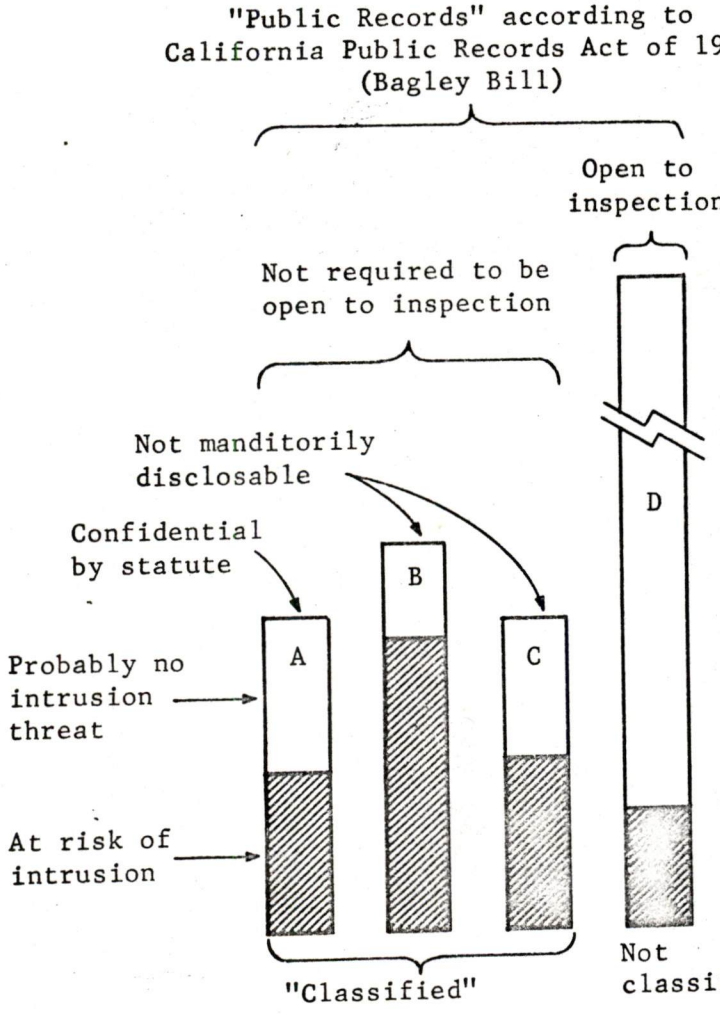
Discussion Draft on File Security Procedures

Q. What records are under consideration?

A. All records in California government, e.g., city, county, State, school districts, boards, commissions, etc.

Q. Which records must be protected from intrusion?

A. Some classes of records at particular risk of intrusion are shown below.



The varying length of the columns is simply intended as a reminder that a large majority of Public Records probably fall in Category D.

Note: Records in various columns as defined in Chapter 3.5, California Public Records Act of 1968 as follows:

A. Subdivision 6254, paragraph k.
B. Subdivision 6254, paragraph a-j; l and m.
C. Subdivision 6254, paragraph c. Not disclosable if it would "constitute an unwarranted invasion of personal privacy".
D. Subdivision 6252, paragraph d.unless otherwise defined in subdivision 6254.

Column C, legally should be included within B. However since it may pose a special problem in computer systems, it is shown separately.

SUBCOMMITTEE ON PRIVACY AND CONFIDENTIALITY
INTERGOVERNMENTAL BOARD ON ELECTRONIC DATA PROCESSING

Draft for Intergovernmental Board Consideration, 10/18/68

FILE SECURITY PROCEDURES

Virtually all records in the custody of government entities in California are designated as "public records." Most "public records" are available to the public, on request, through normal administrative channels. The general statute governing the disclosure of public records is contained in the Government Code--Chapter 3.5 (commencing with Section 6250), Division 7, Title 1. According to this Chapter, the following are examples of types of records which are usually not disclosable, and in fact, may be considered confidential or "classified" in the discussion that follows:

Records pertaining to pending litigation

Personnel, medical, or similar files

Trade secrets

Geological or geophysical data obtained in confidence

Police or correctional law enforcement files

Test questions, scoring keys or other examination data

Real estate appraisals

Records designated as confidential under state or federal law

Records in the custody of the Governor's Office or records maintained by the Legislative Counsel.

For convenience, in the discussion that follows, all records that are designated as confidential by statute or by regulation and all records that are usually not disclosable according to the Government Code reference cited above, will be called "classified."

While classified records deserve special and particular safeguards, all records in the custody of data processing facilities should be afforded reasonable protection from unwarranted intrusions.

The specific safeguards to be applied to various types of files are best determined by the government entity having custody of the files in joint deliberation with an informed and independent advisory body* since the entity is most probably aware of threats to the files and hence, might establish stronger safeguards than would normally be considered reasonable and prudent. For all entities that establish procedural safeguards, it is recommended that independent advisory groups be established to review the safeguards applied to confidential files and to advise on improved methods for file protection.

The use of expert consultants is also recommended.

The safeguards recommended below pertain to punched card files and to electronic computer "batch processing" systems. No safeguards are included for "on-line" systems where files may be accessed from remote terminals.

Administrative Safeguards

"Data Security Officer"

The Director, Executive Officer, Manager or Chairman of each government entity, Department, Agency or Board is, under law, personally responsible for protecting the confidentiality of the files in the custody of that Department, Agency or Board. Within each governmental entity, in addition to the Director, one additional person should be designated as "Data Security Officer" and given authority and responsibility for insuring that all policies, procedures and rules regarding the safeguarding of confidential files are precisely followed by all administrative units of the organization and by all personnel. This designated individual should be known to all individuals in the entity who have any responsibility for file processing management or custody.

The Data Security Officer should not be an official having line-responsibility for confidential files. He should be independent and have no personal responsibility for the programs of the entity which rely on the classified files.

The Data Security Officer should not be an employee of the data processing facility.

*For example, the Intergovernmental Board on Electronic Data Processing could establish a committee to act as an advisory body on system safeguards for all governmental entities in California. The Board could also suggest consultants. An alternative to this approach would be for the League of California Cities, the County Supervisors Association of California and the State EDP Policy Committee to establish advisory bodies to serve their member entities.

Identification of Classified Files

It should be the duty of the Data Security Officer to identify each classified file in the custody of the entity and to make known to all personnel having responsibility for utilization of these files that they contain classified data and are to be accorded the specific protections determined by the Officer.

Designation of Authorized Users

The Data Security Officer shall identify staff of specific organizational units of the entity authorized to utilize each classified file. Such designated staff are called "Authorized Users." Employees who do not have an official requirement to use a classified file, should be prohibited from having contact with that file.

Maintenance of Records on Use of Classified Files

The Data Security Officer shall maintain records of all uses of classified files apart from the normal uses made by "authorized users." All requests for the use of data from classified files by non-authorized users will be reviewed by the Data Security Officer prior to the satisfaction of the request.

The Data Security Officer shall record the identification of the requestor, the justification of the request, the date and the disposition of the request, and if the request is acted upon, a description of the information provided and the media of transmittal.

Records will be maintained on forms provided by the Intergovernmental Board on Electronic Data Processing.

Data from classified files need not carry a "classified" designation when presented in a statistical format--so that an individual record cannot be identified.

Report of Activity on Classified Files

Annually on the first day of December, each government entity shall report all requests for use of classified files by non-authorized users to the Board. This report will include copies of all completed report forms and shall also describe any new, and/or, unusual uses of classified files.

Statement of Intent on Confidentiality

The Data Security Officer shall secure annually from each employee of the entity authorized to utilize a classified file, and from each employee of the data processing facility, a Statement of Intent on Confidentiality. (See Appendix A for Statement of Intent on Confidentiality).

Identification of Classified Files

All classified files should bear a physical label identifying the file as classified.

It is recommended that this physical label identification take the form of three diagonal slashes (45°) across the external label on card files, magnetic tape reels or removable discs.

Use of colored labels or prominent printing of "CLASSIFIED," may be acceptable if colored labels do not have other specialized uses in the facility.

Security Provisions

Each government entity is encouraged to define appropriate security provisions for the protection of each classified file. The stringency of these security measures will depend on the contents of the file and the nature of the threats of unwarranted intrusions into the file by unauthorized persons.

Examples of some graduated security provisions are given below.

Personnel Security Provisions

1. None.
2. Access to facility limited to employees of the entity.
3. Access to facility limited to employees who have signed "Statement of Intent on Confidentiality."
4. Access to facility limited to "authorized users," i.e., employees who have been so designated by the Data Security Officer since their duties require contact with file or information contained in file.

Examples of some graduated security provisions are given below. (Continued)

Physical (Facility)

1. None
2. Limited access to area where files are located. (See Personnel Security Provisions)
3. Storage on non-readable* media.
   Storage in key-locked cabinets (keys controlled).
4. Storage on non-readable* media and in key-locked cabinets.
5. Ingress and egress controlled by guard personnel.
6. Ingress and egress controlled by guard personnel and subject to search.

Physical (Media)

1. Hard copy, e.g., source documents or interpreted punched cards.
2. Non-interpreted punched cards.
3. Magnetic tape or small portable non-readable storage devices.
4. Disc, disc-pack, or large non-readable storage devices.
5. Non-readable media--data scrambled by algorithm, program for which is in security storage.

Physical (Hardware)

To be developed.

Physical (Software)

To be developed.

*Non-readable to humans

Identification of Areas Sensitive to Intrusion

The principle factor to consider in the establishment of reasonable safeguards for classified files is the nature of the threat for which protection must be developed. This will vary according to the contents of the file and whether the entity is a city, county or state government.

Consider a classification of types of threats or levels of intrusions as follows:

1) Accidental observance of data by an employee.

   Example: A keypunch operator notices the name of an acquaintance on a confidential document from which she is keypunching.

2) The accidental dumping of a volume of confidential data to general view.

   Example: Department of Public Health is asked for a data file on air pollution -- inadvertently delivers a file of all persons whose deaths were attributed to alcoholism.

3) Snooping to acquire confidential information on individuals.

   Example: Cranks who seek out data on acquaintances. Private investigators. Blackmailers.

4) Theft of files by individuals or private organizations for profit.

   Example: Files stolen to sell to private businesses for addresses, etc.

5) Tampering with or theft of files by organized crime.

   Example: The Mafia intruding into the Department of Justice's system.

Intrusion threats may differ for data at the point of capture, at the point of reduction, while in storage or in display.

APPENDIX A

INTERGOVERNMENTAL BOARD ON
ELECTRONIC DATA PROCESSING

Statement of Intent on Confidentiality

As a government data processing professional, I will have proper regard for the privacy and confidentiality of the information which may be available to me in the performance of my duties. I intend to abide by the laws and regulations pertaining to public records and the privacy thereof, whether these records are of individuals, organizations, facilities, corporations or any other entity. In addition, I intend to abide by the spirit of this Statement by refraining from any mention of my association with such confidential or private information to friends, associates or any other person not similarly involved with the same information, nor will I take any action that would embarrass the persons on whom information might be available to me, or that would embarrass the persons who provided the information.

I am aware of the identity of the Data Security Officer in this governmental unit who has been officially assigned the responsibility for maintaining the security of information within this unit and I am aware that any transgressions of privacy and confidentiality of which I learn of are to be reported personally and immediately to this individual.

_____ _____

Signature Date

102168

export originated to the Washington Customs District, and 113 million board feet (41 percent) to National Forests from which export originated to the Oregon Customs District. Provision was made to assign some of the exemption quota allocated the Olympic National Forest to the Shelton Federal Cooperative Sustained Yield Unit.

Exempt volume allocations were discussed by Forest Supervisors at timber purchaser meetings held in February 1969. Allocation to National Forests, to individual sales and procedures for administering the requirements of Part IV of the Foreign Assistance Act of 1968 were fully discussed at these meetings. The point was made that assignment of exempt volume to a particular sale does not require such volume be exported. Rather, the decision to export rests with the purchaser. Reaction of timber purchasers at the February meetings indicated satisfaction with the allocations and procedures established to administer Part IV of the Act.

HELLO COMPUTERS, GOODBYE PRIVACY

HON. CORNELIUS E. GALLAGHER

OF NEW JERSEY

IN THE HOUSE OF REPRESENTATIVES

Tuesday, May 27, 1969

Mr. GALLAGHER. Mr. Speaker, since the 1966 hearings of our special Subcommittee on Invasion of Privacy, the Nation has become aware that the efficient whir of the computer may, in reality, be the sound of man's dignity and privacy being shredded. While most Americans acquiesce to the request not to fold, mutilate, or spindle computer cards received from impersonal organizations, they do not receive a corresponding reassurance that they themselves will not be folded, mutilated, and spindled.

This potential danger caused by the recognized and essential benefit of computer applications is the subject of numerous scholarly reviews. Virtually every college and university in the country now has seminars and courses on the impact of technology on the individual. Harvard University's program on technology and society, the American Academy of Arts and Sciences working party on the social implications of the computer, and the National Academy of Sciences' computer science and engineering board privacy group are but three of the major efforts now underway to plow a parallel row to that first laid out by our special subcommittee. Two brilliant books, "Privacy and Freedom," by Dr. Alan Westin, and the soon-to-appear "The Death of Privacy," by Dr. Jerry Rosenberg, soberly amplify the concerns our privacy investigations have uncovered.

Perhaps the most compelling evidence that we are disclosing a deeply personal issue has been the attention given to computer privacy by magazines not normally associated with discussing the impact of congressional investigations. The May 1968 Playboy contained a superb description of the controversy surrounding the suggested national data bank by Dr. Westin. Now Cosmopolitan has published what is undoubtedly the best written account of computer privacy to appear since the preface of the Committee on Government Operations August 1968 report, "Privacy and the National Data Bank Concept."

"Hello Computer, Goodby Privacy," in the June 1969 Cosmopolitan presents an entertaining view of the ramifications of computer technology and does so in terms which everyone can understand and enjoy. The author, Mr. Richard Boeth, has created a sprightly and stimulating piece of journalism.

Mr. Speaker, Mr. Boeth is obviously a very talented and very funny writer. There are those who would reject the importance of his work because they believe that only the ponderous can be meaningful, that only the boring can be significant. I would like to publish the statement made in response to that pompous opinion by the man who heads my privacy investigation staff, Charles Witter:

Let's reach an understanding: You don't regard me as stupid because I am witty and I won't regard you as intelligent because you are dull.

Ignoring the arrogance of that remark, I believe Mr. Witter makes a valid point and one that should be kept in mind particularly by those who must wade through the insipid goo of much govermentally generated prose.

Mr. Speaker, Mr. Boeth writes so clearly, so well, and so amusingly about the issue of computer privacy that I am delighted to enter his article in the RECORD at this point:

HELLO COMPUTERS, GOODBYE PRIVACY—OR, 1984 IS JUST AROUND THE CORNER

(By Richard Boeth)

Back in the comparatively rustic and uncluttered world of the early 1960s, officials of the huge, California-based Bank of America woke up one morning to discover a problem looming. Statisticians had figured that by 1970, in order to service the banking needs of all the people of California, the Bank of America would have to *employ* all the people of California as clerks. The paperwork was piling up that fast, and there was no way to stop it. Since this all-inclusive hiring program held no appeal for anyone, the bank called in General Electric, one of the builders of large electronic computers, and in due course most of the bank's routine operations were "computerized." That is, large and incredibly fast electronic machines took over the clerkly jobs of recording, storing, and giving back on request all the mountains of data pertaining to the bank's billions of transactions with its depositors, creditors, and the rest of the American banking system.

It is difficult to rant and rave too much about the importance of those electronic machines. Without them the Bank of America—and in short order most of the other banks in America—would have choked to death on paper. One cannot imagine the banks of the nation going out of business, of course, but they would have been so impeded and finally so shackled by the blizzard of paper that the whole nature of the American economy, and hence American life, would have changed drastically, and presumably for the worse. Exactly the same thing is true for scores of other major industries as different as insurance and the airlines, the latter of which could not handle anywhere near their present number of bookings without computers to tell them which seats were available on which flights. The Federal Government would collapse without computers; the credit-card empire would not have existed at all. Wall Street got along nicely without computers for two centuries, and thought it could *continue* to get along without them. In the past two years it has been so inundated with paper that it had first to close one day a week and finally shorten its trading time by an hour a day.

The lesson, then, is that these electronic machines, which can pull out stored information at the rate of 100,000 numbers or characters *per second*, are not a mechanical convenience at all but a flat necessity, and their impact is being felt in every sector of American life. In the words of Dr. Robert M. Fano, an M.I.T. professor, computer scientist, and one of the few persons around who looks at men and machines with equal knowledgeableness: "The effects of the computer on society will be more important than those of the printing press."

All this startles those of us who have always thought of computers as endearing little metal things that whirred, clanked, beeped, and, finally—*tapockataqueep*—projected the (wrong) Presidential winner on the basis of partial returns from three districts in Nutley, N.J. True, true, if pressed we could probably have indentified those unfolded, unspindled, and unmutilated punch cards that come in every month from Con Edison, the Diner's Club, and Texaco as having been upchucked from a computer, but even so they are surely only bookkeepers' *helpers*.

Not so. Those punch cards, in fact, may well have cozied us into a false sense of complacency, a deadly unawareness of what computers are capable of. For example, the monthly bill comes in from Esso, right, and it's been sent to you by way of Formosa, and you are damned if you are going to pay the 47-cent penalty for "lateness" when it was their fault. So you enclose a brief, witty note with your check, explaining that they sent the bill via Formosa and that you're not going to pay the 47-cent lateness penalty. And then the next bill comes in—maybe via Formosa, maybe not—and there is no reply to your letter, no acknowledgement of it, either, only the 47-cent lateness penalty noted in the usual box. And so you write more letters, longer and angrier, the last going by registered mail to the president of Standard Oil, and you don't care about the 47 cents but you just want to know *if there is anyone in the whole company who can read and answer a letter*. And, of course, all you get back is another punch card, which you rip up along with your Esso credit card (I went through this ordeal a few years ago with Esso, obviously, but everybody's been through it with one company or other), and you vow never to have anything to do with that idiot company again. So far, fine. You're just reacting as any red-blooded American would. But then we all make our basic mistake: *We assume the computers must be stupid*. We also assume that the people who install and use them must be stupid, and we may be right or wrong about that, but we are fatally wrong and extremely foolish to think that the machines are dumb. Because the next step is to think that because machines are dumb they are not to be taken seriously by bright, sophisticated folk such as ourselves. And the next step after *that* is that the machines throw us all in prison and dissolve the key with a laser beam.

The truth is that these machines are incredibly bright, capable, and powerful, and we cross them at our peril, even when they send us someone else's department-store bill. The best *aide-mémoire* in dealing with computers is REMEMBER THE ASTRONAUTS. Whether you are inspired or appalled by the effort and cost of the moon venture, it is all a scientific and engineering marvel ranking right up there with the first atmoic bomb and Joe Namath's right knee. Billions and trillions of calculations went into the design of the spacecraft, its engines, and its flight plan (including an unprecedented bit of celestial navigation), and this work could not have been duplicated without computers even if you had armed the entire population of Japan with abacuses and set them to work for one hundred years.

So the people who know a little something about computers don't make jokes about computer mistakes. One reason is that the machines themselves don't make mistakes more than about once in every two or three billion calculations. The odds are astronomical (in favor of the computer) that any computer error is really a *programming* error; i.e., that the machine has been given the wrong information in the first place or instructed to do the wrong things by the entirely human being who use it. (These mistakes can be expensive; a single programming error wiped out Mariner I, a moon-shot rocket, at a cost of $18,000,000.) A second and just as important reason why people don't make jokes about computers is that large batches of knowledgeable people, from computer builders to members of Congress, are getting to be frightened of computers and the uses that are already being made of them. It is not easy to be succinct and direct about these fears, because they derive from what Dr. Alan Westin of Columbia University, in his landmark book entitled *Privacy and Freedom*, calls the *"accidental by-product* of electronic at processsing." This problem—the terrible fear—was summed up as best it can be by former Representative James C. Oliver of Maine: "It's my impression," he said, "that these machines may know too much."

That's the only *real* worry, then—just that machines may know too much, and that they can spill it all too fast. What people who know anything about computers are *not* worried about is the kind of computerized apocalypse that grips the popular sci-fi imagination, in which the machines go berserk, say, and bring down nuclear war on our unwilling heads. The leader of a nuclear nation must still *order* the atomic strike himself. (Of course, the computers can feed him misinformation horrendous enough to lead him astray. In october of 1959 our newest computerized Early Warning System in the Arctic flashed an increasingly baleful sequence of warnings all the way up to Emergency, the last step. It turned out that the computers had not been programmed to discount the effect of the moon's reflection on high ocean waves, and one bright night they reacted to this reflection exactly as if they were "seeing" an all-out Russian air strike. President Eisenhower, fortunately, had other information that contradicted the computer's moonshine, or we should all be algae.)

But why should knowledgeable computer people worry about the computers' knowing too much? Isn't that what they're there for, after all? And the answer is a vibrant yes—but! The danger is that the computers, in tadem, will collect so much information about all of us that they will have accomplished what amounts to a monstrous invasion of a whole nation's privacy. The process is already well under way. As Bernard Benson, a California computer manufacturer, has pointed out, the machines have already stored away an enormous amount of information about us—"your FBI record, childhood diseases, and the attitudes of your parents; school records, employment and tax records, contributions to charity, and even the records of your charge accounts and credit cards."

So far, at least, most of these records are stored in different places—in files belonging to the schools, employers, Census Bureau, Internal Revenue Service, etc. But what would happen if all these records were pulled together and filed in one place with *your name on them?* Just from the collation of existing data, the file would show all the pertinent and impertinent information about who you are, how much you make, where you go, how much you pay in taxes, which bills you're slow in paying, how much you spend at the liquor store, and which people you check into what motel with. As we move closer and closer to the day when we use no cash at all and do everything on credit, we move closer and closer to the day when our every move will leave its telltale bit of data behind. Collect all the data in one electronic machine and you've given the collector the key to your private life! "Where information rests is where power lies, and the concentration of power is catastrophically dangerous," computer manufacturer Bernard Benson has said. So it isn't the computer *itself* that will be dangerous—no, it is not mischievous or venal or able to have "motives." "We will all be at the mercy of *the man who pushes the button to make the machine remember,"* says Mr. Benson.

There is no chance, of course, that this sort of power would ever be allowed to lie around without a great many people trying to latch onto it. And sure enough, the U.S. Census Bureau, with the enthusiastic approval of the Commerce Department, Internal Revenue, and half a dozen other Government agencies, has been pushing with enormous eagerness for a National Data Bank that would file in one place everything that's known about everybody—taxes and medical histories, farm loans and Army discharges, fishing licenses and jail sentences. Now this data would be of vast *legitimate* use to sociologists, demographers, statisticians, and Government and industrial planners of all kinds. But there could also be a computer-wise bureaucrat somewhere back in the bowels of the building who could push a button and find out (from the spoor of computerized creditcard data) that you spent the weekend of February 1–2 skiing at King Ridge, in New London, New Hampshire, and that you charged your stay at the New London Inn on the same night as Porfirio Schussboom, the playboy diplomat who is being deported for moral turpitude with ski bunnies. Even if this information were true—and there is no guarantee that it would be—it is hardly any of that bureacrat's business.

The prospect of the Data Bank has alarmed a lot of people, in and out of Government, in and out of the computer industry. The most potent force against the Bank so far has been a Special Subcommittee on Invasion of Privacy in the U.S. House of Representatives, headed by New Jersey Democrat Cornelius E. Gallagher. In a series of hearings over the past couple of years, the Gallagher committee has turned up disturbingly large mounds of evidence that these machines *already* "know too damn much," and also that their unique data-gathering, -storing, and -disseminating abilities are already sometimes being used for unsavory purposes. Among Mr. Gallagher's piquant exhibits:

A large New York firm was brought on the carpet by the Fair Employment Practices Commission for discriminating against blacks in its hiring policies. The company repled that this was impossible, since it used computers to screen and select employees. After a great deal of trouble, it was discovered that the man who *programmed* the computers was a bigot and did indeed fix the machines to weed out all blacks.

All the names of people who wrote into an early, computerized dating system were sold to a pornography peddler. The names could have been sold anyway in a manual system, but only the computers' speed could make the name-selling economical.

A large insurance company upped the rates for burglary insurance the minute a community acquired a certain percentage of blacks or Puerto Ricans. Once again, only computers have the speed and memory to keep track of neighborhood patterns quickly and cheaply enough to make this kind of discrimination possible.

It is known that the dangers of unrestricted computerization came to the White House's attention during Lyndon Johnson's tenancy. Johnson appointed a distinguished Midwestern professor to a Presidential commission—a crime commission, in fact. Routinely, the professor's name was sent off to the appropriate Government agencies for security clearance, and, routinely, the agencies' computers swallowed the name, blinked, and tapped out a message: "Associates with known criminals." Apalled, the Federal gumshoes ran the crime commissioner's name through the computer again, but the machine stuck by its guns: "Associates with known criminals."

When this information was passed along to Johnson, he erupted with several rangy, wide-open oaths, the gist of which was that the professor in question was a longtime goodbuddy and the blinketyblank computer people had just better find out what the hell they thought they were talking about.

Laboriously, by hand, in the old-fashioned, time-consuming way, the computer analysts checked back to see what their baby *had* been talking about. And sure enough, there was the evidence: Every Saturday during the football season, the professor phoned his local candy store and got down a $10 bet on his alma mater's football team. The candy-store owner was tied into the gambling syndicate in his minuscule fashion, the cops had a tap on his phone, and the next thing anybody knew, the security computers in Washington were disgerging the raw information that the distinguished professor was "associating with known criminals."

Fortunately for the dist. prof., he had earlier spent several years associating with known Presidents, and the ludicrous accusation was run to ground. But the incident is bemusing—not because it was rare but because it is so *common,* not because it happened to a highly placed friend of the White House but because such incidents may soon be happening every day to all of us. The National Data Bank is not a reality yet, but several states, including California, have pretty good junior models of it.

The most insidious snooping now being done is conducted by the country's 2500 credit bureaus, with their embarrassingly detailed files on you and 160,000,000 other Americans. Many of the larger local credit bureaus, with tens of millions of names on file, are already computerized; by 1973 the whole system will be linked into one huge computer network, so that a department store in Fort Lauderdale, Florida, at which you might like to open a charge account will be able to find out immediately that you refused, eight years ago, to pay for a bathing suit you'd bought in Akron, Ohio. Maybe the bathing suit disintegrated on the beach the first time you wore it and you were right not to pay—the credit bureau's report will take no nctice of this, but will simply mark you down as a troublemaker and a deadbeat.

The credit bureaus are apparently so far out of line that two Senate subcommittees are vying with Gallagher's House subcommittee in trying to expose them and get some legislation written to control them. In the course of a clutch of hearings over the past two years, the Senate committees turned up some lulus in the abuse pattern. In Baton Rouge, a Raymond Maurer, successful commercial photographer, was unable to open a charge account at a hardware store last year because the credit bureau "remembered" some financial difficulties he had suffered when *starting* his business twelve years before. In Norfolk, Virginia, an insurance adjuster collected $1000 for slander after his company erroneously told a credit bureau he had been fired for taking kickbacks; the credit bureau, naturally on the side of its informer, got its revenge by marking the adjuster down as dangerous because he was "litigious," meaning that he'd take you to court for slander.

The credit bureaus keep very *diverse* information about the 160,000,000 individuals in their files—not only bank references, bill-paying habits, and incomes but such data

as job progress, divorces, debts, bank balances, and any and all legal actions (without recording whether you were in the right). And every bit of this information is open to any creditor who pays the $10 to $50 yearly fee, as well as to any Government agency.

"Credit bureaus," says credit executive Edward Kennedy, "have regarded cooperation with police, FBI, and other Government agencies (read Internal Revenue Service) as routine business and an obligation of good citizenship." To prove how easy it is for any snoop to dip into credit bureau data, Professor Westin had a staff aide at Columbia write the Greater New York Credit Bureau asking for all the dope on a girl in the office, saying only that they were thinking about promoting her. The credit bureau complied immediately, both on the telephone and in writing. When Westin told Congress how easily he obtained the information, the bureau's executive manager yelped at the "shocking abuse of the name of Columbia University"—thereby missing the point entirely. In the first place, what's so noble about Columbia University that its name should inspire an immediate opening of private files? In the second, what if the credit bureau in its wisdom was similarly inspired to invade privacy in the name of some less scrupulous organization?

The only person who has any major trouble getting at the data—including the hearsay and downright errors—in the credit bureau files is the victim himself. The bureaus will not allow citizens to look for possibly false charges in their files, and even if someone *knows* that his file contains misinformation, the credit bureaus are feisty about making changes. A woman in Mississippi learned that a local credit bureau had inserted into her file, without comment, the raw gossip of her neighbors that she was "peculiar," "scatter-brained," and "neurotic or psychotic." The woman had a fierce struggle, costing her a good deal of time lost from work, just to get the undocumented pejoratives "neurotic or psychotic" removed from the file.

The credit bureaus offer at once the most blatant and the most illuminating example of what can happen in a computerized society run amok. Personal information, obviously, has always been available to anyone who wished it, provided he was willing to put out enough money, time, and effort to get it. With the use of day-and-night surveillance and liberal bribes, plus a patient study (and possible purloining) of business, financial, tax, and travel documents gathered from a hundred different sources—using all of these sources and spending enough time—the Government or any interested private party could pull together a comprehensive dossier on just about any citizen this side of Howard Hughes. (Most European governments, on both sides of the Iron Curtain, *do* go to the trouble and expense.) But unless national security were on the line, or a major corporate coup in the offing, or a rich spouse about to be spayed in divorce court, it just wasn't worth the trouble for the Government or anybody else to gather private records about private citizens in such detail.

The computer has changed all that. When we say this, we don't blame the computer any more than we blame the Wright brothers for the London blitz. And when we say this, we don't overlook the fact that one has a bona fide scientific miracle on one's hands, just as the science writers have been telling us. With the technology already at hand, computers can do the work of all the world's libraries, all the world's schoolteachers, all the world's automobile drivers (as well as train, bus, and airplane drivers), and all the world's accountants, and they can cause cash money to disappear from the face of the earth. They can run all the assembly lines in all the factories of the nation, and then judge how well the work has been done and make the necessary corrections. They can get out the nation's bills, meet the nation's payrolls, and very nearly run the nation's homes. Stupendous. The trouble is that they can also make Big Brother tyranny of Orwell's 1984 arrive right on schedule, which is to say fifteen years from now, unless we take measures to insure that we don't turn over our freedom to the computers. As Lee Loevinger, a former member of the Federal Communications Commission, put it, "If it were not for the privacy issue, there would probably be no need to regulate the computer industry."

So what is an electronic computer anyway that it causes so many technological gasps and so much humanistic nailbiting? Well, it is a very large, very complex, very accurate, and very fast adding machine, with three basic new wrinkles. One wrinkle is that it is able to follow a set of instructions fed into it by punch cards or magnetic tape; the second is that it is able to storge huge numbers of earlier calculations for use when needed, and the third is that it is able to electronically call forth the proper bits of information from its memory and do its new calculations in the proper sequence to lead to a solution instead of a meaningless conglomeration of figures. Everything else flows from these gifts. All the other mathematical functions, for example, are simply different kinds of addition, subtraction being upside-down addition, multiplication repeated addition, etc. Furthermore, all data and all concrete ideas can be expressed as numerical symbols. All your employment records in your current job can be encoded and stored in the computer as a series of numbers (a very long series of numbers, to be sure, but because of the computer's speed this is no problem). The machine can then be fed instructions which prompt it to search its memory for your file (your series of numbers), compute how long you have been with the company, for instance, refer to your salary level, and, finally, do a last computation according to a formula already given to determine how much vacation you get this year and, by matching your seniority against everyone else's, when you get it.

What makes all this storage of data possible is a revolution in electronics that began with the invention of the vacuum tube in the 1920s. A vacuum tube can be "fired"—or serve its part in an electronic relay—in a microsecond or one one-millionth of a second, making possible computations a thousand times faster than those of the most advanced mechanical computers. Strangely enough, it was not until fifteen or so years after the invention of the vacuum tube that anyone *needed* that sort of superfast computation. Then, in the middle of World War II, the Army found itself "desperate" for accurately computed artillery tables, which it wanted by the millions. Thus prodded, an engineer named Dr. J. Presper Eckert and a physicist, Dr. John Mauchley, took the familiar vacuum tube—thousands of them—and built ENIAC (Electronic Numerical Integrator and Calculator), the world's first wholly electronic computer, which went into service for the U.S. Army in 1946.

After that the deluge. As Jeremy Bernstein has written in *The Analytical Engine:* "If there is one world that characterizes the history of computers since 1950, the word is probably 'proliferation.'" Remington Rand delivered the first commercial computer, the famous UNIVAC I, to the Census Bureau in 1951 (it was honorably retired to the Smithsonian in 1963). Another UNIVAC, the first designed for ordinary business data processing, was delivered to General Electric in 1954. Today there are 51,000 digital computers in operation in the U.S. (more than twice as many as in all the other countries of the world combined); their total worth: about $22,000,000,000.

Today's computers are faster, more sophisticated, and a great deal more compact than the relatively lumbering ENIACs and UNIVACs. The "basic machine time" for one operation is now a nanosecond—a billionth of a second—instead of a microsecond. The new machines can do 100,000 additions a second, can read data from magnetic tapes and store it at the rate of about 100,000 characters a second. The bulky vacuum tube has been replaced, first by transistors and now by tiny silicon "chips" and tiny magnetic memory cores. Perhaps more important, the computers are becoming more accessible to their users. Until the new, third-generation computers came along, man could "talk" to the machines—give them instructions—only by translating his wishes into one of several artificial "languages," known by such names as FORTRAN or ALGOL. The computers, in turn, came ready-programmed to be able to translate FORTRAN into the billions of electrical impulses, all in proper sequence, which would lead to the solution of a mathematical problem or the name of a scofflaw or the firing of Apollo's retrorockets. Now the third-generation machines permit users to speak to them directly, using something very close to straight English and eliminating the need to use specialists—computer programmers—as translators.

The machines have gotten so fast that here and there they have had to be slowed down intentionally to keep within the perspective of their users. The telephone company in New York, for instance, now uses computers for "intercepts"—the process whereby the operator, when you dial a number that has been changed, cuts into the line, looks up the new number, and gives it to you. Now the operator (a live girl) punches the old number into a computer, which searches for it in its "memory," finds it, plus the new number, and flashes the new number to the operator—all in one-tenth of a second. The trouble is that the operator's consciousness needs *seven*-tenths of a second to take in the fact that she has punched the last digit of the *old number;* so as far as she is concerned, the computer has given the new number before it *knew* the old number, and the computer must therefore have made a mistake! At the phone company's request, the machine was slowed down.

It is interesting that the two most widely *predicted*—and feared—results of computer technology have not come to pass at all. The first was that man would lose control over the "intelligence" of his creation and end up with a Frankenstein monster on his hands, an independent, powerful, indeed superhuman, electronic intellect that would cackle fiendishly and foreclose on the human mortgage. Not so. Of course, the argument is semantic in many respects, and some computer champions argue that the machines are getting so much better in so many intellectual functions that they can be said to be approaching human intelligence. But the commonly accepted ultimate measure is the Turing test, in which a computer, in conversation with a skilled human interrogator, must successfully pass itself off as another human being—and by this measure the computers aren't making progress.

The second worry—"nightmare" is more like it—was that the proliferation of computers would eliminate so many jobs that we would have the worst depression—and most abject unemployment—in history on our hands. This frightening prognosis was a favorite of the late Norbert Wiener, otherwise known as "the father of automation," and about a decade ago the press was full of what seemed like justified scare stories. As with every other major technological advance, however, the computer has *created* more jobs than it has destroyed, though not necessarily more of the old *kinds* of jobs. Right now there is a howling need for tens of thousands of people to service and program the computers themselves!

For this and other reasons, the computer industry is in a pretty disheveled, not to say chaotic, state as it faces its glorious future. One major trouble is that while everyone knows pretty well what computers *can* do, no one is really sure what they should be *asked* to do. "All the sci-fi marvels are already within the state of the art, except that we can't go faster than the speed of light," says Dick Brandon, president of Brandon Applied Systems and one of the more out-spoken young swashbucklers in a swashbuckling industry. "But if the way we've used computers in business is any harbinger, boy are we in trouble! Not more than 50 percent of the computer installations are successful economically, for three reasons. One: People are buying them who shouldn't be—for prestige, whether or not they need them. Two: People are buying computers who don't know how to use them. Three: People underestimate their cost and overspend."

Brandon himself is eminently successful economically, having grabbed a modest but measurable capital chunk of an industry (computers) that did $18,000,000,000 worth of business last year, the fifteenth year that it could be called an industry at all. Dutch-born, Columbia educated, and only thirty-four, Brandon founded his own company four years ago and now says that he is "worth five or six million on paper and have $300 in the bank." Like all of his compeers, he thinks that the computer avalanche, with all its waste and abuses, is thundering along too fast to worry about such niceties as the destruction of the population's right to privacy. "We could build safeguards into the systems, but it wouldn't be profitable," he says.

Up at M.I.T. in Cambridge, Professor Fano agrees, with mingled enthusiasm and anguish, that there is no stopping the avalanche. "You can never stop these things," he says. "It is like trying to prevent a river flowing to the sea. What you have to do is to build dams, built waterworks, to control the flow." Dr. Fano is building his own dams in several directions. He's just finished conducting M.I.T.'s first seminar on the implication of computers to society, to see if he cannot instill in his students an awareness of all those privacy problems that Congress and the Federal Communications Commission are now disturbed about. "I'm coming essentially to the conclusion that it can't be dealt with by different disciplines," Dr. Fano says. "There is a terrible gulf of knowledge between society at large and the scientific elite, and this is enforced by the system itself. How is the individual even to know that the system is operating as it's supposed to? How *can* you generate a new breed of people who will be equally responsive to the needs of technology and humanity? We know that knowledge is power, but this means not only having the data at hand but having the ability to *extract* the relevant data. If this is limited to a few technological high priests in the Government and the large corporations, then the gap with the public will be immense and we are heading straight to *1984*."

CIVIL DEFENSE OFFICER LAUDED

HON. JOHN W. WYDLER

OF NEW YORK

IN THE HOUSE OF REPRESENTATIVES

Tuesday, May 27, 1969

Mr. WYDLER. Mr. Speaker, many of our citizens work long and hard for their community and their country. Some of them receive plaudits and become famous. Others work quietly and receive little recognition, although their contributions are often very great. Such a man is Lt. Lawrence Petry of 177 Walton Avenue, Uniondale.

Lieutenant Petry served for 20 years in the unheralded job of Auxiliary Police officer with the Uniondale Civil Defense Unit 122. He recently retired, following long years of dedicated, loyal service as the unit treasurer and training officer.

I wish to commend Lieutenant Petry for his honorable and faithful service, which is an example to all of us who enjoy the benefits of a free society.

MRS. MARION L. STUART HONORED AT TESTIMONIAL DINNER

HON. JOSHUA EILBERG

OF PENNSYLVANIA

IN THE HOUSE OF REPRESENTATIVES

Tuesday, May 27, 1969

Mr. EILBERG. Mr. Speaker, the world does not know of Marion L. Stuart, but the Olney community, which takes in a substantial part of my Fourth Congressional District, knows her very well. She is a schoolteacher—a remarkable lady in every sense of the word.

It was my pleasure on Thursday, May 22, 1969, to attend a testimonial dinner in her honor given by the Olney community. Supporting organizations included, but were not limited to, the following:

American Legion, Olney Post No. 388.

AMVETS, Olney Post No. 77, 512 West Ruscomb Street.

Barton Home and School Association.

Big Four Fathers' Association.

Catholic War Veterans, St. Helena's, Post No. 424.

Cook Junior High Home and School Association.

Creighton Home and School Association.

Feltonville Civic Association.

Feltonville Home and School Association.

Finletter Home and School Association.

Golden Age Club of Olney.

Greater Olney Community Council.

Kiwanis Club of Olney.

Lindley-Olney Lions Club.

Lowell Home and School Association.

Lower Olney Civic Association.

Morrision Home and School Association.

Olney Business Men's Association.

Olney Elementary Home and School Association.

Olney High School Alumni Association.

Olney High School Home and School Association.

Olney neighbors.

Olney Symphony Orchestra.

Veterans of Foreign Wars, Raymond T. Osmond Post No. 1692.

The faculty of Olney High School.

Financial institutions.

Community Federal Savings & Loan Association.

Fidelity Bank.

Founders Federal Savings & Loan Association.

Girard Bank.

Olney Federal Savings & Loan Association.

Olney High School has had many problems, but under Marion L. Stuart's capable leadership, there was no problem that has not been intelligently and effectively handled. Her plaudits are best summed up in the program book which accompanied the testimonial dinner, as follows:

TRIBUTE

With appreciation, the Olney Community acknowledges the vital and dedicated services Miss Marion L. Stuart has given the Olney High School since its opening in February, 1931, first at a teacher, later department head, Vice Principal and since 1953, as Principal. She is the first woman Principal to direct a co-educational comprehensive high school. She has capably directed the school of over 4000 pupils with its faculty of several hundred teachers and an all male administrative staff of five vice-principals and eight department heads. Though slight of body, she is a bulwark of strength and energy. A prodigious and indefatigable worker she has given unstintingly of her time, her very life, especially to foster good human relationship and understanding among pupils, teachers and parents. She is magnanimous of heart and mind, and is the embodiment of graciousness and refinement and culture. With restraint, she carries all confidences, disappointments and heartaches. Hysterical reactions are foreign to her nature. She is a creative and positive thinker, hopeful that right will prevail. She has indeed been a noble servant and leader of Olney High, an educator of first rank.

Thankfully the Olney Community pays tribute to Miss Marion L. Stuart for her devoted service of 50 years with the School District of Philadelphia, her interest in all community activities and for her exemplary life.

We feel confident that all who know her outside of our community join us in this tribute.

The entire Olney Community hopes she will be richly blessed in the years of her retirement.

OUR MEN

HON. GEORGE E. SHIPLEY

OF ILLINOIS

IN THE HOUSE OF REPRESENTATIVES

Tuesday, May 27, 1969

Mr. SHIPLEY. Mr. Speaker, on Sunday, May 25, I had the privilege of attending a ceremony in Hutsonville, Ill., to honor the war dead of that community. This was truly a community endeavor, and I was greatly impressed with the public spirit and participation which resulted in this memorable dedication program. Under leave to extend my remarks, I would like to include in the RECORD a poem which was recited at the ceremony. The poem was written by Gary Cox, a Hutsonville High School student:

OUR MEN

(By Gary Cox)

We live in a land that is mighty and free.
Our land is more powerful than any could be.
Everything we have is in abundance, and more,
Our land has everything we can ask for.
But without our men, just where would we be.
We would not be a land that is mighty and free.
From the old Revolution, to the modern day war,
They have fought side by side, both the rich and the poor.

NATIONAL ACADEMY OF SCIENCES

Computer Science and
Engineering Board

FOR BASIC REFERENCE

Executive Support Staff, Room 536, Joseph Henry Building
Phone (202) 961-1386

NINETIETH CONGRESS

Congress of the United States

House of Representatives

GOVERNMENT ACTIVITIES SUBCOMMITTEE
OF THE
COMMITTEE ON GOVERNMENT OPERATIONS
RAYBURN HOUSE OFFICE BUILDING, ROOM B350-B
WASHINGTON, D.C. 20515

February 17, 1969

The Honorable Melvin R. Laird
Secretary of Defense
Washington, D. C.

Dear Mr. Secretary:

This Subcommittee has devoted considerable effort over the years to advancements in the management and utilization of computers in Government. Under Public Law 89-306, the Executive Branch is structuring a Government-wide business-like management system for computers under the policy direction of the Bureau of the Budget, but with operational responsibilities lodged in the General Services Administration and the National Bureau of Standards.

On a number of occasions, the Subcommittee has intervened, either directly or through the Bureau of the Budget or GSA, when it became apparent that the course of some particular computer selection was ill-advised. On May 24, 1968, I wrote then Secretary of Defense Clark Clifford about plans of the Department to update the so-called "World-Wide Command and Control Computer System." At that time, we recommended that this large computer procurement might be segmented to allow for the purchase of computers of various manufacturers. Our interest in this goal is as strong as ever. However, over the past several months, as the Subcommittee has sought to obtain additional information concerning this proposed procurement, a number of other questions have arisen. For purposes of economy and efficiency, these questions merit consideration prior to finalization of this procurement, rather than after firm commitments have been made.

These questions and areas of concern are as follows:

1. Despite the magnitude of the proposed expenditure, there is no one office or individual in the entire department, to the Subcommittee's knowledge, having overall jurisdiction over the processing of this proposed procurement. Over a period of several months, every official in the Department the Subcommittee has contacted responded to some important aspect of this proposed procurement by saying that the matter was beyond his jurisdiction. Surely, when a sum in the magnitude of between $100 million and $500 million is involved, there should be overall coordination of the entire project at some level within the department with firm responsibility to evaluate the need and to maintain control over all aspects of the project.

2. The Subcommittee has not been able to obtain or to determine the existence of any feasibility study or any other substantive evaluation of the equipment now in use that supported the immediate need for the acquisition of new hardware. It is not suggested that such a requirement does not exist, but to the extent the Subcommittee has been able to determine, the requirement is of an abstract type based upon a letter or memorandum simply directing that the new procurement be made, rather than supporting in factual and logical terms the need for a new procurement.

3. During several years of investigating computer procurement in the Government, most experts coming before the Subcommittee have urged that acquisition of computer hardware come after completion of the basic design of the system in which it is to be used. The "World-Wide System" is probably the largest of its kind and has more built-in problems and demanding requirements than any other system ever developed. Yet, it is apparently the decision of the Department to select and acquire hardware in anticipation of system development under this procurement. Only the most definitive and persuasive reasons should allow this procurement to be an exception to what otherwise has become a generally-accepted rule in efficient computer system procurement.

4. From information obtained from the Department, it would appear that the principal increase in computer compatibility expected from this procurement would correspond to a higher level of hardware performance. There is no indication that the procurement proposes a new computer system significantly better in capability or versatility as compared to its present output.

A telling factor is that the so-called "data management package" or that part of the software the Subcommittee understands allows for the updating and extraction of data from the system, that would be used with the new hardware, is at best in a nebulous state of development. One system (developed by System Development Corporation with Federal funds and committed to use on IBM equipment) is under a year's test with the results of this test uncertain at this time. Other data management packages are being "evaluated" on a far lower and less extensive scale, which again suggests that the department does not know of a data management package that can be implemented into the system with reasonable certainty that it will perform with sufficient capability to provide a system significantly better than the present command and control output.

Although it might be possible to add or structure an advanced and workable data management package at a later date, it is our understanding that the data management packages now being tested and evaluated are dependent upon and interwoven with the software management or so-called "executive systems" that are unique to the computers of the various manufacturers. Thus, hardware selection at this time might limit future options affecting overall system capability.

This raises a question whether this procurement is not premature and more logically should await breakthroughs in the state of the art that would give a significant increase in overall system capability above that obtained from the present equipment.

5. The department plans to introduce this new equipment into the various command levels of the military over a period of five years. Yet, there are many manifestations that it is only an interim approach to updating command and control computer capability -- a "brute force" method to achieve compatibility and to avoid further sole sourcing of IBM equipment needed to augment present capacity. If this be correct, is this interim step really necessary?

Under these circumstances, it is questionable whether the gradual introduction of this new equipment would have any significant impact on overall system capacity and capability. Also, equipment acquired during the latter portions of the procurement would be relatively obsolete as compared to equipment then available.

Accordingly, if such a procurement is to be made, it would seem desirable that the new hardware be phased into use as rapidly as possible rather than stretched out over a period of five years.

6. There would appear to be some misunderstanding as to the fundamental description of this procurement. Although the procurement is routinely described in terms of updating the "World-Wide Command and Control System," it would seem more accurate to say that the procurement is to replace computers now in use for all purposes (other than administrative) at the high levels of the military. It would appear that the application of the term "system" to the computers subject to replacement under this procurement constitutes too loose a definition and is misleading.

These are some of the questions the Subcommittee has concerning this particular procurement. They are questions of laymen and not those of computer experts. On the other hand, they are questions which the Subcommittee considers pertinent and material, and to which we have been unable to obtain appropriate answers from the Department. These questions do not reflect any predetermination on the part of the Subcommittee concerning the overall merits of this computer procurement. However, they constitute areas of uncertainty which should be clarified before further procurement procedures take place.

Sincerely,

/s/ Jack Brooks

Jack Brooks
Chairman

C
O
P
Y

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

Honorable Jack Brooks
Chairman, Government Activities Subcommittee
Committee on Government Operations
Washington, D. C. 20515

Dear Mr. Chairman:

Secretary Laird has asked me to reply to your letter of February 17, 1969, concerning computer selection plans for the World-Wide Military Command and Control System.

At present, we are completing our analysis of this area and I assure you we are not proceeding on the basis of an abstract requirement. Our analysis is weighing many factors: advantages of standardization, need for processing capacity beyond that now available, promise of hardware technology beyond that now on the market, and costs of software conversion. It is based on a number of excellent studies conducted by the Air Force, JCS, and Defense Agencies. It is considering many alternatives with respect to the pace and scope of a potential procurement.

Your letter raises a number of excellent points that we have been or will consider. For example, we agree that the specifications for a standard data management system are indeed in a very preliminary state; we have a number of efforts underway to evaluate potential specifications, their cost and lead time.

Within the Secretary's office, Dr. Gardiner L. Tucker of my office is the focal point for this potential procurement. When we have completed our analyses, we will be glad to present them to you. In the meantime, Dr. Tucker is prepared to arrange additional briefings for you or your staff.

Sincerely,

/s/ G. L. Tucker for

John S. Foster, Jr.

STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305

COMPUTER SCIENCE DEPARTMENT

Telephone:
415-321-2300

reply distribute w/note

7888 #12
1-5

27 June 1968

Mr. Warren C. House
Executive Secretary
Computer Science and Engineering Board
National Academy of Sciences
2101 Constitution Avenue
Washington, D.C. 20418

Dear Mr. House,

Professor William F. Miller has mentioned your interest in computer privacy to me and has asked me to send you the enclosed working paper on that topic. I am also enclosing for your information a bill currently before the California Assembly and informal comments by the Deputy Attorney General of California on this bill.

It is not expected that the bill will be passed during this session of the Legislature. Rather, in order to strengthen the bill in hopes of getting it considered and passed during the next session, comments from interested members of the scientific and legal communities are being solicited. If you have any comments or suggestions on the bill I am sure that Mr. Stephen Gibbens, Chairman of the Subcommittee on Computers and Privacy of the California Intergovernmental Advisory Board on Electronic Data Processing would be interested in them. His address is:

Stephen Gibbens, Chief
Data Processing Center, Research Division
Dept. of Public Health, State of California
2151 Berkeley Way
Berkeley, California 94704

I hope this information is of some use to you. If I can be of more help don't hesitate to get in touch with me.

Sincerely,

Lance J. Hoffman (K.M.)

Lance J. Hoffman
Research Assistant

LJH/km
cc: Professor W.F. Miller
Mr. Stephen Gibbens
Encl.

CALIFORNIA LEGISLATURE—1968 REGULAR SESSION

ASSEMBLY BILL No. 1381

Introduced by Assemblymen Bagley and Harvey Johnson
(Coauthor: Senator Marks)

April 3, 1968

REFERRED TO COMMITTEE ON JUDICIARY

An act to amend Sections 3020, 7017, and 19432 of the Business and Professions Code, to amend Sections 15490 and 16480.1 of, to add Chapter 3.5 (commencing with Section 6250) to Division 7 of Title 1 of the Government Code, and to repeal Sections 1208, and 20473 of the Agricultural Code, Sections 2122, 2713.5, 2852.5, 4013, 4809.1, 5014, 6307.5, 7207.5, 7611, 8010, 8918.2, 9009.5, 9536, 9936, 10060, 18626.7, and 19035.10 of the Business and Professions Code, Article 1 (commencing with Section 1887) of Chapter 3 of Title 2 of Part 4 of, and Sections 1892, 1893, and 1894 of the Code of Civil Procedure, Sections 113, 13867, 23607, 24156, 26008 and 31008 of the Education Code, Sections 105, 732, 1326, and 14107 of the Fish and Game Code, Sections 1227, 8013, 8340.8, 8440.8, 13913, 15487, 20137, and 65020.10 of the Government Code, Sections 1153.2, 1262, 1356, 1711, and 3805 of the Harbors and Navigation Code, Sections 103.2, 431.4, 1110.2, 13141.2, 17940, and 18917 of the Health and Safety Code, Sections 71.2, 137, 147, and 3092 of the Labor Code, Sections 538, 638, 666, 4567, 9065.2, and 9072 of the Public Resources Code, Section 21209 of the Public Utilities Code, Sections 2805 and 3009 of the Vehicle Code, Sections 13008 and 20034 of the Water Code, and Chapter 842 of the Statutes of 1959, relating to public records.

LEGISLATIVE COUNSEL'S DIGEST

AB 1381, as introduced, Bagley (Jud.). Public records.

Adds, amends, and repeals various secs., various codes.

Defines public records and requires public records to be open to inspection during office hours and allows any citizen to acquire a copy of a public record at a reasonable cost.

Vote—Majority; Appropriation—No; Fiscal Committee—Yes.

2938—614 Reprinted 4-29-68 500

The people of the State of California do enact as follows:

SECTION 1. Section 1208 of the Agricultural Code is repealed.

~~1208. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 3. Section 20473 of the Agricultural Code is repealed.

~~20473. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 4. Section 2122 of the Business and Professions Code is repealed.

~~2122. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 5. Section 2713.5 of the Business and Professions Code is repealed.

~~2713.5. All records of the board shall be open to inspection by the public during regular office hours, except as otherwise provided by law.~~

SEC. 6. Section 2852.5 of the Business and Professions Code is repealed.

~~2852.5. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 7. Section 3020 of the Business and Professions Code is amended to read:

3020. The board shall keep an accurate inventory of all property of the board and of the state in the possession of the board and it shall obtain a receipt therefor from its successor. ~~All the records of the board shall be public and shall be kept in the office of the board.~~

SEC. 8. Section 4013 of the Business and Professions Code is repealed.

~~4013. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 9. Section 4809.1 of the Business and Professions Code is repealed.

~~4809.1. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 10. Section 5014 of the Business and Professions Code is repealed.

~~5014. All records of the board shall be open to inspection by the public during regular office hours, except as otherwise provided by law.~~

SEC. 11. Section 6307.5 of the Business and Professions Code is repealed.

~~6307.5. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 12. Section 7017 of the Business and Professions Code is amended to read:

7017. The board, in addition to the usual periodic reports, shall within 30 days prior to the meeting of the general session of the Legislature submit to the Governor a full and true report of its transactions during the preceding biennium including a complete statement of the receipts and expenditures of the board during the period.

A copy of the report shall be filed with the Secretary of State.

~~All records shall be public records.~~

SEC. 13. Section 7207.5 of the Business and Professions Code is repealed.

~~7207.5. All records of the board shall be open to inspection by the public during regular office hours, except as otherwise provided by law.~~

SEC. 14. Section 7611 of the Business and Professions Code is repealed.

~~7611. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 15. Section 8010 of the Business and Professions Code is repealed.

~~8010. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 16. Section 8919.2 of the Business and Professions Code is repealed.

~~8919.2. Except as otherwise provided by law, all records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 17. Section 9009.5 of the Business and Professions Code is repealed.

~~9009.5. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 18. Section 9536 of the Business and Professions Code is repealed.

~~9536. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 19. Section 9936 of the Business and Professions Code is repealed.

~~9936. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 20. Section 10060 of the Business and Professions Code is repealed.

~~10060. All records of the commission shall be open to inspection by the public during regular office hours, except as otherwise provided by law.~~

SEC. 21. Section 18626.7 of the Business and Professions Code is repealed.

~~18626.7. Except as otherwise provided by law all records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 22. Section 19035.10 of the Business and Professions Code is repealed.

~~19035.10. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 23. Section 19432 of the Business and Professions Code is amended to read:

19432. The secretary shall keep a full and true record of all proceedings of the board, preserve at the board's general office all books, documents, and papers of the board, prepare for service such notices and other papers as may be required of him by the board, and perform such other duties as the board may prescribe.

~~All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 24. Article 1 (commencing with Section 1887) of Chapter 3 of Title 2 of Part 4 of the Code of Civil Procedure is repealed.

SEC. 25. Section 1892 of the Code of Civil Procedure is repealed.

~~1892. Every citizen has a right to inspect and take a copy of any public writing of this State, except as otherwise expressly provided by statute.~~

SEC. 26. Section 1893 of the Code of Civil Procedure is repealed.

~~1893. Every public officer having the custody of a public writing, which a citizen has a right to inspect, is bound to give him, on demand, a certified copy of it, on payment of the legal fees therefor. If a public officer having custody of public writings of a particular type fails to find a demanded writing of that type after diligent search, he shall furnish, upon demand, a writing so stating and affix his signature thereto in his official capacity, on payment of a fee therefor in like amount as the minimum fee that would have been required for the preparation and certification of a nonphotographic copy of the demanded writing.~~

SEC. 27. Section 1894 of the Code of Civil Procedure is repealed.

~~1894. Public writings are divided into four classes.~~

~~1. Laws;~~

~~2. Judicial records;~~

~~3. Other official documents;~~

~~4. Public records, kept in this State, of private writings.~~

SEC. 28. Section 113 of the Education Code is repealed.

~~113. All records of the board shall be open to inspection by the public during regular office hours, except as otherwise provided by law.~~

SEC. 29. Section 13367 of the Education Code is repealed.

~~13367. All records of the board shall be open to inspection~~

~~by the public during regular office hours, except as otherwise provided for by law.~~

SEC. 30. Section 26008 of the Education Code is repealed.

~~26008. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 31. Section 23607 of the Education Code is repealed.

~~23607. All records of the trustees shall be open to inspection by the public during regular office hours, except as otherwise provided by law.~~

SEC. 32. Section 24156 of the Education Code is repealed.

~~24156. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 33. Section 31008 of the Education Code is repealed.

~~31008. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 34. Section 105 of the Fish and Game Code is repealed.

~~105. All records of the commission shall be open to inspection by the public during regular office hours, except as otherwise provided for by law.~~

SEC. 35. Section 732 of the Fish and Game Code is repealed.

~~732. All records of the committee shall be open to inspection by the public during regular office hours.~~

SEC. 36. Section 1323 of the Fish and Game Code is repealed.

~~1323. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 37. Section 14107 of the Fish and Game Code is repealed.

~~14107. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 38. Section 1227 of the Government Code is repealed.

~~1227. The public records and other matters in the office of any officer, except as otherwise provided, are at all times during office hours open to inspection of any citizen of the state.~~

SEC. 39. Chapter 3.5 (commencing with Section 6250) is added to Division 7 of Title 1 of the Government Code, to read:

CHAPTER 3.5. INSPECTION OF PUBLIC RECORDS

6250. In enacting this chapter, the Legislature, mindful of the right of individuals to privacy, finds and declares that access to information concerning the conduct of the people's business is a fundamental and necessary right of every citizen of this state.

6251. This chapter shall be known and may be cited as the California Public Records Act.

6252. As used in this chapter:

(a) "State agency" means every state office, officer, depart-

ment, division, bureau, board, and commission or other state agency.

(b) "Local agency" includes a county, city, whether general law or chartered; city and county; school district; municipal corporation; district; political subdivision; or any board, commission or agency thereof; or other local public agency.

(c) "Person" includes any natural person, corporation, partnership, firm, or association.

(d) "Public records" includes all papers, maps, magnetic or paper tapes, photographic films and prints, magnetic or punched cards, discs, drums, and other documents prepared, owned, used, or retained by any state or local agency regardless of physical form or characteristics.

6253. Public records are open to inspection at all times during the office hours of the state or local agency and every citizen has a right to inspect any public record, except as hereafter provided. Every agency may adopt regulations stating the procedures to be followed when making its records available in accordance with this section.

6254. Nothing in this chapter shall be construed to require disclosure of records that are:

(a) Public records pertaining to pending litigation to which the public agency is a party, provided however, this chapter shall not be construed to limit or otherwise avert the rights of litigants under the laws of discovery;

(b) Personnel, medical, or similar files, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy;

(c) Trade secrets;

(d) Geological and geophysical data obtained in confidence from any person; or

(e) Records exempted under provisions of federal or state law.

6255. An agency may deny access to:

(a) Records of complaints to or investigations conducted by, or records of intelligence information or security procedures of, any state or local police agency, or any investigatory files compiled for any other correctional law enforcement or licensing purposes;

(b) Test questions, scoring keys, and other examination data used to administer a licensing examination, examination for employment, or academic examination;

(c) The contents of real estate appraisals made for or by the state or local agency relative to the acquisition of property for public use, until such time as the property has been acquired, provided, however, the law of eminent domain shall not be affected by this provision; and

(d) Library and museum materials made or acquired and presented solely for reference or exhibition purposes.

Nothing in this section is to be construed as preventing any agency from opening its records concerning the adminis-

tration of the agency to public inspection, unless such action would conflict with specific exceptions provided in this chapter.

6256. Any person may receive a copy of any identifiable public record or shall be provided with a copy of all information contained therein. Computer data shall be provided in a form determined by the agency.

6257. A request for a copy of an identifiable public record or information produced therefrom shall be accompanied by payment of a reasonable fee established by the state or local agency, or the prescribed statutory fee, where applicable.

6258. Any person may institute proceedings in any court of competent jurisdiction to enforce his right to inspect or to receive a copy of any public record under this chapter. The times for responsive pleadings and for hearings in such proceedings shall be set by the judge of the court with the object of securing a decision as to such matters at the earliest possible time.

6259. In any action commenced pursuant to Section 6258, the agency shall demonstrate the record in question is exempt under express provisions of this chapter or that on the facts of the particular case the public interest served by not making the record public clearly outweighs the public interest served by disclosure of the record.

SEC. 40. Section 8013 of the Government Code is repealed.

~~8013. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 41. Section 8340.8 of the Government Code is repealed.

~~8340.8. All records of the authority shall be open to inspection by the public during regular office hours.~~

SEC. 42. Section 8440.8 of the Government Code is repealed.

~~8440.8. All records of the authority shall be open to inspection by the public during regular office hours.~~

SEC. 43. Section 13913 of the Government Code is repealed.

~~13913. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 44. Section 15487 of the Government Code is repealed.

~~15487. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 45. Section 15490 of the Government Code is amended to read:

15490. (a) There is in the state government the State Allocation Board, consisting of the Director of Finance, the Director of General Services, and the Superintendent of Public Instruction. Two Members of the Senate appointed by the Senate Committee on Rules, and two Members of the Assembly appointed by the Speaker, shall meet and, except as otherwise provided by the Constitution, advise with the board to the

extent that such advisory participation is not incompatible with their respective positions as Members of the Legislature.

(b) The members of the board and the Members of the Legislature meeting with the board shall receive no compensation for their services but shall be reimbursed for their actual and necessary expenses incurred in connection with the performance of their duties.

(c) The Director of General Services shall provide such assistance to the board as it may require.

~~(d) All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 46. Section 16480.1 of the Government Code is amended to read:

16480.1. There is hereby created a Pooled Money Investment Board, which shall consist of the Controller, Treasurer and Director of Finance. The Pooled Money Investment Board shall meet at least once in every three months and shall designate at least once a month the amount of money available under this article for investment in securities authorized by Article 1 of this chapter, or in bank accounts, or in loans to the General Fund and the type of investment or deposit.

For the purpose of this article, a written determination signed by a majority of the members of the Pooled Money Investment Board shall be deemed to be the determination of the board. Notwithstanding the provisions of Sections 7.5 and 7.6 of this code, the members of the board shall personally make the determinations under this article, and may not authorize a deputy to act for them.

~~All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 47. Section 20137 of the Government Code is repealed.

~~20137. All records of the Board of Administration, Public Employees' Retirement System, shall be open to inspection by the public during regular office hours, except as otherwise provided for by law.~~

SEC. 48. Section 65020.10 of the Government Code is repealed.

~~65020.10. All records of the committee, with the exception of those pertaining to personnel matters, shall be open to inspection by the public during regular office hours.~~

SEC. 49. Section 1153.2 of the Harbors and Navigation Code is repealed.

~~1153.2. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 50. Section 1262 of the Harbors and Navigation Code is repealed.

~~1262. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 51. Section 1356 of the Harbors and Navigation Code is repealed.

~~1356. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 52. Section 1711 of the Harbors and Navigation Code is repealed.

~~1711. All records of the authority shall be open to inspection by the public during regular office hours.~~

SEC. 53. Section 3805 of the Harbors and Navigation Code is repealed.

~~3805. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 54. Section 103.2 of the Health and Safety Code is repealed.

~~103.2. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 55. Section 431.4 of the Health and Safety Code is repealed.

~~431.4. All records of the council shall be open to inspection by the public during regular office hours.~~

SEC. 56. Section 1110.2 of the Health and Safety Code is repealed.

~~1110.2. All records of the conference shall be open to inspection by the public during regular office hours.~~

SEC. 57. Section 13141.2 of the Health and Safety Code is repealed.

~~13141.2. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 58. Section 17940 of the Health and Safety Code is repealed.

~~17940. All records of the appeals board shall be open to inspection by the public during regular office hours.~~

SEC. 59. Section 18917 of the Health and Safety Code is repealed.

~~18917. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 60. Section 71.2 of the Labor Code is repealed.

~~71.2. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 61. Section 137 of the Labor Code is repealed.

~~137. All records of the Division of Industrial Accidents, including the administrative director and the appeals board, shall be open to inspection by the public during regular office hours.~~

SEC. 62. Section 147 of the Labor Code is repealed.

~~147. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 63. Section 3092 of the Labor Code is repealed.

~~3092. All records of the council shall be open to inspection by the public during regular office hours.~~

SEC. 64. Section 538 of the Public Resources Code is repealed.

~~538. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 65. Section 638 of the Public Resources Code is repealed.

~~638. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 66. Section 666 of the Public Resources Code is repealed.

~~666. All records of the board shall be open to inspection by the public during regular office hours, except as otherwise provided for by law.~~

SEC. 67. Section 4567 of the Public Resources Code is repealed.

~~4567. All meetings of the committee shall be open and public and all persons shall be permitted to attend any meetings of the committee.~~

~~All records of the committee shall be open to inspection by the public.~~

SEC. 68. Section 9065.2 of the Public Resources Code is repealed.

~~9065.2. All records of the Commission shall be open to inspection by the public during regular office hours.~~

SEC. 69. Section 9072 of the Public Resources Code is repealed.

~~9072. All records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 70. Section 21209 of the Public Utilities Code is repealed.

~~21209. All records of the division shall be open to inspection by the public during regular office hours.~~

SEC. 71. Section 2605 of the Vehicle Code is repealed.

~~2605. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 72. Section 3009 of the Vehicle Code is repealed.

~~3009. Except as otherwise provided by law, all records of the board shall be open to inspection by the public during regular office hours.~~

SEC. 73. Section 13008 of the Water Code is repealed.

~~13008. All records of the state and regional boards shall be open to inspection by the public during regular office hours.~~

SEC. 74. Section 20034 of the Water Code is repealed.

~~20034. All records of the commission shall be open to inspection by the public during regular office hours.~~

SEC. 75. Chapter 842 of the Statutes of 1959 is repealed.

O

State of California

Memorandum

Department of Justice

6000 State Building
San Francisco, California
94102

To : Stephen F. Gibbens, Chief
Data Processing Center
Division of Research
Department of Public Health
2151 Berkeley Way
Berkeley, California 94704

Date : May 14, 1968

File No.:

From : Office of the Attorney General
Clayton P. Roche, Deputy Attorney General

Subject: Assembly Bill No. 1381

I have quickly looked over Assembly Bill 1381 which you forwarded to me by memorandum of May 9, 1968 and in which you requested my views as to whether this bill has any significance regarding our inquiry into "privacy." This is not an "in depth" analysis, but I want to get a few thoughts on paper to you, which, of course, are my own personal thoughts.

I believe this bill is highly significant as to our concern with privacy.

1. This bill, by repealing section 1227 of the Government Code (§ 38) and sections 1892, 1893 and 1894 of the Code of Civil Procedure (§§ 25-27), and by adding section 6252(d) of the Government Code defining "Public Records" (§ 39) appears to expand tremendously the definition of "public records in California." Under the present law, there are "public writings" (or "public records," really) and "other matters" in the custody of public agencies. Under our present law, as I understand it, "other matters" do not include everything that are not "public writings," but are restricted to records in which the whole state (the public) might have a legitimate interest and have to be determined on a case by case basis. Under section 6252(d) as added by this bill, everything retained by a public agency appears to be a "public record." Thus, this bill seems to contemplate a much greater exposure of the public business than presently permitted (with, of course, the enumerated exceptions, and those contained in the Evidence Code relating to "governmental privilege.").

2. Despite the greater "exposure" of the public business apparently contemplated by this bill, this bill, in my opinion, has the interesting twist of containing the first direct general statutory recognition of the individual's right of privacy. (See, e.g., Gov. Code §§ 6250, 6254(b) as added by

this bill.) My feeling is that material which under existing law is considered confidential and privileged in the hands of public officers is generally so considered primarily for the benefit of the government, with the individual being the "accidental beneficiary" of the confidentiality provisions. This bill appears, for the first time, to generally recognize the individual's direct right to privacy in government documents in his own right.

3. In conjunction with the recognition of the individual's right of privacy in this bill, certain problems occur to me regarding the wording of the bill itself. Section 6254 appears to be an enumeration of matters which should mandatorily be kept confidential. For example, subdivision (e) obviously intends to incorporate all the special provisions of law relating to non-disclosure as set forth in the compilations we have supplied you. Yet, the introductory language of the section "Nothing in this chapter shall be construed to require disclosure of records that are . . . ." certainly does not state that such records cannot be disclosed. As to the special confidentiality provisions contemplated by subdivision (e), it could at least be argued that such special provisions are still mandatory. But what about subdivision (b) as to matters not covered by a special provision, and whose disclosure would constitute an invasion of personal privacy? In short, whether section 6254 is mandatory or discretionary as to non-disclosure is of vital significance. The same general problem inheres in section 6255 of the Government Code as added by this bill. It speaks in terms of an agency "may" deny access to certain matters. Yet it appears that at least some of these should be mandatorily confidential -- e.g. -- records of complaints and investigations -- at least in many instances.

4. Assuming sections 6254 and 6255 are mandatory regarding non-disclosure, in many instances a great burden will be placed upon public officers in determining such matters as, e.g., what records, if disclosed "would constitute a clearly unwarranted invasion of personal privacy"? Must a public officer make such decision at his own peril? Or does he have some discretion in making such determination?

5. If you will recall from the discussion in the compilations we supplied you, it was pointed out that there are individual differences in many statutes from agency to agency regarding the right to inspect public records of the agency. I refer specifically to those which make all "records" open to public inspection "except as otherwise provided by law" vis-a-vis those which have no such qualification. (See, e.g., §§ 1 and 4 of the bill.) At least as to some agencies where

there is now an apparent requirement of complete disclosure, such agencies are on the spot since they have sensitive, personal data on individuals, and also information secured from third parties which they should legitimately maintain in confidence. This bill apparently would remove such dilemma as to such agencies, and put them at least on a par with all other public agencies.

6. I note that the definition of public records in this bill included computer materials such as magnetic tapes, punched cards, etc. (The "etc." being euphemistic for my own lack of knowledge as to the tools of your trade.) (See Gov. Code § 6252(d) as added by this bill.) I note also the addition of section 6256 and its requirement that "computer data shall be provided in a form determined by the agency." Thus, under this bill, it is clear that a "public record" need not be in writing -- and access to and control over computerized data as well as the basic documents is required.

In short, this bill is, in my personal opinion, very relevant to our concern over "privacy." It appears to be an attempt at a complete new framework within which to work in California regarding disclosure and non-disclosure of public records. Whether such new "framework" would bring about a great many substantive changes would require a greater analysis "in depth." However, on the surface the bill's recognition of both an individual's right of privacy as a direct right and the bill's recognition of computerized data as "public records" appears to me to be of substantive significance. I understand from talking to Charles Barrett that hearings on this bill will be held this week. If this bill, or a similar bill is passed, there is no doubt in my mind that it is of concern to your subcommittee, if only as the base of planning -- since it purports to be an attempt at a new approach to public records in California -- and will, of course, if passed, be the general law guiding public bodies as to public records in conjunction with the other specific laws found throughout our codes.

I hope the foregoing is not too disjointed as to be unintelligible. As I said, it's a quick look at the bill.

CLAYTON P. ROCHE

CPR:ch

cc: Charles A. Barrett

COMPUTERS AND PRIVACY: THE PRESENT AND THE FUTURE

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ABSTRACT

The computer privacy problem is stated in terms of existing systems and current proposals. A review of suggested legal and administrative safeguards is given. The bulk of the paper discusses the current technology, its limitations, and some additional safeguards which have been proposed but not implemented. Finally, a few promising computer science research problems in the field are outlined. A partially annotated bibliography of literature in the field is given.

CONTENTS

I. Introduction

This paper deals with the problem of privacy in large, computerized data banks. Section II states the problem in terms of existing systems and current proposals. A review of suggested legal and administrative safeguards is given in Section III. The major section, Section IV, is given over to a discussion of the current technology, its limitations, and some additional safeguards which have been proposed but not implemented. Finally, a few promising computer science research problems in the field are outlined in Section V.

II. The Privacy Problem

In the last several years, computer systems used as public utilities have moved from dream to reality. There are now a large number of multi-terminal, on-line, time-sharing systems in both commercial and academic environments.[1,2,3,4,5] Many people fully expect a public "data bank grid" to come into existence in the very near future; they point out that "it is as inevitable as the rail, telephone, telegraph, and electrical power grids that have preceded it, and for the same reasons. It is much less expensive and more efficient to share information than to reproduce it."[6]

Unfortunately, current information networks do not have adequate safeguards for protection of sensitive information. However, since the benefits derivable from computerization of large data banks are so great, pressure in some circles[7,8,9,10] is building up to "computerize now!". Computerization offers benefits in both economy and performance over many current systems.

Social scientists and statisticians, for example, have suggested the creation and maintenance of a National Data Bank.[9] Its use would remedy many defects of current files and procedures which result in information unresponsive to the needs of vital policy decisions. Some of these defects, as pointed out by Dunn, are:

"1) Important historical records are sometimes lost because of the absence of a consistent policy and procedure for establishing and maintaining archives.

2) The absence of appropriate standards and procedures for file maintenance and documentation lead to low quality files that contain many technical limitations in statistical usage.

3) Many useful records are produced as a by-product of administrative or regulatory procedures by agencies that are not equipped to perform a general purpose statistical service function.

4) No adequate reference exists that would allow users to determine easily whether or not records have the characteristics of quality and compatibility that are appropriate to their analytical requirements.

5) Procedures for collecting, coding and tabulating data that were appropriate when developed now lead to some incompatibilities in record association and usage required by current policy problems and made possible by computer techniques.

6) There are serious gaps in existing data records that stand in the way of bringing together records of greatest relevance for today's problems.

7) The need to by-pass problems of record incompatibility in developing statistics appropriate for policy analysis, places severe strains upon regulations restricting the disclosure of information about individuals. Technical possibilities for using the computer to satisfy these statistical requirements without in any way violating personal privacy have not generally been developed and made available by the agencies."[11]

To take advantage of the economies and capabilities of the computer, governmental agencies and private organizations such as credit bureaus are making use of computerized personal dossier systems. The New York State Identification and Intelligence System (NYSIIS) provides rapid access to criminal histories, stolen property files, intelligence information, etc., for use by "qualified agencies".[12] Santa Clara (California) County's LOGIC system includes a person's name, alias, social security number, address, birth record, driver and vehicle data, and other data if the person has been involved with the welfare or health departments, the district attorney, adult or juvenile probation, sheriff, court, etc.[10] Other municipalities have created similar systems.

These large data banks will make it easy for the citizen in a new environment to establish who he is and, thereby, to acquire quickly those conveniences which follow from a reliable credit rating and an acceptable social character. At the same time, commercial or governmental interests will know much more about the person they are dealing with. We can expect a great deal of information about the social, personal, and economic characteristics to be supplied voluntarily --often eagerly-- in order to acquire the benefits of the economy and the government.[13]

On the other hand, systems designed with insufficient consideration given to access control could be illicitly search for derogatory information.

Systems with insufficient input checking might be given false and slanderous data about a person which, when printed out on computer output sheets as the result of an inquiry, looks quite "official" and hence is taken as true. "On the horizon in technology is a laser scanning process that would enable a twenty-page dossier to be compiled on each of the United States' 200 million citizens.' Such information could be stored on a single plastic tape reel. Under such conditions it might be cheaper to retain data than to discard it.[14] Clearly, we must decide what information to keep and when to keep it. As Paul Baran points out[15], we face a balance problem. How do we obtain the greatest benefit from computerized data banks with the least danger?

III. Legal and Administrative Safeguards

The problem of controlling access to computerized files --how to safeguard the processes of inputting to and retrieving from computerized data banks-- has recently gained more and more attention from concerned citizens. We will examine some of this new interest in this section, deferring mention of the technical solutions to Section IV.

Bauer has given a brief but sound discussion of policy decisions facing the designers of a computerized data bank, and has pointed out that we now have the "special but fleeting opportunity ... to explore the issue of privacy with objectivity and in some leisure. ... the public's fears of dossier-type police information systems have been thoroughly aroused; left unchecked they may become so strong as to in fact prevent the creation of any publicly supported information systems. The reactions to proposals for a Federal data center are a case in point. Were such blanket prohibitions to be imposed the development of socially useful information sharing would be enormously impeded. Furthermore, without public trust, information systems could well be fed so much false, misleading or incomplete information as to make them useless. Thus it becomes imperative not only to devise proper safeguards to data privacy, but also to convince the public and agencies which might contribute to a system that these safeguards are indeed being planned, and that they will work."[16]

Fortunately, the federal government is aware of the computer privacy problem and has quite effectively shot down proposals which did not adequately consider the effect of a centralized data bank on privacy.[17,18] Most of the states, however, lag seriously in awareness of contemporary data processing capabilities and techniques. Some of the more highly computerized areas are, however, trying to approach the idea of regional data banks in a rational manner. At least one state (California) has an intergovernmental board on automatic data processing which has solicited and received comments on confidentiality and the invasion of privacy from concerned members of the

technical community.

As Senator Sam J. Ervin, Jr. has pointed out,[19] the threat to privacy comes from men, not machines; it comes from the motives of political executives, the ingenuity of managers, and the carelessness of technicians. Too often, he says, an organization may seize upon a device or technique with the best intentions in the world of achieving some laudible goal, but in the process may deny the dignity of the individual, the sense of fair play, or the right of the citizen in a free society to privacy of his thoughts and activities.

"The computer industry, the data processing experts, the programmers, the executives-all need to set their collective minds to work to deal with the impact of their electronic systems on the rights and dignity of individuals.

"While there is still time to cope with the problems, they must give thought to the contents of professional ethical codes for the computer industry and for those who arrange and operate the computer's processes.

"If self-regulation and self-restraint are not exercised by all concerned with automatic data processing, public concern will soon reach the stage where strict legislative controls will be enacted, government appropriations for research and development will be denied. And the computer will become the villain of our society. It is potentially one of the greatest resources of our civilization, and the tragedy of slowing its development is unthinkable."[19]

Though Senator Ervin gave that speech on 1 May 1967, so far only Chariman Watson of IBM, of all the computer manufacturers, has commented publicly on the subject.[20] The Washington, D.C. chapter of the Association for Computing Machinery (ACM) has gone on record as opposing the creation of a national data bank until the proposers can show that "such a system is still economically attractive under the legal and technical constraints necessary to protect individual liberties in the American society".[21] (It has been alleged, however, that this vote reflects the views of a minority of that chapter's members and cannot necessarily be taken to represent the view of the chapter.)

We often forget that no "right to privacy", similar to the "freedom of speech" or the "right to vote", exists in the Constitution. Thus, the amount of privacy an individual is entitled to and when that privacy is

violated varies according to the whim of a particular court or legislative body.[19,22,23] Prosser, of the University of California School of Law at Berkeley, has compiled an excellent review of this subject.[24]

Recently, significant efforts have been made to create a more satisfactory situation. In 1966, John McCarthy suggested a "computer bill of rights". Some of the rights he proposed were these:

"No organization, governmental or private, is allowed to maintain files that cover large numbers of people outside of the general system.

"The rules governing access to the files are definite and well publicized, and the programs that will enforce these rules are open to any interested party, including, for example, the American Civil Liberties Union.

"An individual has the right to read his own file, to challenge certain kinds of entries in his file and to impose certain restrictions on access to his file.

"Every time someone consults an individual's file this event is recorded, together with the authorization for the access.

"If an organization or an individual obtains access to certain information in a file by deceit, this is a crime and a civil wrong. The injured individual may sue for invasion of privacy and be awarded damages."[25]

Additional suggestions have been made concerning legislative methods of safeguarding privacy. In 1967, the United States government proposed a Rights to Privacy Act banning wiretapping and electronic eavsdropping. (In 1968, however, the pendulum swung the other way and the Senate passed a "safe streets" and crime-control bill which granted broad authority for wiretapping and eavesdropping, even without a court order for a limited period of time.)

Even if a statute controlling access to sensitive information in files of the federal government were passed, the computer privacy problem will still be a long way from solved. A threat which is possibly even more serious is the misuse of data in the files of private organizations or in the files of state or local governments. Medical records in the files of hospitals, schools, and industrial organizations contain privileged information. When these records are kept in a computerized system, there must be control

over access to them. Some disconcerting examples of what has has happened when controls are lax are mentioned in a paper by Baran[15].

The California Assembly has before it currently (June 1968) a bill (AB 1381 - 1968 Regular Session) which if passed would (1) recognize an individual's right of privacy, and (2) recognize computerized data in state files as "public records". This bill, if passed, would be a landmark in the fight to establish a "right to privacy" and would seem to guarantee the right of an individual to read his own file.

The licensing or "professionalization" of (at least some) computer scientists, programmers, and operators seems to be the most frequent suggestion in the papers on computer privacy which are not written solely for computer scientists. In addition to Ervin (see above), advocates of this measure include Michael[26], Brictson[14], and Ramey[6]. Parker has been the main supporter of the ACM guidelines for Professional Conduct in Information Processing[27], but Brictson makes the best argument the author has seen for these to date[14]. With such current and potential outside interest in professional conduct of computer people, there has been very little published discussion about these matters. In view of Senator Ervin's unsettling predictions above, perhaps the computer community should give these problems more attention than it has to date.

This concludes the discussion of legal and administrative safeguards for the protection of sensitive information. We can now turn our attention to the technical solutions that have been proposed.

IV. Technical Methods Propsed to Date

A. Access Control in Conventional Time-Sharing Systems

Various technical methods for controlling access to the contents of computer memories have been suggested. In this discussion, these methods will be broken up into two categories -- those which are necessary for proper operation of a time-sharing system, and those which enhance the privacy of data in a shared system.

1. Methods Necessary for a Properly Operating Time-Sharing System

First let us consider the controls required in any time-sharing system. A means must be provided to lock out each user from the program and data of all other (unauthorized) users. In addition, a user must not be allowed to interfere with the time-sharing monitor by improper use of input/output commands, halt commands, etc. The latter capability is generally obtained by denying to the user of certain "privileged" instructions, which may be executed only be "privileged" programs such as the operating system.

The former is generally provided by memory protection schemes such as relocation and bounds registers[28], segmentation[29,30], paging[31], memory keys which allow limited (e.g., read-only) access[32], etc.

These access control methods all protect contiguous portions of (real or virtual) computer memory from alteration by an errant program. They do not, however, provide protection of a user file from unauthorized access. Towards this end, software schemes have augmented the hardware schemes described above.

2. Methods Which Enhance Data Privacy

With respect to the methods which enhance the privacy of data in a shared system, Paul Baran observed in 1966 that "It is a very poorly studied problem ... There is practically nothing to be found in the computer literature on the subject."[33] Since then, awareness has grown, largely as a result of congressional interest.[17,18] An entire session of the 1967

Spring Joint Computer Conference was devoted to this issue. But only very recently has there been developed a working system with more than password protection at the file level.[38]

In nearly all systems to date, a user's password will get him into his file directory and into any file referenced in that directory. The most elaborate scheme so far is that of Daley and Neumann[34] which features directories nested to any level used in conjunction with passwords. Each directory has access control information associated with itself. So, unless one has the "key" to each directory which appears on the chain to the desired file, one cannot get at the information in that file. Password schemes permit a small finite number of specific types of access to files, although Daley and Neumann[34] effectively provide more flexible control via a type which allows a user-written program to decide whether each requested access to a file is allowed.

3. Limitations of These Models

The methods of Section IV.A.1 perform their task acceptably -- they guarantee the system integrity. However, the password methods of Section IV.A.2 fall short of providing adequate software protection for sensitive files. Password schemes can be compromised by wiretapping or electromagnetic pickup, to say nothing of examining a console typewriter ribbon. Moreover, in some systems the work factor, or cost, associated with trying different passwords until the right one is found is so small that it is worth it to the "enemy" to do just that. Centralized systems tend to have relatively low work factors, since breaking a code in a centralized system generally allows access to more information than in a decentralized system. Some methods used to raise the work factor back to at least the level of a decentralized system are given later in this paper.

There is an even more serious problem with password systems. In all current systems, information is protected at the file level only -- it has been tacitly assumed that all data within a file was of the same sensitivity. The real world does not conform to these assumptions. Information from various sources is constantly coming into common data pools, where it can be used by all persons with access to that pool. The problem of what to

do when certain information in a file should be available to some but not all legal users of tha file is not well-studied. At Project MAC for example[1], it is currently the case that if a user has a file which in part contains sensitive data, he just cannot merge all his data with that of his colleagues. He must separate the sensitive data and save that in a separate file; the common pool of data does not contain this sensitive and possibly highly valuable data. Moreover, he and those he permits access to this sensitive data must, if they also want to make use of the nonsensitive data, create a distinct merged file, thus duplicating information kept in the system; if some of this duplicated data must be changed, it must be changed in all files, instead of only one. If there were a method to place data with varying degrees of sensitivity into common files and be guaranteed suitable access control over each piece of data, all the data could be aggregated and processed much more easily. Indeed, many social scientists are in favor of a National Data Bank for this very reason.[7,35] On the other hand, precisely because the problem has not been solved satisfactorily, lawyers[36,55], computer scientists[33,37,56] and the general public have become concerned about such a system.

In a recent thesis, Hsiao[38] has suggested and implemented files which contain "authority items"; these authority items control access to records in files. This is the first working system which controls access at a lower level than the file level. The implementation depends on a multi-list[39] file structure, but the idea of an authority item associated with each user is independent of the structure of the file. The accessability of a record depends on whether the file owner has allowed access to the requestor. This information is carried in the authority item. Capabilities[40] (such as read only, read and write, write only, etc.) appear to reside with the file rather than with each record.

A problem with Hsiao's scheme is the duplication in each authority item of entries for protected fields of one file. If there are J users of the system and each has K private fields in each of L files, then (J-1) xKxL entries must be made in each authority item for user protection. Since there are J users, T = Jx(J-1)xKxL entries must be maintained in the authority

items by the system. For the not unlikely case J = 200, K = 3, L = 2, we calculate T = 238,000. This price in storage and maintenance may well prove too much to pay in many instances.

Some other methods for access control have been proposed. Graham[41] has suggested a technique involving concentric "rings" of protection which may prove a reasonalbe way to provide flexible but controlled access by a number of different users to shared data and procedures. Dennis and van Horn[40] have proposed that higher-level programs grant access privileges to lower-level programs by passing them "capability lists".

Graham's scheme has several disadvantages. It assumes a computer with hardware paging and/or segmentation; since no large computer systems (of the type that would be necessary for a public utility) with these hardware facilities are as yet serving a large user community in an acceptable manner, this assumption may be premature, particularly in light of the alternatives such as extended core storage bulk memories.[42,57] The Graham scheme rules out the use of one-level memories such as associative memories,[54] Lesser memories,[43] etc. If the data bank has many different data fields with many different levels of access, the swap times necessary to access each datum in its own (two-word or so) segment will rapidly become prohibitive. In addition, the Graham scheme imposes a hierarchy on all information in the data base; this brings on quite a few problems in the passing of control from one procedure to another, as Graham points out in his paper.

The scheme of Dennis and van Horn suffers from all the drawbacks of the Graham scheme except the last. Compensating for this relative simplicity in the control structure however, a very large number of their meta-instructions must be executed for each attempt to access data which is not in a file open to every user.

B. Some Proposed Safeguards to the Privacy of Information in Files

In this section, we discuss countermeasures that have been proposed to more adequately insure against unauthorized access to information in files. Petersen and Turn have published an excellent paper[44] on the threats to information privacy, and much of the material of this section has been drawn from that paper.

The most important threats to information privacy are shown in Figure 1.

Accidental

- User error
- System error

Deliberate, passive

- Electromagnetic pick-up
- Wiretapping

Deliberate, active

- Browsing
- Masquerading as another user
- "Between lines" entry while user is inactive but on channel
- "Piggy back" entry by interception and transmitting an "error" message to the user
- Core dumping to get residual information

Figure 1. Some Threats to Information Privacy (extracted from [44])

We can encounter these threats by a number of techniques and procedures. Petersen and Turn have organized the various countermeasures into several classes: access management, privacy transformations, threat monitoring, and processing restrictions.

1. Access Management

These techniques attempt to prevent unauthorized users from gaining access to files. Historically, passwords have almost been synonymous with access management. Passwords alone, however, are not enough, as shown in Section IV.A.3. The real issue in access management is authentication of a user's identification. Peters[45] has suggested using one-time passwords: lists of randomly selected passwords would be stored in the computer and maintained at the terminal or kept by the user. "After signing in, the user takes the next work (sic) on the list, transmits it to the processor and then crosses it off. The processor compares the received password with the next word in its own list and permits access only when the two agree. Such password lists could be stored in the terminal on punched paper tape, generated internally by special circuits, or printed on a strip of paper.

The latter could be kept in a secure housing with only a single password visible. A special key lock would be used to advance the list."[44] Another method based on random-number generation has been suggested by Baran.[46]

A novel idea based on the same principle -- the high work factor[46] associated with breaking encoded messages appearing as pseudo-random or random number strings[47] -- has been suggested by Les Earnest.[48] He proposes that the user login and identify himself, whereupon the computer supplies a pseudo-random number to the user. The user performs some (simple) mental transformation T on the number and sends the result of that transformation to the computer. The computer then performs the (presumably) same transformation, using an algorithm previously stored in (effective) execute-only memory at file creation time. In this way, while the user has performed T on x to yield y = T(x), any "enemy" tapping a line, even if the information is sent in the clear, sees only x and y. Even simple T's

(e.g., $T(x) = \left[\left(\sum_{i \text{ odd}} \text{digit } i \text{ of } x\right)^{3/2}\right]$ + (hour of the day)) are well-nigh

impossible to figure out, and the "cost per unit dirt"[49] is, hopefully, much too high for the enemy. Petersen and Turn point out that one-time passwords are not adequate against more sophisticated "between lines" entries by infiltrators who attach a terminal to the legitimate user's line. "Here the infiltrator can use his terminal to enter the system between communications from the legitimate user."[44] As a solution, they suggest one-time passwords applied to messages (as opposed to sessions), implemented by hardware in the terminal and possibly in the central processor. I conjecture that this solution will be too costly for most applications. I further conjecture that placing access control at the datum level, rather than at the file level, would eliminate many (though not all) problems associated with this type of infiltration.

Babcock[50] mentions a "dial-up and call-back" system for very sensitive files. When a sensitive file is opened by the program of a user who is connected to the computer via telephone line A, a message is sent to the user asking him to telephone the password of that file to the operator on a different telephone line B. The legal user can alter the password at will

by informing the data center.

2. Privacy Transformations

Privacy transformations are reversible encodings of data used to conceal information. They are useful for protecting against wiretapping, electromagnetic radiation from terminals, "piggyback" infiltration (See Fig. 1), and unauthorized access to data in removable files. Substitution (of one character string for another), transposition (rearrangement of the ordering of characters in a message), and addition (algebraically combining message characters with "key" characters to form encoded messages) are three major types of privacy transformations, which can be (and are) combined to increase the work factor necessary to break a code. This work factor depends (among others) on the following criteria:

" - Length of the key Keys require storage space, must be protected, have to be communicated to remote locations and entered into the system, and may even require memorization. Though generally a short key length seems desirable, better protection can be obtained by using a key as long as the message itself.

" - Size of the key space The number of different privacy transformations available should be as large as possible to discourage trial-and-error approaches, and to permit assignment of unique keys to large numbers of users and changing of keys at frequent intervals.

" - Complexity Affects the cost of implementation of the privacy system by requiring more hardware or processing time, but may also improve the work factor.

" - Error sensitivity The effect of transmission errors or processor malfunctioning may make decoding impossible.

Other criteria are, of course, the cost of implementation and processing time requirements which depend, in part, on whether the communication channel or the files of the system are involved."[47]

More detailed information on uses of privacy transformations is given

in Petersen and Turn[44]. A good unclassified discussion of encrypting and cryptanalysis methods, with particular attention paid to "distributed" communication networks (many terminals, many message switching centers, etc.) has been written by Baran.[46] He also has suggested[49] that we should always make use of minimal privacy transformations in the storage and transmission of sensitive data.

Privacy transformations can be performed by appropriate software in terminals and central processors. When desirable, hardware can be used instead. One current system, for example, uses basically a transposition method and is handled with preset plastic scrambler wheels; changes of these wheels are accomplished by time coordination.[51]

3. Threat Monitoring

Petersen and Turn give a good description of threat monitoring: "Threat montioring concerns detection of attempted or actual penentrations of the system or files either to provide a real-time response (e.g., invoking job cancellation, or starting tracing procedures) or to permit post facto analysis. Threat monitoring may include recording of all rejected attempts to enter the system or specific files, use of illegal access procedures, unusual activity involving a certain file, attempts to write into protected files, attempts to perform restricted operations such as copying files, execessively long periods of use, etc. Periodic reports to users on file activity may reveal possible misuse or tampering, and prompt stepped-up auditing along with a possible real-time response."[44]

Threat monitoring also will help improve the efficiency of the system, by reporting widespread use of particular system facilities. These system facilities can be "tuned", or, if need be, the facilities can be altered to eliminate bottlenecks. If some security restriction is unduly interfering with system operation, threat monitoring should help pinpoint the offending restriction.

4. Processing Restrictions

In addition to normal memory protection features mentioned in Section

IV.A.1, some processing restrictions may be desirable. Suggestions have included the mounting of removable files of drives with disabled circuits which must be authenticated before access[44], erasure of core memories after swapping a program and its data out to an auxiliary storage device, and built-in hardware codes which peripheral devices would transmit to other system components when necessary.[52]

There is a real question as to what price one wishes to pay for how much privacy.[53] In some instances, one might desire a whole processor to implement the entire file control and privacy system.[44] Most users, however, will probably settle for less privacy at less cost. This has been the experience so far of Allen-Babcock Corp. -- they have not implemented their "dial-up - call-back" privacy technique since none of their customers have demanded it.

Petersen and Turn have summarized their countermeasures to threats against information integrity, and the major part of the table they present is reproduced here:

Figure 2. Summary of Countermeasures to Threat to Information Privacy (extracted from [44])

Threat \ Countermeasure	Access Control (passwords, authentication, authorization)	Processing Restrictions (storage, protected privileged operations)	Privacy Transformations	Threat Monitoring (audits, logs)
Accidental: User error	Good protection, unless the error produces correct password	Reduce susceptibility	No protection if depend on password; otherwise, good protection	Identifies the "accident prone" provides post facto knowledge of possible loss
System error	Good protection, unless bypassed due to error	Reduce susceptibility	Good protection in case of communication system switching errors	May help in diagnosis or provide post facto knowledge
Deliberate, passive: Electromagnetic pick-up	No protection	No protection	Reduces susceptability; work factor determines the amount of protection	No protection
Wiretapping	No protection	No protection	Reduces susceptability; work factor determines the amount of protection	No protection

Figure 2. Summary of Countermeasures to Threat to Information Privacy (continued)

Threat \ Countermeasure	Access Control (passwords, authentication, authorization)	Processing Restrictions (storage, protected privileged operations)	Privacy Transformations	Threat Monitoring (audits, logs)
Deliberate, active: "Browsing"	Good protection (may make masquerading necessary)	Reduces ease to obtain desired information	Good protection	Identifies unsuccessful attempts; may provide post facto knowledge or operate real-time alarms
"Masquerading"	Must know authenticating passwords (work factor to obtain these)	Reduces ease to obtain desired information	No protection if depends on password; otherwise, sufficient	Identifies unsuccessful attempts; may provide post facto knowledge or operate real-time alarms
"Between lines" entry	No protection unless used for every message	Limits the infiltrator to the same potential as the user whose line he shares	Good protection if privacy transformations changed in less time than required by work factor	Post facto analysis of activity may provide knowledge of possible loss
"Piggy-back" entry	No protection but reverse (processor-to-user) authentication may help	Limits the infiltrator to the same potential as the user whose line he shares	Good protection if privacy transformations changed in less time than required by work factor	Post facto analysis of activity may provide knowledge of possible loss
Entry by system personnel	May have to masquerade	Reduces case of obtaining desired information	Work factor, unless depend on password and masquerading is successful	Post facto analysis of activity may provide knowledge of possible loss

Figure 2. Summary of Countermeasures to Threat to Information Privacy (continued)

Threat \ Countermeasure	Access Control (password, authentication, authorization)	Processing Restrictions (storage, protected privileged operations)	Privacy Transformations	Threat Monitoring (audits, logs)
Deliberate, active, cont'd: Entry via "trap doors"	No protection	Probably no protection	Work factor, unless access to keys obtained	Possible alarms, post facto analysis
Core dumping to get residual information	No protection	Erase private core areas at swapping time	No protection unless encoded processing feasible	Possible alarms, post facto analysis
Physical acquisition of removable files	Not applicable	Not applicable	Work factor, unless access to keys obtained	Post facto knowledge form (sic) audit of personnel movements

V. Promising Research Problems

In this section, we discuss some technical problems which offer promising avenues for research in the future. We shall raise some relevant questions, but no answers are suggested in this paper.

1. Location in File Structure of Access Control Mechanism

For reasons mentioned in Section IV.A.3, the methods of protection which effectively pass privileges from one program to another are fairly unsatisfactory. We also saw there that protecting data by associating controls with the data at the file level only is not sufficient. What is really needed is some means of controlling access to each individual datum. Such a means should (1) be efficient, and (2) not unduly penalize the user who only wants a small part of his file protected. The mechanism may reside in program, data, indexes into an inverted file, authority items[38], or elsewhere. Parker[52] claims that this kind of protection can be expensive. I agree, but I have the feeling that it can also be inexpensive, and see in this subject a very interesting area for research.

2. Dependency of Access Control Efficiency on File Structure

The structure of a file is not independent of the method used to control access to it-- they may affect each other very strongly. For example, one might consider physically separating sensitive data in a hierarchical file (e.g., a tree-structured file). The more sensitive data could be stored in a memory which was logically at a low level and physically removed from higher-level data. This solution would not be feasible in certain types of associative memories, since the control would require all data to be at the same level. As another example, the existence of indexes into a tree-structured file (i.e., using an inverted file) might strongly alter the operating characteristics of the access control mechanism by allowing control information to reside in the indexes rather than (say)

with the data itself. Further investigation of this relationship is warranted.

3. Costs of Various Proposed Methods

Several types of countermeasures have been proposed to insure privacy: various types of threat monitoring, privacy transformations, access management, etc. Some hardware countermeasures, such as physical keys which record on a file or protocol the key number have also been suggested. Unfortunately, no systems, hardware or software, simulated or actual, have been built which enable us to evaluate the various costs of processing time, storage space, etc., of these methods. Why haven't these systems been built? Is it just that no one has gotten around to it yet? Is it only that no one needs a certain countermeasure (yet)? Is it that we don't really know how to implement what we theorize about in the literature? It is true that the literature on this is sparse. Even worse, there is almost a complete absence of implementation of nearly all of the proposed techniques.

Consider just one of these techniques, privacy transformations. Petersen and Turn discuss the further work that is needed:

"Special attention must be devoted to establishing the economic and operational practicality of privacy transformations: determining applicable classes of transformations and establishing their work factors; designing economical devices for encoding and decoding; considering the effects of query language structure on work factors of privacy transformation; and determining their effects on processing time and storage requirements."[44]

The implementation of a (real or simulated) system using many countermeasure techniques, in order to evaluate them in practice, would be a very desirable undertaking.

VI. Summary

It is hoped that this paper may help increase awareness of the computer privacy problem and the need to investigate it further. Paul Baran puts

it well,

"What a wonderful opportunity awaits the computer engineer to exercise a new form of social responsibility. The advent of the new computer-communications technology need not be feared with trepidation as we approach 1984. Rather, we have in our power a force which, if properly tamed, can aid, not hinder, raising our personal right of privacy.

If we fail to exercise this unsought power that we computer engineers alone hold, the word 'people' may become less a description of individual human beings living in an open society and more a mere collective noun.

It may seem a paradox, but an open society dictates a right-to-privacy among its members, and we will have thrust upon us much of the responsibility of preserving this right."[49]

VII. Partially Annotated Bibliography

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5. Parker, R.W., "The SABRE System", Datamation 11, 9(Sept. 1965), pp. 49-52.

6. Ramey, J.W., "Computer Information Sharing -- Threat to Individual Freedom", in Proc. Amer. Documentation Institute, 1967, pp. 273-277.

   Discusses, for a lay audience, why centralized data banks threaten privacy. Proposes licensing of computer professionals, much as CPA's are licensed now. Proposes legislation to allow an individual to inspect his entire dossier, delete inaccuracies via court order, and prohibit transfer of information identifiable with himself to a linked data bank without his express consent.

7. Dunn, E.S., Jr., statement in Reference 17.

8. Janssen, R.F., "Administration Studies Plan to Generalize Data, Hopes to Avoid 'Police State' Image", Wall Street Journal, 11 November 1966, p. 6.

9. Kaysen, C., "Data Banks and Dossiers" in The Public Interest, Spring 1967 (also in Reference 18).

   The case "for" a national data bank, in the light of the mauling this proposal got before the Gallagher subcommittee.

10. Davies, Lawrence E., "Computer Plan for Personal 'Dossiers' in Santa Clara Stirs Fears of Invasion of Privacy", New York Times, 1 August 1966.

11. Dunn, E.S., Jr., "The Idea of a National Data Center and the Issue of Personal Privacy", Amer. Statistician, 21, (Feb. 1967), p. 21ff.

An attempt by the author of the ill-fated BuBudget report to correct "certain obvious misinterpretations and set forth more explicitly some views on the very important issue of personal privacy." He says we have 10 or 15 years to figure out how to protect privacy while (right now) saving a lot of "harmless" datain his "statistical" data bank. The trade-offs on both sides are more clearly delineated than in the original report. I cannot be as sanguine over the prospects for protection of privacy.

12. Gallati, R.R.J., "The New York State Identification and Intelligence System", in Reference 17, p. 159ff.

13. Michael, D.N., "Speculations on the Relation of the Computer to Individual Freedom and the Right to Privacy", Geo. Wash. Law Review, 33, (1964-65), p. 270ff.

Between now and 1984, business and government will use extraordinary advances in computer technology to file and collate "personal" facts about private citizens and even to telemeter the populace. What are the implications for traditional ideas of freedom and privacy? Will such progress be met with constitutional objections or with public acquiescence? -- Author's abstract

A well-written paper with no technical content. However, it does make some valid and oft-overlooked points. It outlines factors which, in the past, have made privacy invasion difficult:

1. Data available but uncollected and uncollated.
2. Data not recorded with precision and variety necessary to gain new or deeper insight into the private person.
3. Difficulty of keeping track of a particular person in a large and highly mobile population.
4. Difficulty of access to already filed data about the private person.
5. Difficulty of detecting and interpreting potentially self-revealing private information within available data.

Points for a central data bank are validly and tellingly made, and the point is made that now, as in the past, people may give up some freedom to protect or enhance another freedom. How corruptible programmers may become privy quite legally to privileged information is discussed. In brief, a short, worthwhile paper.

14. Brictson, R.C., "Some Thoughts on the Social Implications of Computers and Privacy", System Development Corporation Document SP-2953/001/00 25 Sept. 1967.

This is a reprint of a talk presented to the American Society for

Industrial Security as part of a panel on "Problems in the Age of the Computer", 13th annual seminar, September 12-14, 1967, Los Angeles, California. Briefly discussed are (1) the computer as an innovation and tool along with some of the anxieties it creates, (2) a framework for an inquiry into the problem, (3) responsibilities of organizations and the establishment, (4) socialization--the preparation of new members for entry into society, (5) some examples reflecting issues, (6) possible remedies. In 11 short pages, a quite readable discussion understandable to the lay person is given. The framework suggested for investigation seems quite reasonable, and represents one of the few attempts to define the general problem before rushing off to tackle it. This structure considers information from the standpoint of (1) acquisition, (2) access, (3) dissemination, (4) retention, (5) revision, including updating, rejoinder and redress, (6) destruction, (7) time cycles. Brief examples are given for acquisition and protection. A good case (and a brief one) for the existence of professional ethics codes is made, much better than the discussion in Communications of the ACM, Vol. 11, No.3 (Mar. 1968) by Parker. Five guidelines for public policy makers are suggested: (1) specifications of benefits, (2) catalog of potential risks, (3) directory of preventive safeguards and controls (4) inventory of antidotes and countermeasures, (5) index of penalities and sanctions.

A very good paper for the layman and interested computer scientist.

15. Baran, P., "Remarks on the Question of Privacy Raised by the Automation of Mental Health Records", RAND Document P-3523, April 1967.

Remarks invited for presentation before the American Orthpsychiatric Association Workshop on "The Invasion of Privacy", held in Washington, D.C., 21-23 March 1967. A speech of Baran which presents in excellent fashion, to an intelligent group of computer laymen, a view of computer privacy invasion which only computer types heretofore have appreciated. Some horror stories are recalled, with emphasis on medical record leaks, in view of the audience. The famous tale of the MIT freshman who progammed the computer to dial up every telephone extension in the school simultaneously is retold, and thus is graphically illustrated what a real "bad guy" could do. A very good talk to alert intelligent people about the implications of the computer age for privacy.

16. Bauer, K.G., "Report on the Joint Center for Urban Studies Project for the Preliminary Design of a Health Information System for Boston for the Period October 1 through December 31, 1967", Cambridge, Mass., 1967.

A nine-page section on the privacy issue as it relates to a proposed health information system for the Boston ares. "...Right now our project has a unique opportunity to propose safeguards to privacy in the design of an information system at a time when the crucial operational decisions have not yet been made. ..." Discusses present safeguards to record disclosure. Currently privacy is not really insured, and only the excessive cost of getting sensitive information (because of the unwieldiness of current non-computerized systems) prevents almost all unauthorized

access. "...With proper safeguards computerization makes such information far easier to guard ..." -- Why this is the case is explained. A broad framework of new safeguards, combining legal, technological, and administrative measures is being urged, and these are gone into very briefly, with references to a couple of papers. The committee hopes during the coming months to secure staff help to define levels of security and to suggest specific access rules and rights of patients that should be kept in mind.

17. "The Computer and the Invasion of Privacy -- Hearings before a Subcommittee of the Committee on Government Operations, House of Representatives, 89th Congress, Second Session", (the Gallagher report), 26-28 July 1966, U.S. Government Printing Office.

Pro and con on a national "statistical" data bank-- the full testimony.

18. "Computer Privacy -- Hearings before the Subcommittee on Administrative Practice and Procedure of the Committee on the Judiciary, United States Senate, 90th Congress, First Session" (the Long report), 14-15 March 1967, U.S. Government Printing Office.

The full testimony before the Long subcommittee on computer privacy.

19. Ervin, Sam J., "The Computer -- Individual Privacy", Vital Speeches of the Day, 1 May 1967, p. 421.

Senator Ervin discusses the impact of the computer on national life in a speech to the American Management Association. He thinks the industry, to avoid strict legislative controls and denial of government research and development funds, must devise safeguards against improper data access, illegal tapping, and purloined data in shared systems. He evidently likes the idea of an industry ethical code.

20. Watson, T.J., Jr., "Technology and Privacy", speech given to Commonwealth Club of California, Hotel St. Francis, San Francisco, 5 April 1968.

An Address by Thomas J. Watson, Jr., Chairman of the board of IBM, to the Commonwealth Club of California. Watson discusses in general what the privacy problem is, advantages and disadvantages of centralized data banks, possible solutions to the problem, and gives suggestions for legal, ethical, and technological safeguards.

21. Warburton, P., "A National Data Center and Personal Privacy -- Resolution Proposed", Computers and Automation, 16, 5, May 1967, p. 8.

A resolution on the National Data Center and Personal Privacy proposed by the Washington, D.C. chapter of the Association for Computing Machinery.

22. Lickson, "The Right of Privacy in the Computer Age", IEEE Computer Group News, 2, 1(Jan. 1968).

A nontechnical five page paper which defines privacy, examines some historical court cases dealing with it, and tries to pinpoint current legislative trends in this area. "...Legislation and court decisions can catch up to the state of the art." A good general overview from a nontechnical standpoint, well-referenced.

23. Westin, A.F., Privacy and Freedom, Atheneum, New York, 1967.

A comprehensive, well-written book on the relationship of privacy to freedom, tracing "privacy rights" from 1776 to the present. The emphasis is, by far, on the present and the future. The book has four parts: the functions of privacy and surveillance in society, new tools for invading privacy, American society's struggle for controls (five case studies), and policy choices for the 1970's. Each part is copiously documented, and in addition there are four bibliographies at the end: the functions of privacy, the new technology, the struggle for controls, and privacy in American law and policy. The section on computer technology and possibilities for it by 1975 was quite enlightening, even to a computer science graduate student. This is a must book for those concerned with the privacy problem. Westin is, at the time of this review, Professor of Public Law and Government at Columbia, and numerous legal decisions are cited. It is a seminal work in the field.

24. Prosser, W.L., "Privacy", California Law Rev., 48, 3(Aug. 1960), p. 385ff.

A review of court cases dealing with a "right to privacy". The review appears to be comprehensive (to this layman at law). The author, then Dean of the University of California Law School at Berkeley, contends that four distinct kinds of privacy invasion cases can be described: (1) intrusion upon seclusion or solitude, or into private affairs, (2) public disclosure of embarrassing private facts, (3) publicity which places the plaintiff in a false light in the public eye, (4) appropriation, for the defendant's advantage, of the plaintiff's name or likeness. The article is well-written and interesting. As a final fillip, I can not conclude without praising the author for making me aware of "a possible nomination for the all-time prize law review title, in the note 'Crimination of Peeping Toms and Other Men of Vision', 5 Ark. L. Rev. 388 (1951)."

25. McCarthy, J., "Information", Scientific American, 215, 3(Sept. 1966), p. 64ff.

McCarthy, in a very good survey article on computation, proposes a computer bill of rights which would guarantee privacy in computerized data files.

26. Berkeley, E.C., "Individual privacy and Central Computerized Files", Computers and Automation, 15, 10(Oct. 1966), p. 7.

Discusses a privacy bill of rights initially suggested by Professor John McCarthy in his lead article "Information" in Scientific American of Sept. 1966

27. Parker, D.B., "Rules of Ethics in Information Processing", Communications of the Association for Computing Machinery, 11, 3(Mar. 1968), p. 198ff.

28. Control Data 6400/6600 Computer Systems Reference Manual, Control Data Corp. St. Paul, Minn., 1966.

29. Corbato, F.J., and Vyssotsky, V.A., "Introduction and Overview of the Multics System", Proc. Fall Joint Computer Conference 1965, p. 185ff.

30. System/360 Model 67 Time-Sharing System Preliminary Technical Summary, IBM Corporation, White Plains, New York, 1966.

31. SDS 940 Computer Reference Manual, Scientific Data Systems, Santa Monica, California, Aug. 1966.

32. IBM System/360 Principles of Operation, IBM Corporation, Poughkeepsie, New York, 1966.

33. Baran, P., statement in Reference 14.

34. Daley, R.C., and Neumann, P.G., "A General-Purpose File System for Secondary Storage", Proc. Fall Joint Computer Conference, 1965, p. 213ff.

Control is placed on the branches of a tree-structured file directory. Five modes of control are allowed -- trap, read, execute, write, and append. Some of the best thinking about a practical, general solution to lower-level access control yet. One of the "Multics papers". Must reading for data base system designers.

35. Bowman, R.T., statement in Reference 14.

36. Reich, C.A., statement in Reference 14.

37. Squires, B.E., Jr., statement in Reference 14.

38. Hsiao, D.K., A File System for a Problem Solving Facility, dissertation in Electrical Engineering, Univ. of Pennsylvania, 1968.

An important new concpt is introduced and implemented on the file system at Penn. This concept, that of the authority item, allows control within files over data access. Each field in a file can be protected from unauthorized access. Data records need not be reprocessed if a change in a record's protection status or in a user's level of accessability occurs. The capability to read only, write only, etc., goes with a file and not with a record. Protected records are completely nonexistent as far as the unauthorized user is concerned. The system as currently implemented is dependent on the file structure (multi-lists). However, the idea of authority items is not and is an important new concept. This thesis should be examined by those who have the responsibility for access control in thier own file systems. It appears to be the first working system with protection below the file level.

39. "A Storage Retrieval System for Real-Time Problem Solving", University of Pennsylvania Moore School Report No. 66-05.

40. Dennis, J.B., and Van Horn, E.C., "Programming Semantics for Multi-programmed Computations", Communications of the ACM, 9, 3 (March 1966), p. 143ff.

A number of meta-instructions are defined which relate to programming operations in multiprogrammed systems. These are related to parallel programming, protection of separate computations, sharing of files and memory. The meta-instructions are cumbersomely put into an Algol-like language, but nevertheless, some very good and long-neglected ideas are here. The capabilities are related to segments which are not quantitatively defined. In practice, these are still too large for a basic unit, and something else ought to be used, e.g., nodes of a tree. This may be possible by altering the Dennis and Van Horn scheme to acquire programs, rather than lists; these programs could call appropriate macros to set up the lists they need.

41. Graham, R.M., "Protection in an Information Processing Utility", Communications of the ACM, 11, 5, May 1968, pp. 365-369.

A good five page paper on the topic. A solution to the file

access problem is given which involves rings or spheres of protection for both data and programs (in particular, for segments, as at Project MAC). The main drawbacks are: (1) the method is tied to segments which in practice are fairly large blocks of memory, and protection of a smaller area wastes the rest of the segment; (2) parallel processes or processors may render invalid parameters or data if proper safeguards are not taken. Aside from these considerations, this may be a reasonable way to provide flexible but controlled access by a number of different users to shared data and procedures.

42. Mac Dougall, M.H., "Simulation of an ECS-based Operating System", Proc. Spring Joint Computer Conference 1967, pp. 735-741.

43. Lesser, V.R., "A Multi-Level Computer Organization Designed to Separate Data-Accessing From the Computation", Stanford Linear Accelerator Center Computation Group CGTM-37, Jan. 1968.

44. Petersen H.E., and Turn, R., "System Implications of Information Privacy", Proc. Spring Joint Computer Conference 1967.

"Various questions of providing information privacy for remotely accessible on-line, time-shared information systems are explored.... A range of protective countermeasures is discussed, and their choice and implication considered. It appears possible to counter a given level of threat without unreasonable expenditures of resources. The protective techniques discussed ... include: shielding to reduce electromagnetic emanations; use of once-only passwords for access control; application of privacy transformations to conceal information in user-processor communications and in data files; recording of attempted penetrations; and systematic verification of the hardware and software integrity." (authors' abstract)

A detailed and well-written paper on threats and countermeasures for file security. Problems at the processor, the files, the terminals, and the communication lines are discussed. A good bibliography is given. A must paper.

45. Peters, B., "Security Considerations in a Multi-programmed Computer System", Proc. Spring Joint Computer Conference 1967.

A specific list of desirable and necessary security safeguards in file systems for both hardware and software.

46. Baran, P., "On Distributed Communications: IX. Security, Secrecy, and Tamper-Free Considerations", RAND Corporation RM-3765-PR (unclassified), Aug. 1964 (DDC Accession Number AD-444839).

A consideration of the security aspects of a distributed communication system, written from the viewpoint that we should fully anticipate the existence of spies within our ostensibly secure communications secrecy protection structure; "Hence, our primary interest should be in raising the 'price' of espied information to a level which becomes excessive." The proposed system combines end-to-end and link-by-link cryptography, automatic error detection and repeat transmission, path changing, and use of a scheme requiring complete and correct reception of all previous traffic in a conversation in order to decrypt subsequent message blocks. It assumes enemy infiltration and takes these countermeasures: key bases split over N (>1) individuals, filtering tests, key change for each conversation, heavy system use for unclassified traffic. Contents:

I. Introduction
II. The Paradox of Secrecy about Secrecy
III. Some Fundamentals of Cryptography
IV. Implications for the Distributed Network System
V. A "Devil's Advocate" Examination

A clear, well-written discussion of an often "touchy" subject. Relevant points are brought out by good diagrams. One of the clearest expositions of real-to-life problems and solutions to be found in the open literature.

47. Shannon, C.E., "Communication Theory of Secrecy Systems", Bell System Technical Journal, 28, 4(Oct. 1949), pp. 656-715.

In this classic paper, a mathematical theory of secrecy systems is developed. The theory is presented in a most readable form. First, basic mathematical structure of secrecy systems is dealt with. Examples of various types of ciphers are given. Measures of "how secret" a system is are introduced, and it is shown that "perfect" secrecy is possible but requires, if the number of messages is finite, the same number of possible keys. A measure of "noise" in a message is given, and strongly ideal systems where this cannot be decreased by the cryptanalyst are discussed. Finally, an analysis of the basic weaknesses of secrecy systems is made. This leads to methods for constructing systems which require a large amount of work to solve. Finally, a certain incompatibility among the various desirable qualities of secrecy systems is discussed. An excellent paper, and doubly so for the non-fainthearted in mathematics (particularly probability and modern algebra).

48. Earnest, L., private communication.

49. Baran, P., "Communications, Computers and People", Proc. Fall Joint Computer Conference 1965, Part 2, pp. 45-49.

A well-thought out general discussion of the privacy problem. Overlaps somewhat with his testimony before the Gallagher subcommittee. Contains some specific proposals.

50. Babcock, J.D., "A Brief Description of Privacy Measures in the RUSH Time-Sharing System", Proc. Spring Joint Computer Conference 1967, pp. 301-302.

A brief summary of the file security procedures in RUSH. Contains some good but short discussion of possible threats and associated countermeasures.

51. McLaughlin, F.X., private communication.

52. Parker, D.B., "Privacy in Resource-Sharing Computer Systems", Control Data Corporation Programming Technical Report TER-06, Nov. 1967 (company private).

An excellent down-to-earth paper on objectives of penetration of computer systems, threat types, countermeasures, and methods of protection. A survey of past and current privacy considerations of Control Data Corporation and its customers is made. Privacy methods are proposed for internal use and for products-- problems arising from oft-proposed, relatively simple (and in fact, too simple) methods are brought up.

53. Weissman, C., "Programming Protection: What Do You Want to Pay?", SDC Magazine 10, 7 and 8 (July, August 1967), System Development Corporation, Santa Monica, Ca.

54. Feldman, J.A., "Aspects of Associative Processing," MIT Lincoln Laboratory Technical Note 1965-13.

55. Duke University School of Law, "Privacy", Law and Contemporary Problems, XXXI, 2 (Spring 1966).

A Law Journal issue. Contents:

Foreword by Clark C. Havighurst
The Right to Privacy and American Law by William M. Beany
Privacy and The Law: A Philosophical Prelude by Milton R. Konvitz
Privacy: Its Constitution and Vicissitudes by Edward Shils
Some Psychological Aspects of Privacy by Sidney M. Jourard

Philosophical Views on the Value of Privacy by Glenn Negley
Privacy in Tort Law--Were Warren and Brandeis Wrong by Harry Kalven, Jr.
"The Files": Legal Controls Over the Accuracy and Accessability of Stored Personal Data by Kenneth L. Karst
Privacy in Welfare: Public Assistance and Juvenile Justice by Joel F. Handler and Margaret K. Rosenheim
The Privacy of Government Employees by William A. Creech

Nothing on computer methods except in the Karst paper, which has about four pages on the effect of automation. The possible solutions to this aspect of the privacy problem are dealt with in superficial detail, but relevant references are given for the reader interested in a more advanced technical discussion.

56. Harrison, A., The Problem of Privacy in the Computer Age: An Annotated Bibliography, RAND Corporation RM-5495-PR/RC, Dec. 1967.

A must document. This 300 entry bibliography is well-annotated and filed by author and by each of the following categories:

cashless-checkless society	computer utilities
time-sharing	congressional view of privacy
data banks	legal views
media	system security
social scientists' views	technologists' views
bill of rights	
electronic eavesdropping and wiretapping	

57. Humphrey, T. A., "Large Core Storage Utilization in Theory and in Practice", Proc. AFIPS 1967 Spring Joint Computer Conference, Vol. 30, Thompson Book Co., Washington, D. C., p. 719.

7288 #22
11-5

U.S. Spies Keep Bosses Busy

WASHINGTON (UPI)—A House subcommittee reported Tuesday U. S. spies were collecting information so fast their bosses don't have time to read it.

The backlog, it said, may have contributed to recent intelligence failures such as capture of the USS Pueblo.

The Defense Appropriations Subcommittee said unprocessed reports on Southeast Asia alone recently filled 517 linear feet of file drawer space at the headquarters of the Defense Intelligence Agency (DIA), created in 1961 five months after the disastrous Cuban invasion attempt at the Bay of Pigs.

COMMITTEE MEMBERS, in published testimony on DIA operations, said the undigested information may have contributed to the Pueblo seizure, the Israeli attack on the USS Liberty, and the lack of advance information about the Communist Tet offensive in Vietnam.

"Within DIA it takes an average of eight workdays from the time of receipt for a document to reach the analysts," the subcommittee reported.

"One could only conclude that the management of your intelligence assets is in a state of complete disarray," Rep. Jamie L. Whitten (D-Miss.) told DIA officials.

THE REPORT said testimony showed that a warning message intended to divert the spy ship Liberty from its position in the Mediterranean last June was misrouted to the Philippines. It was finally sent back to the Pentagon and relayed to the Liberty after the ship had been fired on and 34 members of its crew killed.

As for the Pueblo, captured by North Korea while on an off-shore intelligence mission, Whitten said, "there are a number of areas where it looks as if somebody has fallen down."

He said proper intelligence should have provided forewarning that an attack was likely, making possible a response by South Korean air force planes which he said were only 15 or 20 minutes away.

"It has been evident from witnesses that it did not dawn on our top leaders that the Tet offensive was going to happen when it did," Whitten said, referring to the surprise Viet Cong attack on Saigon and other South Vietnam cities.

"It is inconceivable to me, with this country having gone through Pearl Harbor, where every child is taught about Washington crossing the Delaware on Christmas Eve because the opposition was having a big party, that grown and experienced men come before this committee and say it did not cross their minds that we would be hit on a holiday."

Lt. Gen. Joseph F. Carroll, DIA director, conceded the need for improvement, but insisted no "vital" information had been lost.

Wisconsin State Journal - Wednesday, July 10, 1968 - Madison, Wisconsin

N. COSTAKE, eng.
S. SCHÄCHTER, Dr. eng.

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The Centre of Economic Computation
and Economic Cybernetics
Bucharest -- Romania.

Preliminary Survey on the Building of a National Network of Electronic Computers

The present study presents the preliminary conclusions which resulted so far from the research carried out within the subject-matter included in the plan of the Centre of Economic Computation and Economic Cybernetics.

1. BRIEF INTRODUCTION TO THE PROBLEM

1.1. Our country's economy is of an integrated type, meaning that the plan targets and the methodological basis of economic recording and computation are unique, with the activities of all the economic units strongly intercorrelated. It results that the economic information system is also of integrated type, which necessarily involves the setting up of interdependent and not of diverse autonomous information sub-systems.

The technique of the transmission and processing of information has reached the stage at which integrated information systems can be created. The operational achievements known so far (see the examples in the Annex) refer, however, only to large capitalist enterprises, and consequently cannot be adopted as such, since:

a) — the programmes are written for different economic conditions and, implicitly, the necessary processing capacity will not be the same;

b) — they have a character of information sub-system (they do not refer to the activity on a national scale but to the level of large enterprises operate in conditions of competition).

Some data on the projects worked out in socialist countries are known (as for instance the project of the network of electronic computers of the U.S.S.R. and that of Czechoslovakia). It results from these projects that the line adopted is that of setting up hierarchized networks of electronic computers, observing in the main the administrative structure and envisaging the

setting of the computation centres on the principl of the service to a territory. This situation does not guarantee, at least evidently, the maximum economic level and the capacity of the necessary expansion, being also linked to organizing features.

1.2. The average cost of the equipment needed to the processing of information varies approximately proportionally to the logarithm of the computation speed which, in its turn, expresses in a first approximation, the processing capacity.

1.3. The requirements of a national network of electronic computers are in the main the following:

— economical character (important investments being involved);
— reliability in operation (the system being of national importance, a defective running could have serious repercussions);
— modularity (the system can be set up only on successive stages, in step with the analysis of the applications).

2. PREMISES CONSIDERED IN PROPOSING THE SOLUTION

In proposing the solution, one has to proceed from the following premises:

2.1. The technical solution must be based on a functional scheme.

2.2. An economical character should be obtained with a minimum number of equipments of corresponding capacity, the two other requirements being at the same time observed:

— high reliability in operation;
— modularity.

2.3. The economic units to be served are divided in the following categories:

2.3.1. — units with a big volume of own information and critical dynamic conditions, which will require consequently their own endowment with electronic equipment (as for instance iron and steel aggregate works);

2.3.2. — units with a big volume of own information but lacking critical dynamic conditions, which could be served by territorial computation units, at periodical rates (as for instance the building sites);

2.3.3. — units with small volume of information, to which the ensuring of periodical access to computation units or to equipments of information transmission would be sufficient (as for instance the State farms).

2.4. The major information processings are divided in the following categories:

2.4.1. the prospective (superior) direction — the drawing of long-range programme plans (over 5 years, for instance);

2.4.2. planning — the drawing of short-range plans (as for instance up to 5 years and phased per years);

2.4.3. operative direction — the management of the economic processes in keeping with the short-range plans;

2.4.4. the estimation of the stage and performances — the collecting of data and their presentation in a form available immediately;

2.4.5. technical and scientific computation — processing of varied information, the data being received in an aleatory rhythm, as the computation is not urgently required.

2.5. There must be a single circulation of information between the diverse sub-systems, of a minimum volume (management by way of exception).

2.6. It is necessary to specify, at least generally, a unitary conception and, hence, a final solution, involving the study of the most suitable plan for the realization of the integrated system proposed finally, proceeding from the initially given situation.

2.7. The endowment of the economic units with conventional equipment is continued; the proposed system of information processing supposes the ensuring of a collection of accurate data. In the description that follows and in the computation this aspect has not been taken into consideration, since this involves a necessary action, irrespective of the solution adopted for the network of electronic computers.

From the technical point of view, adequate seems to be the orientation towards the conventional equipment which secures the production of punched tape (in cases when the needs of eventual remote transmission are prevalent), or of stylized symbols, adapted to the automatic optic symbol reading (in the rest of cases). In the present study, the conventional equipment appears as an initial component of the whole system of data processing and transmission, the conclusions referring to the organization of the network of electronic computers being relatively dependent to a lesser degree on the type of the chosen conventional equipment,

2.8. With regard to the endowment with equipment for the processing of information, the question entails the securing of the needed computation services with minimum of expenses on the economy as a whole, and not in securing the own equipment with minimum of expenses for each considered economic unit.

3. SHORT PRESENTATION OF THE PROPOSED SOLUTION OF PRINCIPLE

3.1. The principle of programming the processing of information.

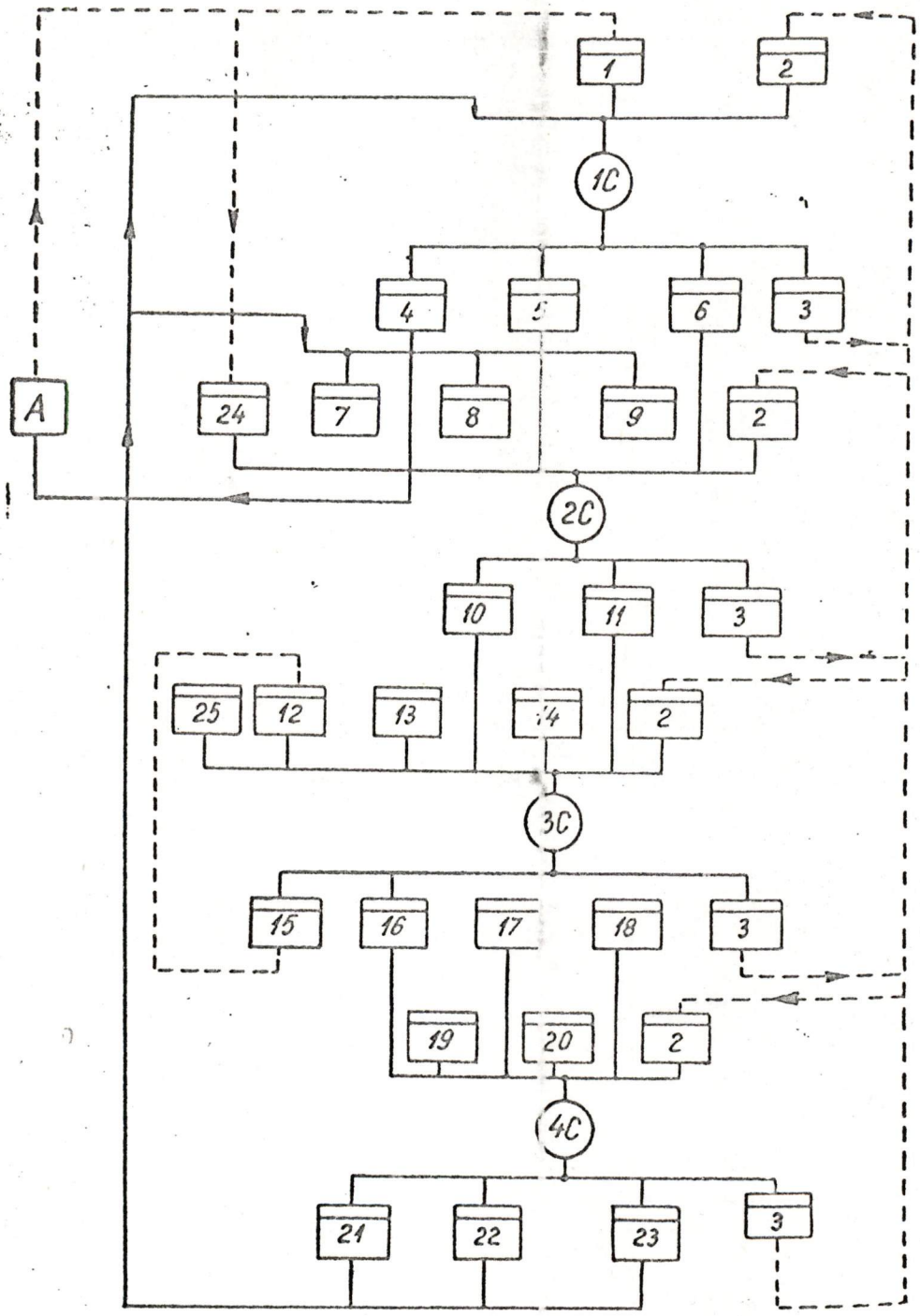
The processing of information is proposed to be organized on a major cycle, according to Fig. 1. The management by way of an exception, is proposed to be achieved in compliance with the algorithm in Fig. 2.

The main information processings are considered as being formed of open programme systems, (type OPS), in the main:

— *higher management*: simulation programmes mathematical programming, PERT, provisional programming, etc.;

— *planning:* diverse methods of mathematical programming, RAMPS, the division of products per materials and cycles, etc.;

— *operative management:* division of products per materials and sub-assemblies, algorhitms of optimization, algorithms specific to the economic unit, statistical surveying, etc.;


1
2
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14
2
3C
15
16
17
18
3
19
20
2
4C
21
22
23
3

Fig. 1

Sequences of information

1. Expected economic indicators
2. Corrected exceptions
3. Exceptions
4. Probable economic indicators
5. General plan for the use of resources
6. General plan for finding resources
7. Achievements
8. Existing resources
9. Detailed mathematical models of the economic system
10. Detailed plan for the use of resources
11. Detailed plan for finding resources
12. Achievements of the economic unit
13. Mathematical model of the economic unit
14. Resources of the economic unit
15. Plan of the economic unit
16. Report on the achievements of resources
17. Report on the use of resources
18. Report on the mathematical model
19. Diverse internal statistical data
20. Diverse external statistical data
21. Existing resources of the economic system
22. Existing mathematical models of the economic system
23. Existing economic indicators of the economic system
24. Economic agreements
25. Foreign orders

Processing of information

1 C — management policy
2 C — planning
3 C — operative management
4 C — estimation of performance of economic system

Special symbols

A — higher management of the economic system

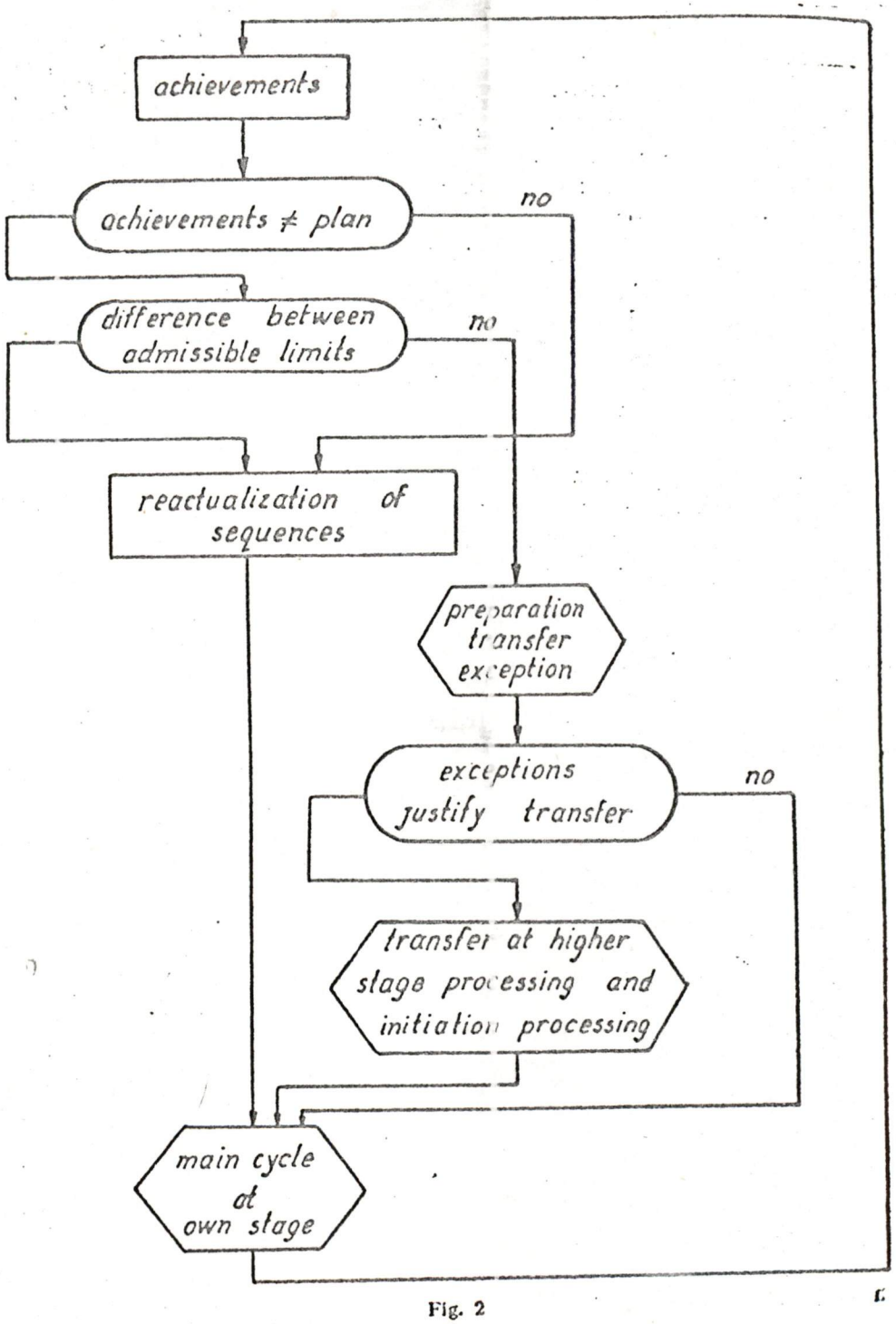
achievements
achievements ≠ plan
no
difference between admissible limits
no
reactualization of sequences
preparation transfer exception
exceptions justify transfer
no
transfer at higher stage processing and initiation processing
main cycle at own stage

Fig. 2

— *estimate:* diverse statistical algorhitms (filterings, correlations, regressions, simulations, statistical tables, etc.).

3.2. Equipment

The project of the endowment with information processing equipment is proposed according to Fig. 3, the transfer of information between the main computers proceeding in compliance with the data in Fig. 4.

The proposed endowment project includes:

a) *a sub-system of information processing* formed of three electronic computers of large capacity, destined to the functions of higher management planning, operative management and estimate respectively, having access to a big capacity external memory (the main external store) through the instrumentality of a computer controlling the transfer of information. As a rule, all the data of the economic system are introduced by means of the transfer control computer in the main external store and next transferred to the computer calculating the performances of the economic system (estimate). The results yielded by this computer are transferred to the main external store in a zone of access to the other two computers, a.s.o. The results needing a transfer to the economic system are also transferred to a data teletransmission system, with the help of the transfer computer;

b) *a sub-system of automatic filing in archives* (by using, for instance, the microfilm technique) where all information introduced and, respectively, released by the transfer computer is kept;

c) *a sub-system of operative managemement of the big central units* with critical dynamic conditions (as for instance the railways, foreign trade) which is coupled to the transfer control computer in the first sub-system, with the aim of ensuring the rapid exchange of information needed;

d) *a sub-system of operative management of own electronic computers of the economic units*, which justify such an endowment, centres of territorial computation and units for collecting data and receiving the local results (destined to units extremely little critical from the dynamic point of view, such as the agricultural production co-operatives);

e) *a sub-system of inquiry and remote processing* linked to the first subsystem by transfer computers, for performing technical and scientific computation or rapid integration of some information from a reserved zone of the main external store;

f) *a sub-system of teletransmission of data* needed to ensure the transmission speed of the information.

3.3. Technical advantages

It has been appreciated that the solution proposed enables the following advantages:

— minimum endowment (a unique scheme, to ensure a minimum number of equipments for the processing of information);

— a minimum flow of transmitted information (specialized sub-systems transferring the processing, respectively reduced information);

— favourable cost indexes and reliability (the scheme is based on few capacity computers, whose number is however enough to secure reliain operation, and which can eliminate themselves reciprocally, by witching in case of breakdown);

LARGE
BILITY
CHANNEL S

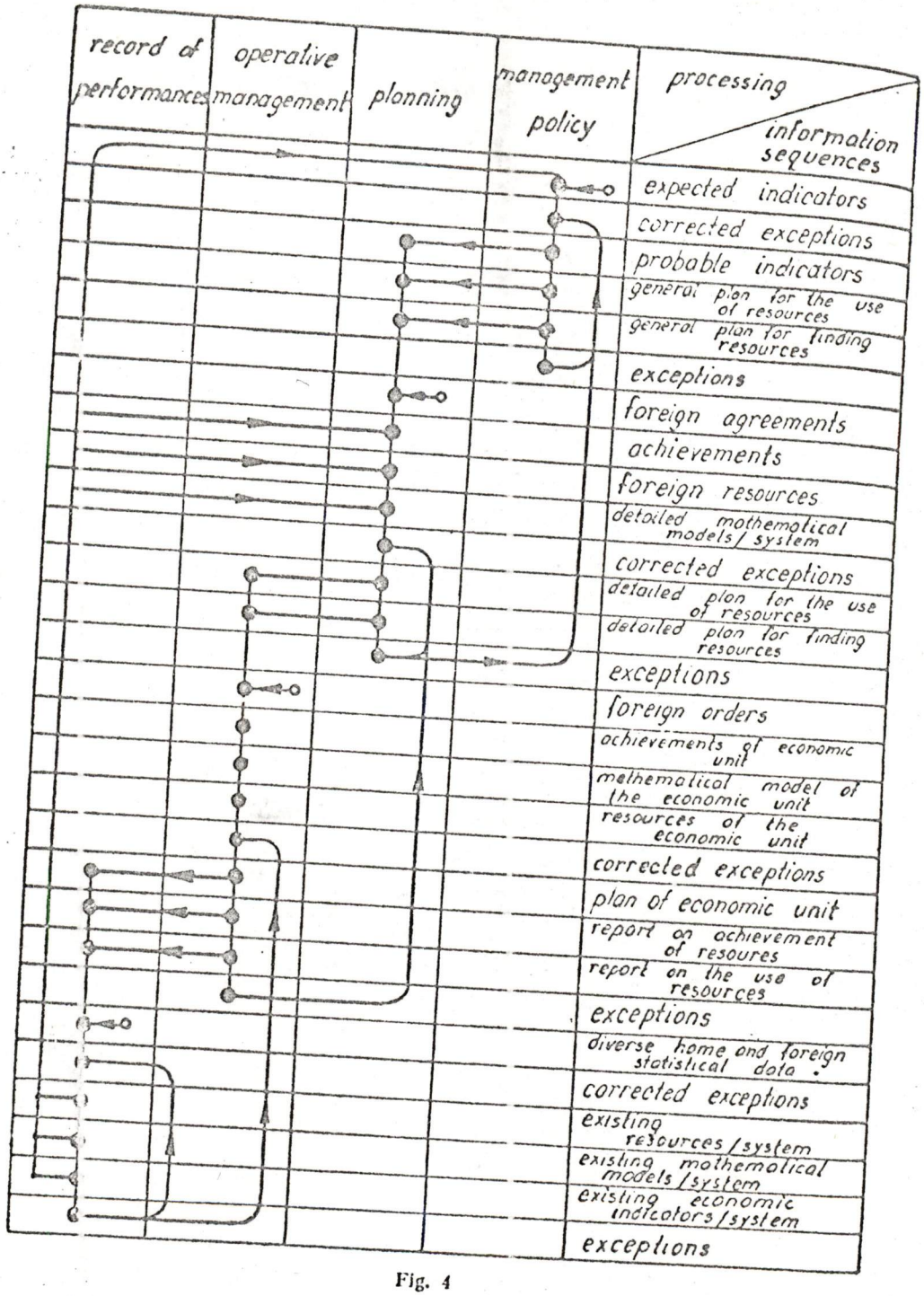
record of performances
operative management
planning
management policy
processing
information sequences
expected indicators
corrected exceptions
probable indicators
general plan for the use of resources
general plan for finding resources
exceptions
foreign agreements
achievements
foreign resources
detailed mathematical models/system
corrected exceptions
detailed plan for the use of resources
detailed plan for finding resources
exceptions
foreign orders
achievements of economic unit
mathematical model of the economic unit
resources of the economic unit
corrected exceptions
plan of economic unit
report on achievement of resoures
report on the use of resources
exceptions
diverse home and foreign statistical data
corrected exceptions
existing resources/system
existing mathematical models/system
existing economic indicators/system
exceptions

Fig. 4

— reserve of expansion (new units can be added, the capacity of the existing units can be increased without affecting the running of the systems);

— an as best as possible functional organization (directed towards the meeting of requirements).

Obviously, the proposed system requires, as a condition to high economic efficiency, a correct collecting of information and the correct use of results.

3.4. Relation to the administrative system

The system proposed does not impose particular conditions to the administrative system, as it is a technical means at its disposal. It is expected to see the administrative system affected only to the degree in which the access to the system store, in other words the processing capacity, proceeds with new technical means and in conditions of increased performances, the premises of an administrative activity based on study being thus created. It stands to reason that the integration of the proposed system would proceed gradually, starting with quite simple problems which would however present a relatively high efficiency (as for instance PERT).

3.5. The problem of other studies

Study work is now under way on the endowment of industrial units and departments. The adoption of a unitary conception from the very beginning is imperative, with the risk that by adopting an "autonomous" endowment, the investment would not be profitable as a whole.

3.6. The problem of assimilation of computation means

The problem of unattainable performances in this country is not raised at a relatively large number of central units. It is however necessary to define from the start the technical conditions of the equipment that should ensure the compatibility of the network as a whole. This asks for a supplementary study stage.

4. SHORT INFORMATIVE TECHNICAL AND ECONOMIC APPRECIATIONS

4.1. Informative dimension elements

From the analysis based on the parameters of the statistical informatory system, the IPA (the Institute of Automation) projects, the technical conditions referring to the Ministry of Mail telecommunication system and from data of technical literature, it results: *

— the volume of information that would have to be transmitted between the economic units and the central processing sub-system, etc. of below 200 M car/day. This volume represents the capacity of about 10 musical channels. It results that the transmission of the information flow could not raise, as a rule, major problems and conventional solutions—as for instance the transmission by punched tape — might be adopted.

— the priority breaking period of the transfer computer: some 1 ms.

— the main store of the system ranging to the magnitude of 10,000 M car.

* Only synthetical results are given so as not to enlarge the volume of the study.

— the necessary speeds of the system's central units would be as follows:
— the central sub-system: over 100,000 operations per second;
— the transfer computer: over 100,000 operations per second;
— the sub-system of operative management of the big central units: some 100,000 operations per second;
the sub-system of operative management (own equipment): 25,000 ... 50,000 operations per second;
idem (territorial centres): 50,000 .... 100,0000 operations per second,
the sub-system inquiry and remote processing: some 10,000 operations per second.

4.2. Main economic indicators of the proposed system:
— the number of central units: some 80 (about 4 units to one million inhabitants, as against some 10 on the average in the industrially-developed countries);
— average investment per unit: about 20 million lei, as against the world average of some 6 million lei (it involves a quite small number of relatively strong equipment);
— the value of total investment: some 2,500 million lei;
— the ratio electronic equipment/total investment: some 50 per cent (the rest of 50 per cent is represented by conventional means necessary to the proposed system, other investment);
— annual expenses: some 400 million lei yearly.
The data referring to expenses have been computed taking into account the known average prices of the electronic equipment, the schemes of usual organization, as well as the indexes used currently in the technical and economic studies.
— annual economic effects: minimum 1,000 million lei per annum.
The sources of economic effect considered in the computation are:
— the *growth of the production capacity* by some 5 per cent (over the 15 per cent reserve appreciated in the literature, which agrees with the results of the analyses carried out within the Ministry of the Machine-Building Industry), as a result of a better use of the equipment following planning and its more efficient checking up;
— the *increase of benefits* by some 5 per cent (given in the literature as a result of the possibility of cutting down cost price);
— the *shortening of the commisioning terms* of the new industrial projects, as a result of a more efficient operative planning (as for instance the use of the PERT and RAMPS methods);
No other sources have been taken into account, as for instance:
— the elimination of the badly used means of production;
— the optimization of plans;
— the optimization of stocks;
— the increase of the export competitiveness;
— the more efficient use of the means of payment;
It has been appreciated that the annual economic effect taken into consideration thus assumes a protective character:
— investment pay off time: some 3.5 years;
— necessary specialists: some 4,000.

4.3. The placing of the proposed system in comparison with the territorial hierarchical sub-systems

Provided that the situation involving the setting up of a territorial network for each branch of the economy is accepted, a project of the following type will be obtained:

— at least one central, large capacity, computer for co-ordination;

— an own sub-system for each economic branch (involving medium-size or small-size capacity computers);

— the number of central units: some 150;

— average investment per unit: approximately 15 million lei;

— the value of total investment: some 3,500 million lei;

— the relation electronic equipment/total investment: some 65 per cent;

— annual expenses: 500 million lei yearly.

It must be stated that these average data result from the replies given by departments concerning the immediate and prospective stock of electronic computers needed, within the Institute of Automation inquiry for the technical and economic study on the assimilation for production of electronic computers;

— annual economic effects: some 1,000 million lei/yearly (the question is at issue, since the flow of information is high, while the integration degree more reduced);

— the investment pay off time: some 7 years (beyond the accepted allowable value of 5 years);

— necessary specialized staff: some 7,000.

It results most conspicuously that the solution proposed is more advantageous.

5. — CONCLUSIONS

An analysis of the two main variants: an integrated system of information processing and a system of information processing made up by hierarchical sub-systems, clearly shows that the first variant is more profitable and more efficient.

Annex

SOME ACHIEVEMENTS OF INTEGRATED INFORMATION SUB-SYSTEMS KNOWN SO FAR

1. Olivetti — Italy (The San Bernardo d'Ivrea works).
2. Lockheed — U.S.A. (The group of works)
3. Westinghouse — U.S.A. (The group of works and commercial branches).
4. Richard Thomas & Baldwin — Great Britain (The iron-and-steel works).
5. Honeywell — U.S.A. (The Greefort micro-contact works)
6. General Electric — U.S.A. (Own programmes and the chain of computation services).
7. Massachusetts Institute of Technology (The MAC project).
8. Sage — U.S.A. (The semiautomatic antiaircraft defence of the territory).