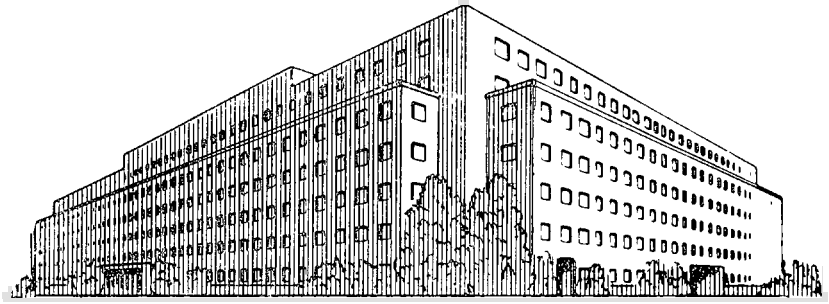


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The GAO Review



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WINTER 1967

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THE GAO REVIEW

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U.S. General Accounting Office

722956



**ON
PROFESSIONAL
DEVELOPMENT**

**by A. T. Samuelson,
Director, Civil Division**

Recruitment literature for accounting and auditing positions with the General Accounting Office contains many references to the professional nature of our work. My observations, however, would indicate that the professional development of many of our staff members does not always keep pace with their growth in technical capability and their advancement to higher positions in the Office.

Distinguished technical performance is but one of the hallmarks of the professional. There are others to which a broadly based professional staff member should aspire.

A professional accountant, to keep up with the times, not only should be a technician of superior competence but also must have more than a nodding acquaintance with the related skills. He need not be an expert in automatic data processing, advanced mathematics, statistics, operations research, probability studies, and similar related management techniques. But the effectiveness of these techniques is enhanced by the availability of the right kinds of accounting data, and the accountant can make a significant contribution through participation with the experts in these fields. Moreover, the conclusions reached or recommended by the practitioners of these skills may often involve the accountant, both in the interpreting of financial data used in the process and in restructuring the financial control system after the decision by management. The use of these management techniques is expanding rapidly. Thus distinguished performance on a broad base by a professional accountant cannot long continue unless he broadens his horizons to encompass an understanding of these sciences.

As a professional accountant on the staff of the General Accounting Office he needs also a working acquaintance with such related fields as

the legislative processes, public administration, economics, sociology, money and banking, international finance, and the behavioral sciences. In this connection, the planning-programming-budgeting system now evolving in the Federal Government opens a new field in which we accountants need a fairly comprehensive understanding.

Writing manuscripts for professional journals, of which the GAO Review is but one, should be high on the list of achievements to be sought by our professional staff members. The sharing of experiences, the exchanging of viewpoints, and the expounding of new ideas provide the opportunities not only for growth and health of the profession but also for the personal stimulation of the contributor. No profession nor any segment of a profession, governmental accounting and auditing in our case, can either hold its place or have health and growth without its members fully exploiting writing opportunities. Similarly, speaking opportunities related to the fields of our interests and of benefit to our profession should be accepted wherever possible for us to do so.

Membership in professional organizations represents another very important means of achieving professional growth. But mere membership, library membership as it were, is not enough. Participation and contribution in the many different ways open to the members of the professional organizations are essential if the broader benefits from membership are to be realized. Many professional accounting organizations exist, and the selections for memberships should be the ones of choice—those having the best opportunities for the professional development of the individual staff member.

Certain professional accounting and auditing organizations require their members to be certified public accountants. Since professional accountancy is personified in its highest levels through possession of a certificate of a certified public accountant, our staff members should vigorously seek to obtain the certificate wherever possible. As a holder of a certificate, our staff members can qualify for memberships in the American Institute and the State Societies of Certified Public Accountants.

It has been said that “man cannot live by bread alone.” In my opinion it can also be said that man in a professional endeavor cannot live by distinguished performance alone—nor will his profession develop to meet the demands of the times. Therefore, I would like to see the professional development of more of our staff members keep pace with their growth in technical capability and their advancement in our organization.

Accounting and Auditing: Some Views and Objectives

By Elmer B. Staats

Comptroller General of the United States

In recent months, Mr. Staats has addressed a number of organizations on accounting, auditing, and other management functions. Following are selected excerpts from some of these speeches.

Before the Washington Chapter, Federal Government Accountants Association, September 8, 1966, on "Improved Management Controls and the Role of the Accountant."

* * * * *

As a frame of reference for further discussion, it may be well to define our terms. We think of management control as the pattern of organization and the policies and procedures of an activity designed to assure that assigned responsibilities and planned objectives are being carried out in the manner and with the results intended. The basic control process, wherever

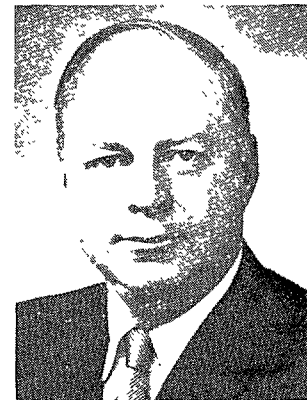
found and whatever controlled, involves three steps:

1. Establishing plans or standards
2. Measuring performance against these standards
3. Correcting deviations from standards and plans

The essence of management control is action taken to direct or carry out operations. The basis of the action is information in the hands of the managers. Such information is sometimes called "feedback," which Eric Kohler's dictionary defines as—"any system involving

- (a) the periodic supplying of information on operating performance

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



- (b) the comparison of such information with a standard of performance
- (c) the provision for taking corrective action based on the comparison."

The manager may obtain information on performance from many sources including direct observation, the press, and citizen complaints. Primarily, however, it should come from the agency's information system. Two very important sources in the latter category are the accounting systems designed and developed by the accountant to meet the manager's needs and the work of the internal auditor.

* * * * *

The Accounting Function

It would be futile to attempt to make a useful general characterization of the status of the accounting function in the Federal Government. We all know that a lot of improvements have been made in recent years and that, in comparison with earlier years, accounting services are vastly better and increasingly used. We can also recognize that this function has not been developed throughout the Government to the point of being of maximum usefulness to those it is intended to serve, namely, agency managers, the President's office, and the Congress.

Federal managers do not universally show adequate appreciation of the usefulness of accounting data in carrying out their responsibilities. Often, and with some justification, accounting data is viewed as historical, after-the-fact information presented too late to be of real use in day-to-day operations.

Accounting-based reports are often not in harmony with the program and activity classifications that are the primary concern of management officials. Lack of compatibility with work measurement or other non-financial performance measures compounds the weakness.

Managers have the responsibility of recognizing and using all tools they can command to enable them to do their job efficiently, effectively, and economically. Accounting reports, based on adequately developed accounting systems, and designed to disclose promptly information of value to management officials, represent one of these tools. It is also management's responsibility under the law to provide itself with these tools.

Accountants in the Federal Government are therefore faced with the challenge of recognizing what is really needed in the way of financial information by the management officials in their agencies, demonstrating these needs, pointing up ways they can assist in meeting them, and designing systems accordingly. This is easy enough to say but I recognize there are many difficult aspects of this problem. At the same time, it seems to me that it is incumbent upon all of us to recognize what it is that we have to do.

Impetus to the development of more useful accounting data is currently being provided by at least two important factors.

First, the President has directed the development of an integrated planning-programming-budgeting system in the agencies of the executive branch. He has placed emphasis on the importance of "high quality, busi-

ness-type information systems." He has solicited the support of the heads of the agencies of the executive departments to see that the agency's managers are supplied with responsibility-centered, cost-based budgets in support of the planning-programming-budgeting processes.

The introduction of the planning-programming-budgeting system provides an important challenge to the accountants in the Federal Government. They now have an increased opportunity to make accounting data more useful and understandable to management. They can and should design and develop information and accounting systems which will make the maximum use of the cost information obtainable and blend in other statistical information needed to produce significant analyses and reports on which management can make day-to-day and long-range decisions.

An adequate accounting system can contribute to the effective operation of the planning-programming-budgeting system in two ways:

- As a reliable source of cost information for use in estimating the costs of alternative courses of action.
- In measuring actual experience in terms of cost for comparison with planned and projected operations.

With the proper use of automatic data processing equipment, this kind of information can be produced promptly and in useful form. Basic data can be quickly sorted and separated to the finest degree or combined to the maximum to suit the needs of management.

This brings me to the second important factor I wish to mention as providing impetus to the development of more useful accounting data. This is the growing use of computers and related equipment in the performance of financial management functions. The application of these facilities has speeded up and enhanced the potential qualities of the accounting processes. This equipment has greatly facilitated the combining and sorting of data, adding significantly to the quality of cost information. Such cost information is essential to keeping managers informed about the progress and status of their programs and operations. These new and more current data sources and capabilities have made it possible to make the accounting function more responsive and flexible in estimating and projecting the costs of programs.

The accountant today certainly has the opportunity to exercise his creativeness and to demonstrate to management the usefulness of accounting and other data which some managements have been getting along without for years, after a fashion, without realizing what a useful tool they were missing.

Our principles and standards of accounting for Federal agencies, as restated last year, are intended to promote the development of cost information useful to agency managers in assessing and controlling costs in relation to planned performance and in fairly disclosing to all concerned the financial aspects of agency operations. To this end, they call for agency accounting systems to provide cost information by at least (1) major

organizational segments and (2) budget programs and activities.

The availability of reliable cost information, particularly when related to assignments of management responsibility, is also of great value in promoting in responsible officials and employees desirable attitudes of cost consciousness so important to conducting operations economically.

* * * * *

The Accountant in the Role of Internal Auditor

Another role of the accountant which I consider particularly important to the improvement of management controls is in the capacity of an internal auditor.

As you know, there is a statutory mandate that the executive agencies have internal audit staffs. The Budget and Accounting Procedures Act of 1950 made it the responsibility of the head of each executive agency to provide for appropriate internal audit.

When the departments and agencies were relatively small, one seldom heard of an internal audit staff. Growth in the size and complexity of the agencies of the Government and in the programs they administer has changed this picture. Under these changed circumstances, managers of the Federal Government have greater responsibilities for assuring themselves, through appropriate administrative processes, whether the money they spend is being used effectively to meet program needs and the intent of the governing legislation. This responsibility has in turn increased the need for internal auditing and thus increased the role and responsibilities

of the accountants and auditors in the management process.

Thus, in every large organization there must be those dedicated professionals—the internal auditors—whose function is to be the skeptic, to ask searching questions, and to study and investigate all operations with a view toward promoting greater efficiency and economy and better performance. This is the role the accountant assumes when he functions as an internal auditor.

I look upon internal auditing as a highly important part of a management control system. This function can serve as the eyes and ears of the top management in such important ways as:

- Locating opportunities for eliminating waste and inefficiency.
- Recommending improvements in policies, procedures, and organization structure.
- Providing checks on performance by individuals and by organizational units.
- Reviewing compliance with applicable statutory and other legal requirements.
- Testing for existence of unauthorized, fraudulent, or otherwise irregular acts.
- Identifying potential trouble spots in future operations.
- Providing an additional channel of communication between operating levels and top management.

I do not think that there should be any significant restrictions on the work of an internal auditor if he is to be fully effective as an important part of a management system. One area of interest to me in this connection is the conduct of employees. I

have a feeling that this area has not generally been regarded as an appropriate field of concern of internal auditors. However, it seems to me that more thought should be given to the question of whether internal auditors should have some responsibility for inquiring into agency policies and procedures for promoting adherence to the high standards of conduct expected of Government employees.

In 1957, the General Accounting Office, as a part of its effort to encourage the development of internal auditing in the Federal departments and agencies, published a statement of basic concepts and principles necessary to the setting up of an effective system of internal review as an aid to management. This statement has been widely used and referred to for guidance in establishing and carrying out this function in the Government.

Not only has our Office encouraged internal auditing but so has the Congress. The House Committee on Government Operations issued a report¹ in June 1963, in which it concluded:

Every organization must have an effective system of internal management control. The so-called internal auditing system, as recommended by the Comptroller General in August 1957, constitutes an effective means for the average Federal agency to obtain this essential management function. Unfortunately, this internal audit system has not been adopted on a Government-wide basis. In too many instances, internal audit functions are compromised by inadequate staffs, improper organizational requirements or limits in scope of service. All Federal agencies should review internal management control systems and place them in compliance with the Comptroller General's

¹ H. Rept. No. 456, 88th Cong., dated June 25, 1963.

1957 recommendations and with the criteria established in this report.

* * * * *

We are currently making reviews of the internal audit activities in 12 civil agencies and in the Department of Defense. We plan to issue reports to the Congress or to the agency on these reviews and make recommendations for improvement where we believe improvement is needed. Several departments are currently in the process of centralizing the internal audit activities and hopefully these reorganizations will result in reporting to top management.

The weaknesses we are finding so far run along these lines:

- Lack of independence, usually coupled with the problem of being organizationally responsible to too low a level.
- Failure to properly plan the audit effort of the agency.
- The audit approach is too narrow in that the scope of the reviews needs to be broadened.
- Inadequate audit programs and audit guide lines.
- Assignment of staff to nonaudit functions.
- Inadequate working paper support for findings.
- Lack of management followup on reported findings.

* * * * *

The General Accounting Office, as you know, reviews the work of Federal agency internal auditors and considers the nature and usefulness of this work in establishing the extent of its audit work. This is not only a statutory principle but a matter of good audit management. Therefore, if you would like GAO to do a little

less auditing in your agency, do a good job of internal audit.

* * * * *

At the Joint Symposium of the Philadelphia Chapters, Federal Government Accountants Association and Pennsylvania Institute of CPAs, September 26, 1966, on "New Directions in Accounting and Auditing."

These are exciting and critical times for the accounting profession both in Government and in private enterprise. The role of accountants and financial managers in the Federal Government has reached unprecedented significance as a result of large Federal budgets and their effect on the American economy. The professional accountant in these times has a unique opportunity for rendering valuable services in maintaining the stable financial structure so essential to economic growth.

There has been much progress, especially since World War II, in improving financial management in the Federal Government. But, there is much to be done. Help is needed; and it's the kind of help that can be furnished by members of the profession, both inside and outside the Government departments and agencies. Sound and progressive planning, budgeting, accounting, and auditing are essential to efficient and economic management of the vast resources and programs of the Federal Government.

* * * * *

Improving Financial Management Practices in the Federal Government

Since becoming Comptroller General of the United States, I have de-

voted considerable time to exploring how we can effectively devote more effort to constructively assisting the Federal agencies to improve their financial management systems. After numerous meetings with departmental officials, it is clear that our Office should stimulate further progress and provide increased cooperative assistance to the agencies in their financial management improvement efforts. While the executive departments have the prime responsibility, we have an obligation to cooperate with them in developing their accounting systems and I deem this obligation as important as our prescribing, reviewing, and approving responsibilities.

Last year the President directed the introduction of integrated planning-programming-budgeting systems in the departments and agencies of the executive branch. The February 1966 issue of the Journal of Accountancy comments that: "* * * this system may become the model information system not only for the Federal Government but also for State and local governments and for private industry." I agree.

One of the important elements of this system is good accounting-based cost data. It is apparent that many agencies do not, at this time, have accounting systems that will produce such data and, consequently, much work needs to be done. Accordingly, I look upon the extension of the planning-programming-budgeting system as providing even greater emphasis to the importance of good accounting systems which can produce useful financial data for important management needs. The opportunity for accountants to provide valuable serv-

ice in evolving a better overall financial management system in the Federal Government is greater than ever before.

Our principles and standards of accounting for Federal agencies are aimed at the development of cost information useful to agency managers in controlling costs in relation to planned performance and in fairly disclosing the financial results of agency operations. We have recognized that accounting systems, to be most useful in connection with the PPB system, will have to be flexible enough to permit the production of cost data which are relevant and useful for the purposes of estimating and projecting costs of programs.

In our continuing accounting and auditing work in Federal agencies, we will do what we can to promote and assist in the full development of planning-programming-budgeting systems and will be available to lend advice and assistance on problems encountered by agencies in their development. We will also undertake to inquire into the effectiveness of the systems in producing reliable and valid information for use by management officials in decisionmaking.

* * * * *

Broadening the Scope of Audits and Reviews of Departments and Agencies

Because of our need to use our limited manpower resources to the best advantage, it has been our policy to place particular audit emphasis on areas of agency operations thought to require correction or improvement. Most of our audit reports in recent years have concentrated on individual

cases of management problems involving actual or potential losses and on making recommendations for their correction. This type of audit emphasis has undoubtedly contributed to significant improvements in Federal agency operations and to substantial savings in public funds.

We believe, however, that our audit work can be even more productive if we make a more extensive inquiry into basic causes of the unsatisfactory conditions that are found and include in our reports clear statements of those causes and our recommendations for improvement. Our current audit work is pointed in this direction. We think that by increasing the coverage and significance of our reports we will also be providing greater assistance to Congress in carrying out its responsibilities.

* * * * *

Our broadened approach to making our audits will involve the increasing use of the new quantitative techniques and methods from mathematics, statistics, electronic data processing, and the social sciences. To more effectively meet our responsibilities we must further cultivate the skills of inquiry and creative thinking, as well as acquire understanding in broader fields related to the business of managing the Federal Government. We have already taken steps to achieve these goals by sending selected staff members to educational institutions and revising our in-house professional training programs. As you are aware, accounting systems are increasingly becoming an integral part of larger management information systems. To do a more effective job of auditing the activities of the entire Federal

Government, we must have the talent and the knowledge to meet this challenge.

Policies and Practices Related to Contract Audits

We will give particular attention in the future to contract practices and to improvements in contract procedures—to help insure that the Government purchases what it needs in an effective and economical manner and at fair and reasonable prices. For example, the military departments are awarding contracts for weapon systems and related equipment and supplies at the rate of over \$25 billion annually. We plan, therefore, to direct a significant portion of our efforts to the review of these contracts.

There are many different areas in which the activities of Government accountants have an important impact on the procurement operations of the military and civil departments and agencies. These include financial evaluation of contractors' financial capabilities to perform Government contracts, pricing of negotiated contracts, Government financing, pricing redeterminations, cost-plus-fixed-fee contracts, claims, and terminations.

The agencies' contract audit work, such as that performed by the Defense Contract Audit Agency, is an essential part of the administrative procedures to properly manage the procurement program. Our responsibility to the Congress is to review the effectiveness with which the program is administered and, in discharging this responsibility, to review the effectiveness of the agencies' contract audit work and give appropriate recognition to it in determining the audit work to be done by us.

In line with our broadened scope of reviews on a functional basis, our reviews of contract agencies and contractor operations now cover broad subject areas. Individual examples of waste, inefficiency, or overpricing are being used in reports to illustrate the need for management improvements, rather than being treated as separate self-contained reports.

* * * * *

Our reviews of contract operations in the future will frequently be on a Government-wide basis, and agency controls and procedures will be compared to evaluate their effectiveness. We have established close contact with Department of Defense officials at the policy level to be in a position to discuss fully the problems which we identify during our reviews and to assist in solving them. This relationship is also being established in the civil agencies, such as the Atomic Energy Commission and the National Aeronautics and Space Administration.

Our future plans provide for continuous and extensive reviews of agency procurement activities. In evaluating the effectiveness and efficiency of their activities we will necessarily continue to inquire into contractor operations, pricing policies and practices, and production costs. I have directed the auditing divisions in performing these reviews to be constructive in their approach and to emphasize those aspects of Government procurement and contractor activities that indicate need for improvement generally. We hope in this way to be of greater service to the Congress, the executive de-

partments, and, if you will, the contractors.

Improved Communications

The professional accountant is now, more than ever before, a vital part of the management team and is required to understand the role and value of all phases of business operations—purchasing, production, marketing, and research, as well as finance and accounting. Professional accountants engaged in auditing private or governmental activities are repeatedly called upon for consultation on matters of policy significance and to conduct special management service projects. These responsibilities have increased greatly the accountant's need for effective communication, both oral and written, and for increased knowledge in many areas. This is especially true of the accountants associated with the General Accounting Office. Our professional accountants and auditors, as well as our attorneys, have continuous contacts with other accountants and lawyers both inside and outside the Government. Each plays a significant role in the essential communication that welds the entire General Accounting Office into an effective operating unit. We seek to assure effective communication with the Congress, with the executive agencies, and with Government contractors, as well as the public accounting and private law firms.

* * * * *

Professional Development

Over the years, as part of our planned professional development, we have devised a series of coordinated training programs designed to meet

the varied needs of our staff members at each level of responsibility. We also select staff members, on a regular basis, to attend advanced management programs at the graduate schools of business administration of Harvard University, University of Michigan, and Stanford University, and others to attend specialized technical courses.

With the increased use of computers in the Federal Government, we have expanded our training programs for the development of ADP specialists to provide more intensified ADP training for our entire professional staff incident to the auditing methods and techniques involved, as well as in systems analysis and development concepts and applications. We are reaching the point where a large part of our professional staff must be thoroughly familiar with computer techniques since such techniques are being rapidly adopted in nearly all fields of our work.

Through our extensive professional development program, we insure consistent excellence in performance, adherence to the generally accepted accounting and auditing principles and standards, and the staff's continued progress. We continuously encourage our staff to join and participate in the activities of professional societies, since we recognize the significant contributions they make in the professional development process. Many of our professional accountants have served and are serving as officers, committee chairmen, and members of committees of the American Institute of CPAs, the various State CPA societies, and other professional organizations.

A majority of the States recognize the professional nature of our accounting and auditing work and accept General Accounting Office experience as meeting their eligibility standards required for the CPA certificate. At present, our staff members can qualify for the CPA certificate in 37 States. Just recently the Congress passed a new accountancy law for the District of Columbia which will permit recognition of our experience. Recognition of our experience by the remaining States, primarily those in which our regional offices are located, such as Pennsylvania, would end the inconsistency now existing. As the situation is now, members of our staff in some States are afforded the opportunity to obtain the CPA certificate, while equally competent and highly qualified professional members of our staff in other States are denied this opportunity.

We have been communicating with State Boards of Accountancy and appropriate committees of State CPA societies, including those in Pennsylvania, to bring to their attention the independent nature and professional quality of our work, so that the General Accounting Office experience will be recognized as qualifying for the CPA certificate in all States.

* * * * *

Before the New England Regional Chapter, National Security Industrial Association, Bedford, Massachusetts, September 29, 1966, on "The Audit of Government Contracts by the General Accounting Office."

* * * * *

As most of you know, our basic role is to check on the effectiveness of

the system of management and internal control of each Federal agency. This requirement extends to the negotiation and administration of Government contracts, for seeing that—

- the contracts are made with due regard to the lawfulness and justice of public accounts,
- the prices paid to the contractors are reasonable,
- the contractors properly discharge their responsibilities under the contracts, and
- the administrative contracting practices are effective and efficient.

Our audits of negotiated Government contracts frequently involve many complex and difficult matters which require a high degree of professional competence. It is my purpose to maintain—and improve, if possible—the professional competence of our personnel. However, because of the complex nature of Government contracting, it is inevitable that differences of opinion on various matters will arise from time to time. As you know, the Military Operations Subcommittee of the House Government Operations Committee held hearings in May, June, and July 1965, to explore some of the differences.

Before commenting on some of the issues discussed in those hearings, I want to assure you that we intend to put forth our best efforts in presenting the facts in a fair and objective manner. The critic's role which we play is not an easy one. As critics of agencies' and contractors' operations we have to develop the facts correctly and we have to interpret them fairly to all parties. We intend to do just that.

Our audit reports are intended to serve a constructive purpose—to inform the Congress and the Federal agencies concerned on the results of audit work including that on negotiated procurement contracts and to make recommendations leading to greater efficiency and economy in such expenditures. This is an important responsibility to carry out and we mean to discharge our responsibility fully and effectively.

Preparation, Distribution and Release of Audit Reports

At the Military Operations Subcommittee hearings one criticism by contractors of our reporting procedures was that in some instances contractors' written comments on our draft reports had not been fully presented in our final reports, thus denying them the opportunity to state their case. In other instances, draft reports on which they commented had been revised prior to issuance and they had not been afforded an opportunity to comment on the significant revisions. We have taken steps to see that future occurrences of this nature are held to an absolute minimum by affording contractors full opportunity to comment on our draft reports and including their comments in our reports.

If significant changes are made in our findings, conclusions, or recommendations before a report is released, we will provide the contractor another opportunity to comment. In this connection, contractors are encouraged to meet with us to discuss any problems they may have with our proposed reports. I assure you we want to be completely fair and objec-

tive in reporting on our contract audit work.

Disclosure of Confidential Business Data

In our audits we obtain many kinds of data relating to an individual contractor's operations including production cost and profits. Some of this data, usually in summary form, is needed to properly present our findings, and when such is the case we feel that a proper discharge of our statutory responsibilities requires that we include in our reports such data as is necessary for this purpose. Some contractors took the position that this was contrary to existing statutes which prohibit disclosure of trade secrets, company profits and the like, except as authorized by law.

Our position is that since our audit reports to the Congress are authorized by law, the restraint on the disclosure of trade secrets and other proprietary business information incorporated in 18 U.S.C. 1905 is not applicable to our reports. However, recognizing the legitimate concern of contractors, we require with respect to every report in which confidential business information is to be disclosed a review by senior officials of our Office and their determination that such disclosure is essential in view of the nature of the report.

Theory of Contractor "Due Care"

In a few of our reports on the audit of cost-type contracts, we took the position that the prime contractor failed to exercise "due care" in protecting the interest of the Government in his dealings with subcontractors and suppliers, and we recommended

recovery from the contractor on the basis of a common law right.

However, on reexamination of our position as a result of the committee hearings, we decided that legally this is a question of cost allowability. At present, when a question of the exercise of due care comes up in our audit work, we direct a recommendation for recovery to the contracting agency for consideration as a matter of cost allowability with the decision to be made by the contracting agency.

Requests for Voluntary Refunds from Contractors

Over the years the General Accounting Office has reported many cases of excessive prices resulting from unrealistically high cost estimates submitted by prospective contractors for negotiation purposes. In other cases, contractors refused to furnish cost information, but the proposed prices greatly exceeded anticipated cost plus normal rates of profit.

These reports eventually led in 1962 to the enactment of Public Law 87-653, the so called "Truth in Negotiations Act." This law—and I know most of you are familiar with it—provides that, with certain exceptions, contractors shall be required to furnish cost or pricing data for use in the negotiation of prices. They are required to certify such data and the contracts are required to contain a clause that the price be adjusted for any significant increases resulting from inaccurate, incomplete, or noncurrent data certified to by the contractor.

In the earlier cases which we reported to the Congress, where we felt the situation warranted such action we recommended that the agency seek

an adjustment from the contractor on the basis of good conscience and equity even though there was no legal liability on the part of the contractor to make a refund.

Most of these cases involved contracts negotiated prior to enactment of Public Law 87-653. Effective implementation of this act provides a legal remedy in similar cases negotiated after the effective date of the act. Therefore, except for a case involving unusual circumstances, our recommendation for voluntary refund in cases involving contracts negotiated before the effective date of Public Law 87-653 will be limited to instances where the cost or pricing information furnished by the contractor at the time of negotiation was inaccurate, incomplete, and noncurrent. This would be on the basis of equity rather than legal right.

GAO Relations with Defense Contract Audit Agency

Questions have arisen from time to time as to our relationships with the Defense Contract Audit Agency and whether our objectives being similar did not result in a duplication of effort in the contract audit area.

The role of the Defense Contract Audit Agency differs from that of the General Accounting Office in that it performs primarily as an advisory service, acting as a part of a team of technical advisors to the contracting officer. Therefore, it plays an operational role and its activity cannot be said to have the attributes of either an internal audit function or an independent review function. Also, the audits performed by the Agency are confined to contractor activity, while the General Account-

ing Office audits cover the broader field of both contractor activity and the negotiation and contract administration activity of the contracting agency.

To prevent unwarranted duplication of audit coverage, we maintain a close liaison with the Defense Contract Audit Agency both at the Washington level and at regional office levels. Also, the Audit Agency receives copies of our reports relating to contract matters and it reviews proposed Department of Defense responses thereto. In this way, the Agency is kept well-informed of our findings and of proposed actions to be taken with respect to our reports.

In carrying out our work, we give full consideration to work done by the Defense Contract Audit Agency and other Department of Defense audit organizations. The scope and effectiveness of these audits are important considerations in determining the scope and nature of audit work to be performed by us. By reviewing and testing their work, the amount of audit work we consider necessary is often lessened.

We believe there is, basically, no duplication of effort in the audit of contracts, but that the efforts of our organizations complement each other. To a limited extent, the General Accounting Office must perform work in the same areas as that of the Defense Contract Audit Agency in order to evaluate the effectiveness of Agency contract audits. Beyond that the Congress may call upon us from time to time for examinations of areas of special interest to the Congress.

**At the Department of the Interior
Financial Management Improve-
ment Seminar, Harpers Ferry,
W. Va., November 19, 1966, on
"Using Cost Data in Decision
Making and Reviewing."**

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The availability of reliable and systematically accumulated cost information, particularly when it is related to assignments of management responsibility, is of great value in promoting in responsible officials and employees desirable attitudes of cost consciousness so important to conducting operations economically. If you require the systematic and comprehensive reporting of the results of conducting programs and activities at the various levels of responsibility within your organization, and you make inquiries of your subordinates about the cost of performance based upon the reports you receive, it will not be unreasonably long before your organizations are perceptibly more cost conscious. * * *

The interest at the various high levels of Government in getting a dollar's value for a dollar spent has spawned such programs and phraseology as "cost reduction" and "cost effectiveness." Many of you probably have asked or heard "what is so new about these concepts. And what do you mean by 'cost consciousness.' We have always managed our operations pretty well!"

Cost consciousness in an organization is more likely to exist if financial reports on the results of program and activity performance present not only obligations or expenditures but also elements of cost necessary to the conduct of the program and activity, such

as the consumption of property resources in the performance of the work. These additional elements of cost must be considered to meaningfully evaluate whether optimum utilization of the dollar resource was obtained consistently when units of output from one period of time are compared with those of another comparable period, or units of output from one organizational unit are compared with those of another such unit performing essentially the same work at another geographical location. Unfortunately, our experience has disclosed significant instances where not all important elements of cost are considered in financial reports on programs and activities.

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More and more effort must be devoted to the preparation and use of cost information for controlling operations. The term "cost" refers to the financial measure of resources consumed in accomplishing a specified purpose, such as performing a service, carrying out an activity, or completing a unit of work, or a specific project. Cost information provides a common denominator for the measurement and evaluation of efficiency and economy in terms of resources used in performance. Cost information is essential to making meaningful comparisons. It is needed in keeping costs within limits established by law, regulation, or management policies prescribed for achieving maximum efficiency and economy.

Congressional policy, as expressed in Public Law 84-863, calls for the use of cost information in budgeting and in the management of operations.

The President has called upon the heads of departments and agencies to use responsibility-centered cost-based operating budgets for setting and achieving maximum cost reduction goals. Secretary Udall, in his June 1966 memorandum to you, highlighted the need for greater utilization of cost-based budgeting and reliable accrual accounting in Interior management operations.

Costs of approved programs can mostly be kept within legal as well as administratively imposed limits if the individual in charge of each activity is made responsible, within limits fixed by higher authority in the form of a financial plan, for costs to be incurred because of the activity. Under this procedure, costs can, in most instances, be related to individual decisions. The financial effects of these decisions can be systematically analyzed and reported for review of the cost effectiveness of decision making, particularly if the accountable financial effects of these decisions are recorded as they occur—a process known as accrual accounting.

Another step in reviewing the cost effectiveness of decision making is that of comparing the actual cost of performing an activity for which someone is responsible with cost targets which were believed to be reasonable for performing the activity. The arraying of various program and activity cost targets is known as the operating budget or financial plan. If the financial plan has been established on the basis of obligation or expenditure authority, it usually would not take into account all significant resources necessary to do the

work for which the center doing the work should reasonably be responsible. Accordingly, a direct comparison of the planned and actual performance would be inhibited.

It follows that financial plans or operating budgets should be cost oriented, rather than obligation or expenditure oriented, if it is agreed that responsibility centers should be held accountable for all costs of performing activities for which they are responsible.

Increasing your understanding of the value of using performance standards in decision making and reviewing is another way to increase your cost effectiveness, provided you put this additional understanding to work. Performance standards add what I might term a second dimension to decision making and reviewing.

When comparing cost performance reported for responsibility centers with substantial deviations from financial plans developed on a cost basis, the first question is whether the problem is one of error in the development of the financial plan or whether the problem is focused on the responsibility center in the form of increased cost. If the performance standards are developed and applied as a part of the financial system, the problem usually can be isolated systematically to a performance or budget problem.

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I have spoken today of ways in which financial management systems could be improved with the probability of a higher degree of cost effectiveness in accomplishing programs and activities. The addition of the second dimension to

financial systems by using performance standards and the other matters that have been discussed, however, do not touch directly on the problem of determining the value of programs and activities conducted by Interior. I hope that in the not too distant future a third dimension will be added to governmental financial systems. This third dimension relates to measuring the benefits from doing the work and relating them to the cost performance which will be efficiently, effectively, and economically accomplished with the aid of improved financial management systems.

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Internal Auditing

A discussion of financial management improvement would not be complete without some consideration of the role of internal auditing. Sometimes when managers are pressed for time, and the forward press for new decisions is upon them, evaluation in depth of the efficiency, effectiveness, and economy of their assigned operations is relegated to a secondary role.

Often, we believe, problem areas which are developing are not seen clearly and solutions are not developed until the problems become critical. This is where we believe effective internal auditing can be of material assistance to management. Internal audit review and appraisal, however, should not in any way relieve others in the agency of the primary responsibilities assigned to them for accomplishment of prescribed programs and activities in an efficient, effective, and economical manner.

The purpose of internal auditing is to provide management with in-

dependent, objective, and constructive appraisals of the effectiveness and efficiency with which financial and operating responsibilities of the organization are being performed. In this connection, we believe a forward step has been taken in the consolidation of internal audit activities of the various Interior agencies effective July 1, 1966. This consolidation should result in better and more effective audit performance and should enable broadening of the scope and depth of penetration into operating areas. We shall be watching the results with increasing interest.

Before the Washington Chapter of the Institute of Internal Auditors, November 21, 1966, on "The Growing Importance of Internal Auditing in the Federal Government."

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In speaking on the growing importance of internal auditing in the Federal Government, I want to make it clear that this evolution or growth is not confined to the Government. Internal audit responsibility in industry is also growing in importance. We, in the General Accounting Office, are interested in this function both in the Federal agencies and outside the Federal Government.

In our work, which carries us into the operations of many industrial firms, we have noted a marked increase in the effectiveness of their audit organizations. In our contract audit work, we have found an increasing awareness by industrial management of the value of internal audit organizations. Where their reports have been available to us, we have

found them to be of great assistance. We hope to make even greater use of such reports in the future because they help materially in lessening our work.

Since 1941, the year the Institute of Internal Auditors was organized, internal auditing has made great progress within the Government. Twenty-five years ago few Government agencies had any internal audit functions. By contrast, today all or nearly all agencies have an internal audit organization. Agency managers have come to rely upon internal audit, and the Congress has officially endorsed it in the enactment of various laws.

The first legislative reference to a type of agency audit resembling internal audit was included in the Air Corps Act passed in 1926. This act gave the Secretary of War the responsibility for auditing costs related to certain negotiated contracts in order to purify cost data to be used in the negotiation of future contracts.

It was during the late 1930's and early 1940's that a new concept of audit called "internal audit" became generally known. But it was not until 1949 that the term "internal audit" appeared in any legislation. This was under the 1949 amendment to the National Security Act of 1947. This act provided the legislative basis for the three internal audit organizations that exist today in the military services.

In 1950 the Post Office Department Financial Control Act was passed giving a fourth agency a legislative mandate for an internal audit function.

Finally the Budgeting and Accounting Procedures Act of 1950 defined the responsibilities and duties of the Comptroller General and the executive agencies, giving recognition to the need for internal audit within all agencies of the Federal Government.

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The transition from a "financial" audit to a "functional" or "operational" audit, such as the Department of the Interior has made, is difficult. We are encouraged when we see these achievements. Many of you may recall the statement of responsibilities of the internal auditor, adopted by the Institute of Internal Auditors in 1947. In speaking of the nature of internal auditing, the statement said: "It deals primarily with accounting and financial matters but it may also properly deal with matters of an operating nature." One gets the impression that the Institute was gingerly getting its foot in the door.

Ten years later the Institute revised the statement of responsibilities of the internal auditor by substituting a stronger, more positive statement concerning the responsibility to review operations. This statement sets forth the objective and scope of internal auditing as embracing "any phase of business activity wherein the internal auditor can be of service to management." It is stated that this should involve, among other things, "reviewing and appraising the soundness, adequacy and application of accounting, financial and operating controls." This was in 1957.

Today there is growing recognition on the part of management that the internal auditor can perform a

valuable service in other than strictly financial and accounting areas. It has been a long hard struggle to change traditional concepts, and the job is not completed. Your organization is to be commended for your contribution in this area.

While we can look with pride to the achievements of the past in these days of fast growth, rapid changes in technology, and the ever increasing complexity of Government administration, we must all look to and plan for the future.

The accelerating pace of growth and change in recent years has led to expanding requirements for services from the Federal Government and for Federal assistance to State and local governments. Over the last decade, the population has increased by nearly 30 million. Our standards of living have also increased over those years. As our standards of living increase, we not only desire better private goods and services but we also seek better public services.

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The Vietnam situation dramatizes the magnitude of management responsibility within the Government and of the internal review function. In July 1966, our Office submitted a report to the Congress on our survey of internal audits and inspections relating to U.S. activities in Vietnam. More recently, the House Committee on Government Operations issued its report on an investigation of the United States economic and military assistance program in Vietnam. The investigation was made by the committee's Foreign Operations and Government Information Subcommittee, and it covered such things as

the causes of inflation in Vietnam, corruption in handling the commercial (commodity) import program, use of U.S.-generated local currency, the black market in U.S. commodities including luxury items from the PX and commissary, military construction, and other programs. The subcommittee also covered the audit and investigation programs of the various agencies concerned.

As we all know, much waste, inefficiency, and corruption have been reported in connection with economic and military aid to Vietnam. I will not attempt here to describe all the conditions prevailing under various economic and military aid programs, as reported by the committee, or to pinpoint responsibility. I am mindful of the extremely difficult and unique conditions with which administrators of the programs are faced. However, I do want to refer to the committee's conclusions with respect to audits and inspections. The report stated:

The Foreign Operations and Government Information Subcommittee investigation disclosed that there had been a general abdication of responsibility for the audit and inspection of U.S. programs in Vietnam in recent years. Agency personnel responsible for auditing and inspecting military as well as economic assistance programs overseas had adopted the attitude "there's a war on in Vietnam so let's not rock the boat." Consequently, the extent of the external and internal audit and inspection effort in Vietnam ranged from nonexistent to barely minimal, despite the widespread charges of inefficiency, waste, and corruption in the Agency for International Development program and related areas of the total U.S. program.

I might say, the General Accounting Office did not escape the committee's criticism. We have intensified our efforts in Vietnam.

In commenting on the reforms expected of the General Accounting Office and the various audit and inspection offices within the Agency for International Development, the Department of State, the Department of Defense, the Department of Agriculture, and the U.S. Information Agency, the report stated:

The subcommittee believes that in addition to the immediate changes which it prompted in the surveillance of U.S. programs in Vietnam, a major significant contribution, which will have far-reaching effects in the future, has been the explosion of the prevailing theory that management controls cannot be exercised and effective audit and inspection cannot be performed in times of war and hostility.

The difficulties and unique conditions under which the programs in Vietnam are being administered are equally present, and they must be dealt with in devising and applying audit techniques which fit the circumstances. As far as I know, this is the first time in the history of the United States that internal auditors, or General Accounting Office auditors, have been expected to carry on their activities in or near combat areas. Further, in the shaping of audit programs, the unique positions of the military and civilian activities being conducted in the role of assistance with their attendant limitations must be appropriately recognized.

These problems are illustrative of the growing importance and the related growth problems of internal auditing in the Federal Government.

In our observations of the agency internal audit activities, we have noted indications that internal audit reports do not always receive the degree of attention by top management that they

should. I am sure that many of you here tonight will agree on that point. We likewise feel that our own role is not always sufficiently understood. One notable example was a report made by a firm commissioned by NBC News for its televised special report entitled "Congress Needs Help." You may have seen the television broadcast which was based on this report. The first broadcast was made a year ago.

The published report on which the telecast was based stated:

(a) Financial management has progressed a long way since 1921, when Congress set up the General Accounting Office (GAO), but Congress has done little to bring itself abreast of the times.

(b) Auditing, which tests conformance of operations to policy and law, on the one hand, and tests for dishonesty or abuses, on the other, is amply taken care of by the GAO and overseen by the Committees on Government Operations of the two Houses of Congress.

(c) But auditing does not test the validity and consequence of plans, programs, and policies. It does not illuminate discussions in these areas or project the consequences of alternative courses of action. In modern business these are the functions of the financial vice president or controller. They are based on the profession of controllership.

The report goes on to say:

(e) Congress has only the most limited controllership resources today. The GAO had been trying to add to its services some of the analyses one would expect under a controllership function. Nevertheless, this movement cannot be expected to give the Congress what it needs because:

(1) Industrial experience has demonstrated that those who are best suited for auditing operations for conformance to policy and regulation are not suited to the evaluation of new ideas and untried plans. Thus, in industry these are usually separate functions.

To set the record straight, let me say that the author of the report appears to have had a somewhat narrow view of the actual role of the General Accounting Office. Although we may test the conformance of operations to policy and laws, we do not stop there. We are not inhibited from evaluating operations from a standpoint of economy and efficiency and from recommending changes in laws and regulations where conformance to existing laws and regulations would otherwise result in inefficiency. As for testing for dishonesty and abuses, this we do; but when there are indications of violations of Federal criminal laws, we promptly turn the case over to the Department of Justice.

The statement that our auditing does not test the validity and consequence of plans, programs, and policies is less than accurate. As you well know, this is an area where we have not feared to tread. We have made cost-effectiveness studies for the purpose of recommending choices between alternative plans and programs or of evaluating plans and programs already initiated. We consider this to be a proper role for the General Accounting Office.

On several occasions, at the request of Members of the Congress or of congressional committees, we have reviewed proposed plans and programs of the Department of Defense in terms of the long-range effect of such plans. These reviews have included plans to consolidate or curtail activities and to move other activities from one geographic location to another. Our work in these cases involved tests of the assumptions and conclusions of the agencies in mak-

ing their forecast of the cost effectiveness of such plans.

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In much of our work we look for alternative methods of operation in the interest of efficient and economical management. Therefore, many of our reports of the past have dealt with cost effectiveness in varying degrees.

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Certainly one of the most critical problems we all face today is acquiring and maintaining a highly professional staff. As Government and industry operations become increasingly complex, increasing demands are being made on accountants and auditors. As a result of increased attention to their professional stature and abilities, there emerges the need for further professional development. * * *

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Automatic data processing systems have become a way of life in most of our major Federal agencies. As their use becomes increasingly prevalent, auditors and systems people are faced with the problem of testing the validity of the programmed input. This is necessary in order to be satisfied that the output is accurate and that it achieves the results desired. It seems quite evident that internal auditors will not only have to be well trained but also will have to be included as members of the team designing a computerized management information system in order that audit trails can be built into the system for future internal review purposes.

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Upgrading the technical skills of our staffs is essential to our livelihood and prestige and to our continued effectiveness. I hope for a successful joint effort in giving our staffs the kind of training they need to keep abreast of the rapid technological growth in automatic data processing systems. If this is as successful as I anticipate it will be, I believe that consideration might profitably be given to a cooperative effort in the training of accountants and auditors in such other fields as economics, mathematics, statistics, behavioral science, contract administration, and the art of writing, to name a few. The primary point is that qualified personnel cannot be hired to fulfill the increased demands on our staffs and that, with the growing complexity of large Government programs and related management problems, dynamic inter-agency training programs are going to be more and more needed.

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Finally, now that it is generally accepted, within our own profession at least, that internal auditing is not confined strictly to accounting and fiscal matters, it seems to me that the make-up of our staffs need not be confined to accountants and auditors as we conventionally think of them. In addition to utilizing the talents of our legal staffs, it seems to me that we should give serious consideration to utilizing the talents of those in other fields—economists, engineers, statisticians, management specialists, actuaries, and possibly others. Why? Because it is difficult to imagine a technical field in which the Government, in one manner or another, is not involved.

We need this expertise to help evaluate Government programs. How many auditors having the responsibility of reviewing a large construction project would not have longed for the advice and counsel of an independent construction engineer! In some cases we might do well to hire these services on a consulting basis. But where the need is great, I see nothing wrong with acquiring these technical skills by hiring such technicians and placing them on the internal audit team or by making them available as specialists to assist and advise the accountants and auditors.

In closing I want to leave this thought: There is no question that a rapid advance in technology is taking place in both commercial and Government activities. To survive, the internal audit activity must keep pace with this growth. Let's not fall short by failing to exploit new ideas for acquiring and updating staff capability for this challenging job. The General Accounting Office is vitally interested in the growth and effectiveness of internal audit organizations both within and outside the Federal Government. We stand ready to support you and to help you in any way we can with your specific problems.

Overseas Activities of the General Accounting Office

An article in the Fall 1966 issue by Charles D. Hylander, Deputy Director, International Division, outlined the development of GAO overseas activities and described current staffing arrangements for overseas assignments. The following two articles were contributed by staff members of the New York regional office who participated in such assignments.

the world's largest church; is built over the tomb of St. Peter; took the combined genius of such giants as Bramante, Raphael, Bernini, and Michelangelo to complete; overlooks a piazza that has reverberated with the sound of hundreds of thousands of the faithful greeting their Pope with shouts of "Viva Il Papa," and houses some of the world's greatest artistic masterpieces too? The true beauty and splendor that is St. Peter's cannot be described, for it is an emotional experience. It is the overpowering enchantment realized upon seeing Michelangelo's incomparable Pieta and the equally matchless frescoes he painted on the ceiling of the Sistine Chapel. It is the heartfelt sorrow sensed when kneeling and saying a prayer at the tomb of the beloved and saintly Pope John XXIII. It is the soul-stirring exhilaration felt when a fantastic view of Rome is perceived from the top of St. Peter's. It is the delightful thrill experienced when looking at the many superlative multi-colored marble, glass, and stone mosaics. It is the sublime serenity received from the pious atmosphere permeating from the Basilica's multitude of consecrated altars and larger than life-size hallowed statues. These are but a few of the reasons why the absolute grandeur, dignity, and excellence of St. Peter's can only be captured through a spiritual involvement.

I also saw the churches of St. John Lateran and the Holy Cross of Jerusalem. The Basilica of St. John Lateran, another masterwork of architectural elegance, is the oldest and the mother church of Catholicism. These churches are of especial interest be-

cause they contain some brilliant marbles, frescoes, mosaics and, of more importance, some of Christianity's most solemn and priceless relics. The relics, a veritable treasure, include the cedarwood used by Christ at the last supper, the "Scala Santa" (stairs) walked on by Christ when he entered the palace of Pontius Pilate, fragments of the cross and a nail, utilized in the crucifixion, and the finger of doubting Thomas which touched Christ's wounds. These sacred mementos took on an added meaning for me, for I was about to leave Rome for Jordan and the opportunity to visit the cradle of Christianity as well as see the actual sites where the historical events that gave rise to the venerated relics took place.

So, with a heavy heart, somewhat lightened by the legend of the Fountain of Trevi, I left the incredible wonders of Rome for Amman, Jordan, and the audit which made the Roman interlude possible.

I would like to say that the GAO staff is very fortunate, from a professional as well as a personal point of view, in having the opportunity to participate in overseas assignments of comparatively short duration. Using my own experience as a criterion, I heartily recommend to each staff member that he accept a temporary overseas assignment, at least once. I am sure that the thrills, excitement, satisfaction, and happiness experienced in the first assignment will create a desire to participate in others. I never imagined that an audit in Jordan could possibly lead to a tour of Rome—the realization of a never-ending wish. Who can say what surprises will be in store for you?

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Overseas Assignment in Africa

By James J. Grace

The United States General Accounting Office on occasion requests that its professional staff participate in overseas assignments. During the autumn of 1965, I participated in an overseas assignment in West Africa which involved the economic assistance programs in Mali and Dahomey.

The Republic of Mali, formerly the French Sudan, is a land-locked country bounded on the north by Algeria; on the east by Niger; on the south by Upper Volta, Ivory Coast and Guinea; and on the west by Senegal and Mauritania. The population of Mali is approximately 4.5 million, and its capital city is Bamako. The Sahara Desert extends over about one half of Mali, and the climate is thus generally hot and dry. Most of the country is covered by semiarid scrub, but there are grasslands in the more moist southern part.

The majority of the people in Mali are Moslem. The economy of Mali is based chiefly on agriculture, but there is some fishing. Rice, cotton, fruits, vegetables, millets and corn, and sesame are cultivated. Peanuts are grown for export, and small quantities of cattle, cotton, hides, and shea nuts are also exported. Industry developed after World War II, but it is restricted to processing of raw materials, chiefly in Bamako. Gold and salt are mined, and iron is extracted for local use. The highways of Mali are not well developed, and caravan routes connect with Algeria and Mauritania. During the rainy season the Niger river is navigable for small craft. The Mali Federation, which was composed of former French Sudan and Senegal, gained its independence in June 1960, but the alliance ended in August 1960. French Sudan assumed the name of

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Reminiscences of a Temporary Overseas Assignment

By Vincent Grimaudo

When I was first interviewed for a possible appointment with the General Accounting Office, I was told my assignments would be challenging, interesting, and diversified. At the time, little did I suspect how prophetic this comment would turn out to be. The work I have done has certainly been:

challenging—to the point that at times I doubted my ability to perform the required tasks;

interesting—to the degree that on occasion I have been motivated into performing independent research on the subject under review;

diversified—to such an extent that my assignments have run the gamut from assisting in a review of the Air Force's management of the Atlas intercontinental ballistic mis-

sile program to a review of our program for foreign aid to Jordan.

I gained tremendous professional satisfaction from these assignments because I became involved in reviews of current Government programs which have had, and will continue to have, significant impact on world affairs as well as on the future course of history.

However, in this article, I would like to limit my comments to recollections of some of the personal or collateral pleasures I experienced in connection with a temporary overseas assignment in which I was fortunate enough to participate. I was able, while in a travel status, to visit Rome and Beirut and, during my stay in Jordan, to see all the sites where the Christian cycle took place—from

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Christ's birth to his passion and resurrection.

My itinerary provided for a 2-day stay in Rome before proceeding to Jordan and for a 2-day stay in Beirut upon leaving Jordan for home.

I expected my stopover in Rome to be a discovery of the Eternal City. Instead, it proved to be a remembrance of all my previous vicarious trips to Rome through the medium of imagination nourished by books, magazines, television, and motion pictures.

The Fountain of Trevi now gained a new dimension, one of reality—I could watch Neptune's horse straining at the traces, feel the cool water gushing from the falls, and join the crowd tossing coins into the fountain, thereby, as legend would have it, ensuring my return.

As every visitor of Rome should, I visited the flowerless Garden of Tivoli in the Villa D'Este. If you could imagine an aquatic extravaganza of water—sometimes cascading forth, sometimes rising, sometimes falling, and sometimes just trickling—from about 1,500 magnificent fountains of all sizes and shapes, then you might have some inkling of what the garden is like. To describe it as a spectacular symphony in water would not be embellishing a truly beautiful sight.

The Forum was no longer just the setting for one of the many motion pictures I have seen about imperial Rome. It gave the ancient city of Caesar, Cleopatra, Cicero, and the capital of civilization a new life. The rubble of stone on my right was restored to its former eminence as the Senate House where I could hear the voice of Cicero expounding his views

before the Roman Senate. The ruins on my left took the shape of the House of the Vestal Virgins, where, if a male was found within its walls, the punishment was death.

As I looked down the Forum, I could see thousands of Romans heading for the Colosseum to witness the day's gladiatorial combats. The feature attraction was a fight to the death between two undefeated champions, one from Sicily and the other from Macedonia. As if being drawn by a magnet, I followed the crowd filing through the archways. The thrills and excitement anticipated from the combat in the main attraction aroused such intense interest that Julius Caesar decided to attend the day's program. Seated with him in the Royal Box were Mark Antony and Cleopatra. I sat and watched as the gladiators arrived and marched around the arena acknowledging the thunderous roar of the crowd's enthusiastic approval. When the gladiators reached the Royal Box, they stopped and I could hear them in unison cry aloud, "Hail Caesar, we who are about to die salute you." Since my sporting blood runs more toward being a spectator at a baseball or football game and because I wasn't about to watch anyone die, I left the arena before the program began. The program, like most events in the Colosseum, involved the wholesale slaughter of man and beast alike.

I could feel a tremendous surge of excitement as I left the Colosseum and headed for the fulfillment of a lifelong dream, seeing the awesome and inspiring St. Peter's Basilica.

How can anyone give a realistic verbal portrait of an edifice which is

Mali and became an independent republic in September 1960.

The Republic of Dahomey borders on the Atlantic Ocean in the south and is bounded by Niger on the north, Nigeria on the east, and Togo and Upper Volta on the west. The population of Dahomey is approximately 1.6 million, the majority of whom are Moslem. Dahomey extends in a narrow strip from the Niger River in the north to the coast, a distance of about 450 miles. The coast, which is about 70 miles in length, is flat and bounded by lagoons and swamps. The average year-round temperature in the south is 80° F., and the average annual rainfall varies from 30 inches in the north to 50 inches in the south.

The economy of Dahomey is based on agriculture. Forest products, particularly palm kernels and palm oil, are important. The main economic crops are cotton, peanuts, shea nuts, and coffee. Subsistence food crops of corn and yams are grown throughout the area and raising livestock is a major occupation in the north. The capital of Dahomey is Porto-Novo, but the city of Cotonou is the major port and the economic center of the country. French conquest of Dahomey began in 1894, but the people resisted French rule until 1904 when the area was made part of French West Africa. Dahomey joined the French Community in 1958 and became an independent republic in August 1960.

Since Mali and Dahomey received their independence from France, the United States had been giving them assistance under the direction of the Agency for International Development (AID). From several discussions

with AID representatives, it was learned that France still contributes a significant amount of assistance to both countries in the form of budget support. France also sends teachers to many of its former colonies where they can teach for 2 years in lieu of military service. Russia and Communist China also contribute aid to Mali and Dahomey.

U.S. assistance has taken primarily two forms: roadbuilding and improvement and vehicles for use by the law enforcement agencies and public health agencies. Since the economy of both Mali and Dahomey is based primarily on agriculture, the United States decided to provide them with roadbuilding equipment to build new roads and improve existing roads so that people who lived in remote and distant sections of the country would be able to transport their products to a market. The law enforcement agencies, in order to effectively carry out their responsibilities, needed vehicles to provide better police coverage of the country, which was virtually impossible with the equipment they had prior to United States assistance. Also the public health agencies required more vehicles to treat those people who lived in remote sections of the country and to effectively combat disease.

One problem I encountered while in Mali and Dahomey was my inability to speak or understand French, the official language of both countries. This lack complicated our communications problems not only in living and moving about but also in our audit work when we were required to interview local government officials. I believe that when the GAO sends

an audit team to a foreign country, it will be to our advantage, whenever possible, to have at least one member who is knowledgeable in the country's official language.

I experienced a new way of life during my stay in Mali and Dahomey. Each day presented new problems and new adventures. I found getting through the customs officials of the two countries to be complicated. It wasn't altogether the language problem, since representatives of the United States Embassy or AID Mission met us at the airport. Even with their assistance, passports, visas, health certificates, and luggage were examined at length. Because we were exhausted from the long trip and the heat of day, it seemed that an eternity had passed before we were officially allowed to enter the country. This procedure was repeated upon our departure from each country.

During my stay in Mali and Dahomey the embassy provided us with transportation to and from work. However, on occasion a taxi was the only means of transportation available to get to a desired location. The similarity between taxi drivers in Mali and Dahomey and taxi drivers in New York is remarkable; they both drive with the accelerator on the floor, one hand on the horn, and a disregard for anyone or anything who may be in front of them. This situation is more tense in Mali and Dahomey, since their streets are narrower and usually more crowded with pedestrians. Because of the language barrier I would always determine in advance some standard location which I hoped would be known by the driver. If this did not work then I relied on

hand signals which usually proved to be effective.

The currency of each country also presented some problems. In Mali, the Malian franc is the acceptable currency and it is only good for use within Mali. Dahomey uses the C.F.A. (central franc area) franc which is acceptable in many West African countries. The exchange rate for both countries was approximately 245 francs to the United States dollar. Every time I made a purchase I would automatically convert francs to cents usually by multiplying by four and pointing off three decimal places which approximated the dollar and cents equivalent.

Visitors to such countries as Mali and Dahomey must recognize, as they would in most foreign lands, that their systems may not be tolerant of native food and its preparation or of the local water supply. The reason for this is that these countries usually do not have Federal or other inspection groups that concern themselves with the quality and standards of hygiene and sanitation that we have come to recognize as routine. Therefore, along with most other visitors, I found it advisable to have meat well cooked and to buy bottled water. The term for "well done" soon became an important part of my French vocabulary. Also I soon learned that water is an expensive commodity in both Mali and Dahomey.

One of the more difficult things to become accustomed to was the French dining customs, which prevailed in the restaurants of Mali and Dahomey. The evening meal was usually served from 8 p.m. to 11 p.m. and consisted of wine, bread, soup, appetizer, a

main course, salad, cheese, dessert, and coffee in that order. I broke all tradition by dining at 7 p.m. and by only eating about a third of the above meal.

For a visitor, the cost of living in Mali and Dahomey is very high and, I believe, higher than in most parts of the United States. This is surprising because the average income of a native of Mali or Dahomey is about \$100 to \$200 a year. In Mali I paid almost \$20 a day in what would be considered a second-rate hotel by U.S. standards. Laundry bills for one week amounted to anywhere between \$6 and \$8. A bottle of water cost \$1.20 and a pack of United States cigarettes cost 80 cents, when obtainable. However, per diem rates of \$32 and \$25 in Mali and Dahomey, respectively, adequately covered our expenses.

American newspapers were not available in Mali. However, news-magazines such as Time and News-week could be obtained, but they were usually a week late. We were able to buy newspapers in Dahomey but also about 1 week late.

One thing which impressed me was the popularity of the late President Kennedy. I noted that, in a local village which I visited, a street had been named in his honor. I also learned from an American working in Africa for a relief agency that many villagers in remote parts of the country have pictures of the late President on the walls of their huts. Along a similar vein, Dahomey has commemorative stamps honoring Abraham Lincoln and Winston Churchill.

In Dahomey we stayed in a motel which was located approximately 100

yards from the Atlantic Ocean. Dahomey, because of its 70 miles of coastline and natural beach, has potential for becoming an outstanding resort country. I could not help making a comparison of the beaches in Dahomey where I could look for miles without seeing another person with the beaches in the United States where millions of people congregate during the summer months. Visitors to Dahomey should make a point to visit the "Village on Stilts" which is located over a lagoon about 10 miles north of the city of Cotonou. History has it that these people built their village over a lagoon to defend themselves against a rival enemy tribe. The canoe is their chief means of transportation. Tourists are most welcome to visit the village, and motorboats are available to transport visitors to this unusual site for about \$1. One might refer to this village as the Venice of Africa. Two highlights of this visit were stops at a local restaurant where refreshments and souvenirs could be purchased for a nominal fee and at the hut of the village chief who welcomed us to his village and was insulted if we did not purchase something from him.

In Mali, a place everyone must visit is the town of Timbuktu which I am sure everyone has heard of at one time or another. Timbuktu is located in central Mali and is the great caravan center of the west central Sahara. Timbuktu has European-type streets, schools, churches, and other buildings. An American tourist visiting Africa told us that when she purchased her tickets from a travel agency in the United States she was informed by the agent that she was the

first person in the history of that agency to buy a ticket to Timbuktu even though that same agency used Timbuktu as part of its advertising campaign. As a result, her picture appeared in the local newspaper.

Another interesting aspect of my trip to Africa was the number of merchants in both Mali and Dahomey who travel the streets of the larger cities selling African art to tourists. It seemed that everywhere I turned a merchant was always there whether I was eating in a restaurant or relaxing on the beach. These natives loved to bargain over the price of their goods, and even though most of them could not speak English they understood such phrases as 1 dollar, 5 dollars, 10 dollars, too much, or too little. I

was advised in advance that the standard procedure was to take half the asking price and divide by two in order to arrive at a reasonable price. I learned that, once I stated what I was willing to pay, the merchant would usually agree to that price even though at times it took almost an hour for him to agree.

My experiences on this assignment in West Africa not only were rewarding and valuable in themselves but also led me to a better appreciation of life in the United States, something most of us take for granted. For anyone in the GAO who has the opportunity to travel overseas on an assignment such as this, I would strongly recommend it as a memorable experience.

Use of Learning Curves in Contract Audits

By Arnett E. Burrow

The author explains the basic features of learning curves and makes some observations concerning their use by GAO auditors.

Labor and related overhead cost estimates often comprise such a significant portion of the total costs of negotiated contracts that an evaluation of their reasonableness must be made by auditors reviewing the negotiations. The labor cost estimates included in such contracts are frequently derived by the contractor by projecting recently experienced costs or estimated starting costs on learning curves. To a lesser extent, learning curves are also used in estimating the cost of materials and other costs.

It is the purpose of this article to introduce some of the basic features of learning curves in the belief that an understanding of this cost estimating technique will assist GAO professional staff members in reviewing the ap-

parent reasonableness of estimated costs included in negotiated contracts. In the Kansas City regional office we have found an understanding of learning curves to be particularly helpful in our work.

Although the interest of the Kansas City regional office in learning curves has been primarily in connection with their use in evaluating the reasonableness of estimates included in negotiated contract prices, learning curves are used by Government contractors for a number of management purposes. One of the more important of these is their use as a cost control device. For example, such curves are used in budgeting production man-hours by department, in measuring departmental efficiency, and in

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evaluating subcontractor price proposals. They are also used in estimating requirements for plant capacity. In conjunction with production schedules, they provide a measurement of the contractor's ability to meet contract delivery dates with his present plant and manning, and indicate the extent that his labor force or facilities may have to be expanded or reduced.

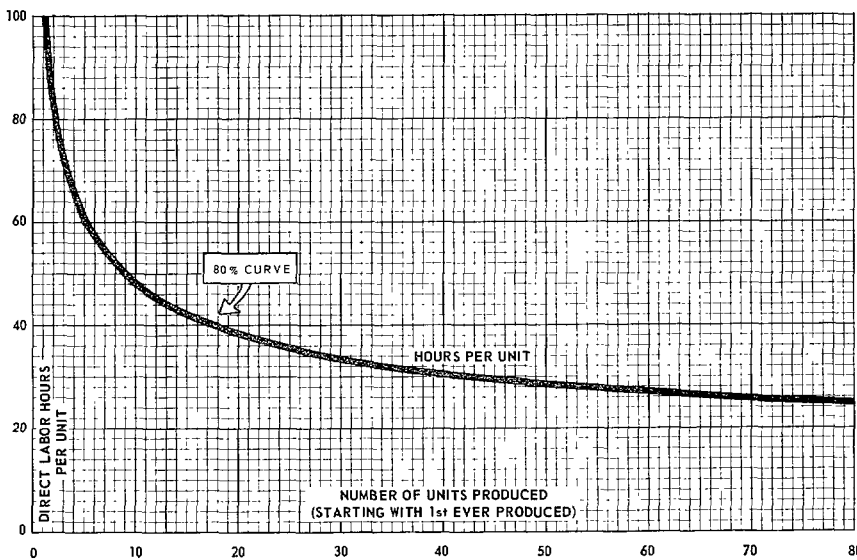
Learning curves are used on the assumption that the labor hours required for successive items in the fabrication and assembly of similar complex items can be expected to decrease at a reasonably regular and predictable rate. Actual industrial experience confirms the reasonableness of this assumption. Factors affecting the rate of decrease include improved human efficiency from repetitive operations, improvements in tooling and manufacturing methods, and stability of design.

Statistical concepts and mathe-

matics involved in the use of learning curves for estimating are somewhat complex, but an adequate understanding of the tools needed for evaluating estimates made with such curves can be acquired with a reasonable amount of study. An understanding of the rules for the use of logarithms is necessary for a thorough understanding of the mathematics involved. Accordingly, it is suggested that such rules be reviewed if necessary.

Statisticians have found that the labor hours required for successive production units tend to decrease rapidly for the early units produced and gradually level off. Data on such hours plotted on plain graph paper shows a curve that is steep for the early units and nearly flat after a sizable number of units have been produced.

The following illustration is typical of the shape of such a curve on ordinary graph paper.



The Logarithmic Graph

A curve with a shape such as that illustrated above would have limited usefulness as an estimating device. Not only is such a shape difficult to fit to actual data, but because of its constantly changing slope it provides only limited guidance as to the hours to be experienced for follow-on production units. However, the logarithms of labor hours plotted against the logarithms of successive production units tend to fall along a straight line. Fortunately, logarithmic (log log) graph paper is readily available which makes it possible to plot such data without constant reference to log tables. By plotting the data on log log paper the effect of plotting logarithms is achieved without looking up the logarithms.¹

Estimates for follow-on production are made by plotting unit or cumulative average labor hours, labor costs or other costs² on log log paper in the sequence that the items were produced, and fitting a straight line to the data. An extension of the straight line through the additional quantities to be produced represents the estimate for the follow-on production. Methods for fitting the straight line are discussed later.

The estimate for follow-on production may be made by reading a value

¹ This is possible because the paper is ruled so that the distances between assigned values are proportionate to the differences between the logs of the values. For example, in exhibit I the distance between 1 and 2 is the same as the distance between 2 and 4, between 4 and 8 and so on, and the logs of the numbers 1, 2, 4, and 8 are 0, 0.30103, 0.60206, and 0.90309, each log increasing the same, or by 0.30103.

² Although trends of labor costs and other costs are frequently determined in this manner, the most important use of such curves is for determining labor hour trends which are more closely correlated with increases in the quantity produced.

from the line. However, small errors in fitting the curve or reading the value can be significant. For example, if the curve represents man-hours per pound, one-half man-hour represents 25 percent of a value read as 2 hours per pound. Moreover, such a small difference is difficult to detect from an inspection of the graph, particularly near the right hand margin or top of the graph where values are relatively large. Therefore, the estimate should usually be computed.

Computing the Estimate

For convenience in computing estimates, tables of factors for curves generally used are available in the Kansas City regional office and can be reproduced if not otherwise available. Similar tables should be available at any aircraft manufacturing plant. Unit and cumulative average factors for the curve selected are the fractions of hours (or dollars) for successive production units in relation to each hour required for the *first unit*. For labor hours, the rate of the curve selected will generally range between 70 percent and 90 percent, with 80 percent being fairly typical of industry experience. Such rates are expressed as complements of the percent of decrease in cumulative average or individual unit factors each time the cumulative quantity is doubled. For example, on an 80-percent learning curve, the factor is 0.800 at unit two, which is decreased by 20 percent to 0.640 at unit four, which is decreased by 20 percent to 0.512 at unit eight, and so on.

Tables are available for two basic theories in common use. One theory (theory A) involves the assumption that the data forming a straight line (the learning curve) should represent cumulative average hours, the other (theory B) that the data should be the hours required for individual units. The assumption in theory A is that in producing a series of like items including the first production unit, the cumulative average hours per unit for a given quantity will be a fixed percentage (80 percent in the table which

follows) of the cumulative average hours per unit for the first half of that quantity. The assumption in theory B is the same except that the percentage represents the ratio of the individual unit hours for the last unit of the given quantity to the hours for the last unit of the first half of that quantity.

Factors for unit, cumulative average, and cumulative values for an 80-percent curve under the two theories are compared at units 1 through 10 in the following table.

Cumulative units	Theory A factors—average is straight line			Theory B factors—unit is straight line		
	Individual unit (2)	Cumulative average (3)	Cumulative (4)	Individual unit (5)	Cumulative average (6)	Cumulative (7)
1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
2	.600000	.800000	1.600000	.800000	.900000	1.800000
3	.506312	.702104	2.106312	.702104	.834035	2.502104
4	.453688	.640000	2.560000	.640000	.785526	3.142104
5	.418185	.595637	2.978185	.595637	.747548	3.737741
6	.391913	.561683	3.370098	.561683	.716571	4.299424
7	.371330	.534500	3.741428	.534500	.690561	4.833924
8	.354573	.512000	4.096001	.512000	.668241	5.345924
9	.340546	.492950	4.436517	.492950	.648764	5.838874
10	.328552	.476510	4.765099	.476510	.631538	6.315384

The factors in columns (3) and (5) were computed by substituting 1 for a , cumulative units for X and 0.321928 for b in the formula $Y = \frac{a}{X^b}$. This is the formula for a descending straight line on log log paper where:

Y = values on the vertical axis (labor hours)

X = values on the horizontal axis (production units)

a = value of Y when X is 1

b = the curve exponent

The exponent for a curve of any rate can be determined from the formula

$$b = \frac{2 - \log r}{0.30103} \text{ where } r = \text{the rate of the curve.}$$

The exponent for the 80-percent curve was determined as follows:

$$b = \frac{2 - \log 80}{0.30103} = \frac{2 - 1.90309}{0.30103} = 0.321928$$

The factors in the other columns were computed as follows:

Col. (2) = increase in col. (4).

Col. (4) = col. (3) times cumulative units.

Col. (6) = col. (7) divided by cumulative units.

Col. (7) = cumulative total of amounts in col. (5).

Notice that the cumulative average factors in column (3) for theory A are the same as the individual unit factors in column (5) theory B. Since the factors in these two columns decreased by 20 percent each time the cumulative quantity is doubled, the table contains factors for 80-percent learning curves.

Most published tables contain factors computed to at least six places for about 1,000 units. However, assuming that 5,376 hours have been experienced in producing two units, use of the factors shown in columns (4) and (7) of the above table for estimating the hours for two additional units is demonstrated below.

Theory A:

Estimated hours for first unit—

$$\frac{5,376 \text{ (total experienced hours for 2 units)}}{1.6 \text{ (cumulative factor for 2 units)}} = 3,360$$

Estimated hours for 4 units—

$$3,360 \text{ times } 2.56 \text{ (cumulative factor for 4 units)} \dots \dots \dots = 8,602$$

Estimated hours for the 2

$$\text{additional units} \dots \dots \dots 8,602 - 5,376 = 3,226$$

Theory B:

$$\text{Estimated hours for first unit} \dots \dots \dots \frac{5,376}{1.8} = 2,987$$

Estimated hours for 4

$$\text{units} \dots \dots \dots 2,987 \text{ times } 3.1421 = 9,385$$

Estimated hours for the 2

$$\text{additional units} \dots \dots \dots 9,385 - 5,376 = 4,009$$

Note that an 80-percent curve projected from a given value produces a significantly higher estimate under theory B. However, a curve properly fitted to data under either theory may produce acceptable results, and both theories are widely used by industry and by Department of Defense agencies. The basic theory used by the contractor should be reviewed by the auditor, and it should be recognized that given data will indicate a slower rate of decrease under theory A.

The graphs shown in exhibits II and III were prepared from the same data. However, the graph in exhibit II shows a 74.39-percent curve determined on the basis of hours experienced for individual units while the graph in exhibit III shows a 79.7-percent curve determined on the basis of

cumulative average hours. The estimates shown were made using factors from 75 percent and 80 percent learning curve tables respectively. In this case, theory A produced an estimate that is about 103½ percent of the estimate produced by theory B. This difference in the estimates would generally be considered as relatively insignificant, and either estimate would therefore be acceptable.

The Scatter Diagram

Initial orders for new items for which no production experience is available are frequently estimated on the basis of man-hours per unit initially experienced by the contractor or by others in producing items of comparable complexity, and an assumed

curve. say 80 percent which is fairly typical of industry experience. As a general rule, firm prices should not be negotiated on this basis unless the orders are relatively small in fairness to both the buyer and seller. For follow-on orders, the curve would ordinarily be selected on the basis of a scatter diagram obtained by plotting experienced hours on log log paper in the sequence of the units produced. A curve selected on the basis of such a diagram would be assumed to be representative of the contractor's continuing ability to improve his productive efficiency. Of course the auditor is interested in the reasonableness of such assumptions in the light of the particular circumstances and typical learning curves for the industry.

Data for the scatter diagram may be available for individual units or for lots of 10, 20, 30 or more units. Under theory A the cumulative averages should be obtained and plotted at the end of each lot. Under theory B, however, the average of each lot should be plotted at the lot midpoint, the unit which theoretically represents the average unit of the lot on the curve. This unit can be determined by a rule-of-thumb method on the assumption that the unit occurs at about one-third of the initial lot and about one-half of subsequent lots. However, if the lots are large, the rule-of-thumb method can result in significant error, particularly in projecting on the unit curve to the midpoint of a follow-on contract. Greater accuracy can be obtained by estimating the rate of the curve (say 80 percent) and determining a factor for the midpoint through the use of a table

of factors. The factor is a result of the expression $\frac{(F_2 - F_1)}{n}$ where:

F_1 = cumulative factor at the end of the preceding lot

F_2 = cumulative factor at the end of the lot being plotted

n = number of units in the lot

For example, the midpoint of a lot comprising units 4 through 10 can be determined using the table on page 38 as follows:

$$\frac{6.315384 - 2.502104}{7} = 0.544754$$

Inspection of the column of unit factors shows that this factor occurs about half way between units 6 and 7, in this case about the same as the midpoint determined by the rule-of-thumb method since the lot is small.

The plot points will tend to be more scattered when individual unit values are plotted since averaging tends to smooth the data. This can be seen by comparing the scatter diagrams in exhibits II and III which were prepared from the same data. However, *averaging also tends to submerge variations attributable to changes in the product which should be considered as starting a new series.* Inspection of the unit value scatter diagram may disclose that a portion of the data plotted is for units that are not similar to the units yet to be produced.

Such a diagram is shown in exhibit I. The auditor has circled the plot points for the units which are similar to the models to be produced. Contrast this diagram with the diagram in exhibit II, which shows the data for the similar units repositioned at the beginning of a series of similar

models. Although the points on the latter diagram are scattered to some extent, the general trend of the experienced hours is easily observable.

Finding the Curve of Best Fit

If the plot points are relatively uniform, the line may be fitted with reasonable accuracy by simply drawing a line that seems best to divide the plot points. If the plot points are scattered, however, more confidence can be placed in a line of best fit determined through "least squares analysis." By such analysis the curve can be placed so that the sum of the deviations and the sum of the squares of the deviations above and below the curve are less than they would be if the curve were in any other position. The analysis involves the use of two equations which can be solved simultaneously. The equations are:

$$\begin{aligned}\Sigma Y^1 &= N a^1 + b \Sigma X^1 \\ \Sigma X^1 Y^1 &= a^1 \Sigma X^1 + b \Sigma (X^1)^2\end{aligned}$$

Where: Σ means a sum of the values for all plot points

X^1 = log of the number of units

Y^1 = log of the number of hours represented by each plot point

N = the number of plot points

a^1 = the value of log Y when log X is 0 (when $X=1$)

b = the curve exponent

Use of the equations is demonstrated in the case study below.

Methods of Determining the Rate of the Curve

After a learning curve has been fitted to the plot points, either by sight or by "least squares analysis" the rate of the curve can be determined in a number of ways.

1. The rate of the curve can be read through the use of a commercially available protractor.
2. A straight line parallel to the curve can be constructed using two drafting triangles to pass through units 1 and 2, 10 and 20, or 100 and 200, and read at units 2, 20, or 200.
3. A value can be read from the curve for a given quantity (X) and for twice that quantity ($2X$) and the rate determined by dividing the second reading by the first

$$\frac{Y_2}{Y_1}$$

4. If the exponent of the curve is known,³ the rate can be determined by the formula $r = \text{anti-log } 2 - 0.30103b$

where r = the rate of the curve

b = the curve exponent

Use of this formula is demonstrated in the following case study.

Case Study

The graph in exhibit I shows a labor hour estimate for 87 units. The estimate was prepared by a Government contractor and accepted by an agency on the basis of data experienced for 75 units. The scatter diagram indicates that data on the later units are not homogeneous with the earlier data. An examination into the nature of the data disclosed that

³ If the curve has been fitted by least squares analysis the exponent will have been developed. If not, the exponent can be determined as follows:

1. Obtain two readings from the curve (X_1) (Y_1) and (X_2) (Y_2)

2. Obtain the logs of the X and Y readings and solve for b in the following formula:

$$b = \frac{\log Y_1 - \log Y_2}{\log X_1 - \log X_2}$$

only 30 of the earlier units were the same as the later units and the units still to be produced. The auditor also found that 30 additional units were produced following the contractor's proposal but about 3 weeks prior

to the negotiation. Accordingly, the auditor prepared the scatter diagram shown in exhibit II, using only the data for the 60 similar units, and fit a curve to the data by least squares analysis. The analysis follows.

X unit No.	Y labor hours	X ¹ (log X)	Y ¹ (log Y)	X ¹ Y ¹	(X ¹) ²
1	18,800	0.00000	4.27416	0.00000	0.00000
*	*	*	*	*	*
*	*	*	*	*	*
*	*	*	*	*	*
60	3,410	1.77815	3.53275	6.281759	3.161817
Totals		81.92010	220.60116	297.339620	120.878144

Substituting in the first equation ($\Sigma Y^1 = Na^1 + b \Sigma X^1$)
 $220.60116 = 60a^1 + 81.92010b$

Substituting in the second equation ($\Sigma X^1 Y^1 = a^1 \Sigma X^1 + b \Sigma (X^1)^2$)
 $297.339620 = 81.92010a^1 + 120.878144b$

The exponent was determined by multiplying $\frac{81.92010}{60}$ times the first equation and subtracting the results from the second equation as follows:

2d equation		297.339620 = 81.9201a ¹ + 120.878144b
1st equation times $\frac{81.9201}{60}$		301.194485 = 81.9201a ¹ + 111.848380b
Remainder		-3.854865 = 0 + 9.029764b
		-0.42691 = b

By substitution in the first equation:

$$220.60116 = 60a^1 + (81.9201)(-0.42691)$$

$$60a^1 = 220.6016 + 34.97521$$

$$a^1 = 4.25956$$

Estimated unit number 1 hours = antilog 4.25956 or 18,180

Estimated unit number 10 hours = $\frac{18,180}{10^{.42691}}$ or 6,802

$$\text{Curve rate} = \frac{100\%}{2^{.42691}}$$

$$= \text{antilog } 2 - (.30103)(.42691)$$

$$= \text{antilog } 1.87149$$

$$= 74.33\% - \text{use } 75\%$$

The auditor's estimate is made on the basis of the hours experienced for the last 30 units processed and the 75-percent curve supported by labor hour data on 60 units. The estimate is made from the 34th to the 121st

unit because 4 additional earlier units were more or less like the follow-on units even though they were not considered in determining the rate of the curve. Examination of the projection will show that the estimate is

slightly above the curve, starting at 18,453 hours

$$\left(\frac{110,638}{5,995,599}\right)$$

instead of the 18,180 hours shown on the graph.

By his analysis, the auditor showed that a reasonable estimate for the 87 units under the follow-on contract was about 272,500 hours, about 109,200 hours less than the contracting agency accepted on the basis of the contractor's estimate. Since each of the hours was estimated to cost about \$9.17 for labor and related overhead, an analysis similar to that made by the auditor would have provided the agency a sound basis for negotiating a significantly lower price.

The difference between the two estimates is approximately accounted for by:

	<i>Labor hours</i>
The auditor's projection from data on the 30 latest units instead of 2 earlier units used by the contractor.....	82,300
The auditor's placement of the follow-on units nearer the start of the curve where reductions for successive units are greatest.....	13,900
The auditor's use of a 75-percent curve supported by the data instead of the 80-percent curve used by the contractor . . .	9,800
The above factors combined . . .	3,200
	<hr/>
Total,.....	109,200

General Observations

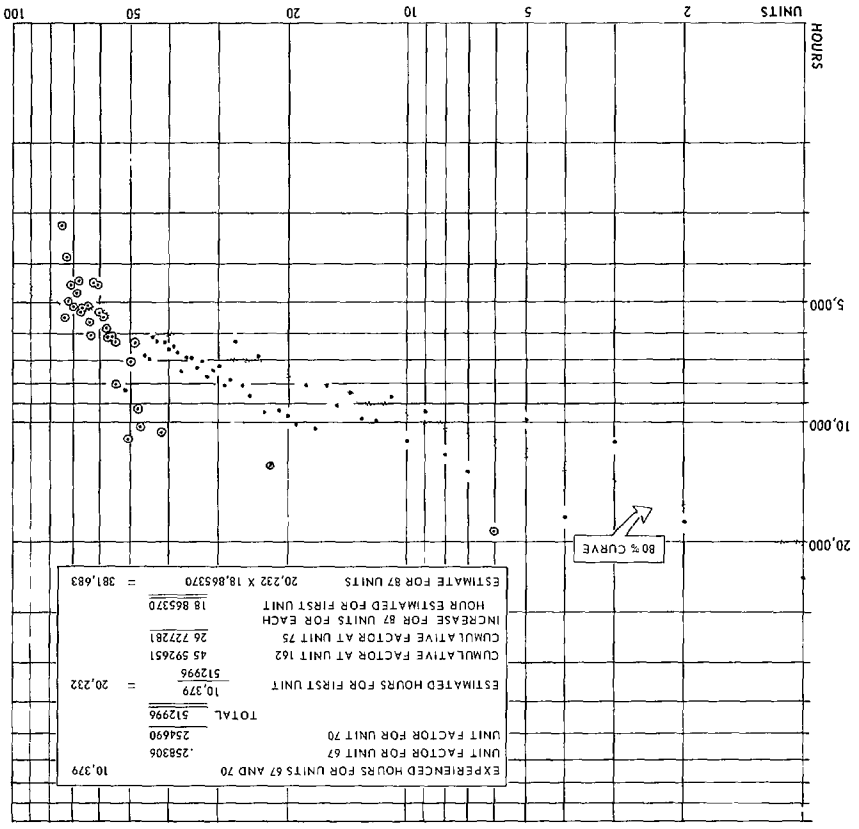
It is not possible in an article of this length to describe all the situations involving the application of learning curves which may be found, or to describe in detail the methods that can be used to evaluate such applications. However, failures by estimators to give recognition to the following matters have resulted in significantly erroneous estimates.

1. Estimates made on the basis of earlier estimates instead of actual experience multiply any errors in the earlier estimates.
2. New items, or major changes in items produced, should be considered as starting at the first unit in a series.
3. Small errors in estimates for minute units of measurement, such as man-hours per pound, become significant when multiplied by total pounds and costs per man-hour.
4. Failure to accurately determine the theoretical midpoint of effort for a large quantity can result in a significantly erroneous estimate.
5. For new items where no data are available the initial estimate should generally not be extended beyond relatively few items.

Exhibit I

Contractor's Estimate for Individual Unit

Labor Hours

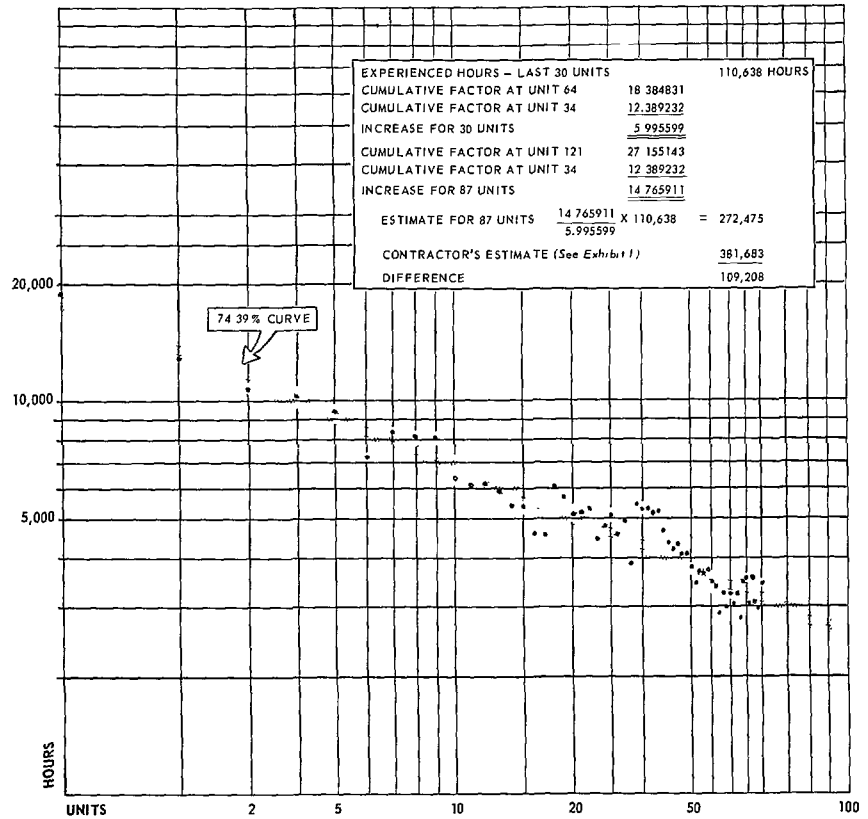


Note: The circled plot points (2) are for units similar to the units for which the estimate was prepared. The other plot points are for earlier models.

EXPERIENCED HOURS FOR UNITS 67 AND 70	10,379
UNIT FACTOR FOR UNIT 67	258305
UNIT FACTOR FOR UNIT 70	254690
TOTAL	512996
ESTIMATED HOURS FOR FIRST UNIT	10,379
CUMULATIVE FACTOR AT UNIT 162	512996
CUMULATIVE FACTOR AT UNIT 75	45 592651
INCREASE FOR 87 UNITS FOR EACH	26 272281
HOUR ESTIMATED FOR FIRST UNIT	18 865370
ESTIMATE FOR 87 UNITS	20,232 X 18,865370
	= 381,683

Exhibit II

Auditor's Estimate for Individual Unit Labor Hours



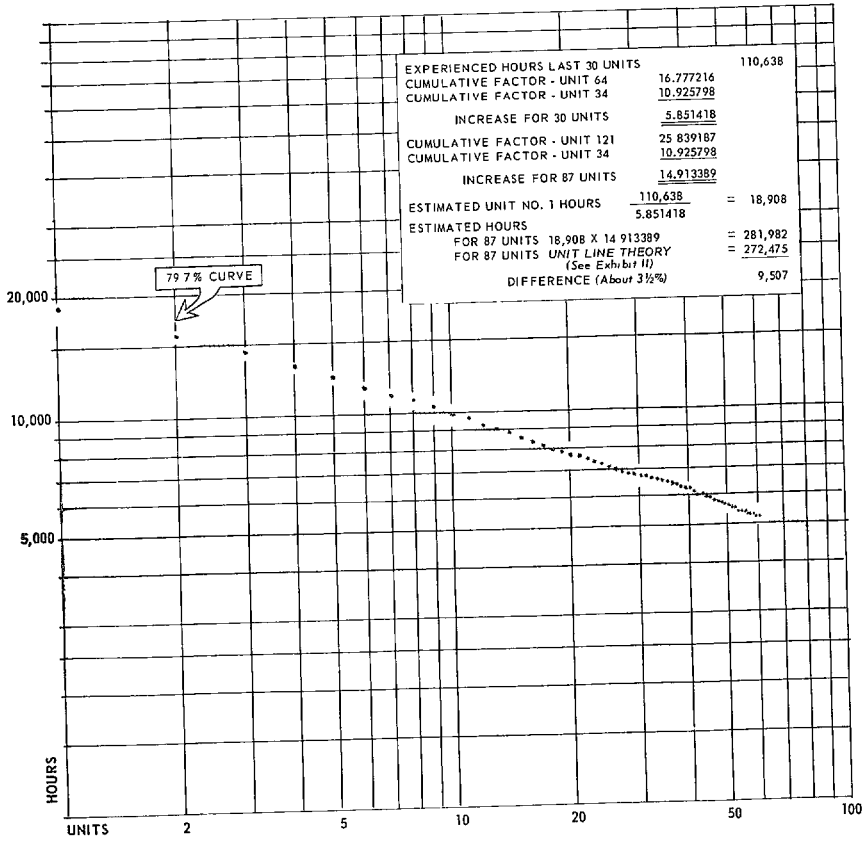
REST DOCUMENT AVAILABLE

Exhibit III

Alternate Estimate

Cumulative Average

Labor Hours



BEST DOCUMENT AVAILABLE

All in the Day's Work

By Robert Drakert

This sketch outlines some of the problems GAO staff members face sometimes in their audit work in contractor plants.

Contractor A

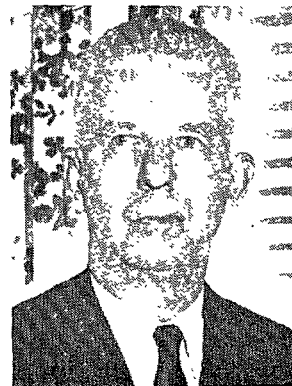
You are on the staff of a regional office and have just arrived at contractor A's plant to begin a preliminary survey. After the usual formalities and amenities (including the usual reference by the controller to "the Hearings") you mention that, among other things, you may want to examine costs incurred on cost-type contracts. Everybody knows that there's no question about GAO access to the records of costs incurred on cost contracts—everybody, that is, but the controller for he says he must refuse you access to these cost records until the contract is completed.

You figure he hasn't heard you right so you explain that you mean *cost-type* contracts. He says yes, he

knows what you mean, but you can't have them. Nobody has ever before refused you access to cost records on cost contracts so you explain that there's a contract clause giving us the right and you even pull out your ID card and reel off a couple of statutory supports for your presence in his plant.

The controller remains just as pleasant and reasonable as you and says, sure, he knows all about the clauses and the statutes and he certainly wouldn't refuse GAO anything to which it's entitled. But, he says, the clauses read "* * * the Contractor shall preserve and make available his records for a period of 3 years from the date of final payment

Robert Drakert is manager of the New York regional office. He came with the GAO in the latter part of 1951 and was appointed regional manager of the New York office in 1954. He served overseas in the European Branch from 1959 to 1961. Mr. Drakert is a Certified Public Accountant in the State of New York and before joining the GAO was in the publishing and the textile factoring businesses and on the staff of a nationally known public accounting firm.



* * *” and that means that we have access to the cost records for a period of 3 years *from* the date the contract was completed. And not before.

This is a new approach to you, so after assuring yourself he really means it you go away to think about it, talk it over with the boss, and do a little research.

Question:

What do you decide—is the contractor right or wrong?

* * * * *

Contractor B

Just down the road from your stimulating contractor A is contractor B, where, once again, you find yourself explaining how you would like to go about making your preliminary survey. Your experience at contractor A being very much in mind, you soon bring up the question of access to cost records for cost-type contracts. Controller B tells you that of course you may have these records—everybody knows GAO has the right of access to them. That hurdle cleared, you anticipate no difficulty getting on with the job and just to wrap things up you say that you may want to look at actual costs incurred on some negotiated fixed price contracts. Although at this point you shouldn't be, you are surprised when the controller tells you that, of course, he wouldn't refuse GAO anything to which it's entitled, but he can't give you the actual costs on negotiated fixed price contracts.

Once again, in your most reasonable, rational manner, you cite chapter and verse of statute and clause supporting our right of access. In equally reasonable tone and manner the controller explains that his posi-

tion is that the actual costs incurred on negotiated fixed price contracts are not directly related to transactions between the buying agency and the contractor and that his interpretation of the contract clause limits our rights to such transactions. (The clause in question reads: “* * * the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of 3 years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.”)

The controller goes on to buttress his case (which to the auditor seems to need it) by referring to the pending *Hewlett-Packard* case; the general nature of testimony given in the Holi-field hearings; and legislative history relating to Public Law 921, as amended by Public Law 245.

An impasse having been reached, at least for the moment, you go away to think, to consult, and to do some research.

Question:

Is the contractor's position correct?

* * * * *

Contractor C

While awaiting clarification and guidance concerning the positions of contractors A and B, our staff man visits still a third contractor. It turns out that contractor C has a number of large negotiated subcontracts with a certain prime contractor. On inquiry, our man learns that subcontractor C has not submitted cost or

pricing data to the prime contractor nor has he certified to its accuracy, currentness, and completeness as appeared to be required by Public Law 87-653. Why not?

According to the subcontractor, he hadn't been asked to do so by the prime contractor. Also, the subcontractor didn't believe submission and certification were required as he understood that the subcontracts were negotiated and entered into some time after the prime contract had been negotiated. And, he asked, that being so, what possible effect could his later negotiations and subcontracting with the prime contractor have on the fixed price the Government had agreed to pay?

Not having a ready answer to that, our man excuses himself from contractor C and decides that he had better go see the prime contractor. There he is told that the prime contractor had not requested a price proposal from the subcontractor prior to submitting his proposal for the prime contract and that the prime had negotiated his contract before getting a proposal from the sub. The prime contractor also said that he had not, when subsequently negotiating with the subcontractor, asked for cost data and a cost certification. After all, he asked, why should he? His negotiations with the Government were completed and his price as prime contractor agreed on. What happened later between subcontractor C and himself could be no legitimate concern of the Government. Nevertheless, our man was interested, particularly when he noted that the items purchased by the prime from subcontractor C were included in the

prime's proposal in an amount greater than that at which they were subsequently bought.

Question:

Are the submission of cost or pricing data and a certification by the subcontractor required?

* * * * *

How did they all come out? Our staff man thought you would be interested in knowing and that his experiences and the Office conclusions could be useful to our staff generally.

Contractor A

Research and consultation at the regional office indicated that while contractor A was probably stretching the wording of the clause to unreasonable limits, guidance from Washington was advisable. We asked for and got it. The General Counsel agreed that a literal reading of the clause gave some support to the contractor's contention that we had access only for a 3-year period *beginning* with the date of final payment. He pointed out that the phraseology of the clause antedates Public Law 245 and was originally intended for use under cost-type contracts which we audited on an on-site basis. He also commented that a subsection (c) of the clause (which was added as a result of the enactment of Public Law 245) requires the contractor to include in its subcontracts a clause to the effect that our Office shall have access to the subcontractor's records *until* the expiration of 3 years after final payment.

The General Counsel noted that the construction given to the clause by the contractor is inconsistent with the

statutory requirement for a clause giving us access *until* 3 years after final payment, and that our rights must be determined by the language of the statute, rather than that of the clause. He therefore concluded that in view of the mandatory language of 10 U.S.C. 2313(b) that the contracts in question contain a provision to the effect that our Office be given access to records *until* the expiration of 3 years after final payment, there is no authority in the Department of Defense, nor was there any intention, to curtail such right of access by contractual provisions, regulations, or otherwise. (*Federal Crop Insurance Corporation v. Merrill*, 332 U.S. 380, 384-385.) The General Counsel therefore gave the opinion that we have a right to the contractor's records *until* 3 years after final payment. (He also informed us that the clause in question is now under consideration for revision by the ASPR Committee and that we would recommend revision of its language to conform to that of the statute.)

Thus supported and confirmed in his own conclusions, our staff man prepared a letter to contractor A stating the GAO position and requesting reconsideration of the contractor's denial of the right of access.

Contractor B

Discussion, and research in statutes, regulations, manuals, and hearings lead our man to conclude that contractor B's contention had little legal merit. However, remembering they were not lawyers, the staff referred the case to the Defense Division and the Office of the General Counsel in Washington. Happily, the General

Counsel gave contractor B's argument for denying us access to the cost records for firm fixed-price negotiated contracts short shrift, stating that the contractor's position was without support either in the language of the law or in the contracts involved. With this assurance the regional office went ahead with its efforts to convince contractor B of the error of his contentions, and with the preliminary survey.

Contractor C

Research at the regional office not having conclusively answered the question posed at subcontractor C, our man turned to our Defense Division staff and to our Office of General Counsel for guidance. The General Counsel held that while there is no requirement that contract agency officials review subcontracts under the circumstances in question in order to determine whether the law is being complied with, still Public Law 87-653 clearly requires that a pricing certificate be obtained from the subcontractor. The General Counsel went on to comment on the desirability, from the Government's view, of obtaining a pricing certificate as it could be helpful in determining whether or not there should be a downward adjustment of the prime contract price under the contract terms. What the General Counsel had in mind was that the existence of the subcontractor's certificate could lend weight and credence to any contention that the prime contractor had actual or constructive knowledge that the amount included in his proposal (for the subcontracted items) was not current, accurate and complete.

With this help and clarification from Washington, the regional office staff concluded that it would be worthwhile, where this proved practicable, to test-check some subcontract certifications against the amount included in the prime's proposal to see if there was a significant overstatement by the prime of the cost of the subcontracted items. If so, a decision would then have to be made, considering all the information available, on whether or not to make a review of the information available to the prime at the time he negotiated his contract and of the support for the amount at which he included the subcontracted items in his proposal. In the specific case of subcontractor C, although he had not given his prime a pricing certificate, our staff man decided to check

several of the subcontracts back to the prime's pricing proposals to see whether there had been significant overstatements of the estimated cost of the subcontracted items.

* * * * *

Modestly bearing some small sense of accomplishment at having helped to resolve three unusual problems, our staff man soon thereafter found himself sitting in contractor D's office and telling him how we would like to begin a preliminary survey. Can anyone wonder that as he did so there passed through his mind two thoughts: speculation on what new interpretation might be advanced concerning our right of access to records, and some small wonder about what happened to the rumor that GAO was getting out of the business of auditing contractors?

722959

Application of Statistical Sampling Techniques to the Audit of Air Force Disbursing Accounts

By Herschel S. Goldstock

The author discusses the unusual problems encountered and the solutions used when random sampling techniques were applied to the audit of certain Air Force disbursements.

Background

The accounts of disbursing officers of the Air Force are audited centrally by the Air Force Audit Staff (AFAS) of the Denver regional office of GAO. This staff is located at the Air Force Accounting and Finance Center (AFAFC) in Denver, Colo., where the accounts and supporting documents are transmitted after payments are made. The AFAS is responsible for the audit of all types of transactions, except those which have been designated for audit elsewhere. Air Force disbursements annually amount to about \$20 billion, based on 1965

fiscal year appropriations and obligations. The types of transactions audited by AFAS amount to approximately \$13.5 billion annually.

As of June 30, 1965, there were 218 active disbursing stations within the Air Force finance network. The original vouchers processed by each station are submitted to the AFAFC on a monthly basis, arranged separately in numerical sequence by four classes of transactions (travel, commercial, military pay, and civilian pay). Collection vouchers are numbered separately from disbursement vouchers. During fiscal year 1965 all disbursing stations submitted a

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total of 5,807,642 vouchers, as follows:

	<i>Disbursement</i>	<i>Collection</i>
Travel vouchers	2, 579, 241	86, 500
Commercial vouchers	2, 137, 060	439, 603
Military pay vouchers	390, 375	75, 737
Civilian pay vouchers	75, 297	23, 829
Totals	5, 181, 973	625, 669

Military pay vouchers show actual amounts of payments made to servicemen on extended active duty as well as to reservists for short tours of active duty. Vouchers for reservists contain information to support the amounts paid. However, the vouchers for payment to servicemen on extended active duty do not contain such information. Instead, this information is contained on individual military pay records (MPRs). Consequently, the basic document for auditing the serviceman's pay account is the MPR.

As of June 30, 1965, there were 138 disbursing stations processing MPRs. An MPR is an accounting document on which the pay account of each Air Force serviceman (member) is maintained. The MPR is opened when the member first reports for active duty and is renewed thereafter each January 1 and July 1. For each 6-month period, the amounts due a member for each type of pay and allowance are entered in the entitlements section of the MPR. Amounts to be withheld are entered in the deduction section, and amounts paid, together with a citation to the vouchers evidencing such payments, are entered in the disbursement section.

MPRs are regularly closed on each June 30 and December 31. The reg-

ularly closed MPRs are transmitted to the AFAFC by the disbursing station closing the MPRs in the same order as the names of the members appear on the last payroll voucher for the cycle. Payments to officers are included in one voucher; payments to enlisted members on another.

MPRs are irregularly closed on dates other than June 30 and December 31, when active duty is terminated because of retirement, discharge, voluntary or involuntary separation, death, or other reasons. Irregularly closed MPRs are transmitted by the closing disbursing station to the AFAFC shortly after the closing dates. Irregularly closed MPRs are listed on a form transmittal, usually in alphabetical sequence. For the 1965 fiscal year, 1,649,854 MPRs were regularly closed and 144,076 MPRs were irregularly closed, throughout the Air Force.

Prescribed audit policy calls for auditing the transactions of each disbursing station in the Air Force finance network at least once each 18 months. Considering the prescribed frequency of audit, the volume of Air Force transactions, and available audit manpower, it is apparent that sampling techniques must be employed to accomplish our objectives in an economical manner.

Our objectives, some of the practical problems we encountered in establishing our initial sampling plan, the manner in which such problems were resolved, and the sampling methods we are now employing, are described below. We anticipate further refinements and improvements in our methods as the number and complexity of the initial problems are reduced.

Audit Objectives

The objectives of our audit are to provide a basis for the settlement of disbursing officers' accounts, as required by law; to identify those disbursing stations where erroneous payments (overpayments, underpayments, or illegal payments) occur at excessive rates and in excessive amounts; to identify the types of transactions or payments in which erroneous payments occur most frequently and in significant amounts, on a station basis as well as Air Force-wide; to evaluate the quality of the Air Force administrative audit; and to identify areas where improvements should be made in management controls to avoid waste, extravagance, or improvidence.

Defining the Universe

Our first problem was to determine what our universe would be. As previously stated, there are 218 disbursing stations within the Air Force finance network. Each disbursing station's documents, as a consequence of subject matter area organization within the finance office, fall within six possible physical groupings or classifications when available for our audit. These groupings or classifications are travel vouchers, commercial vouchers, military pay vouchers, civilian pay vouchers, regularly closed MPRs and irregularly closed MPRs. Since the audit of civilian pay vouchers is not the responsibility of the AFAS, this class of documents was eliminated from the universe, leaving five classes of documents for audit consideration.

To further define the universe, we analyzed the classes of auditable documents processed by each of the 218 stations. There were 138 stations

submitting accounts containing all five classes: 50 stations submitting accounts containing three classes (travel, commercial, and military pay vouchers); and 29 stations (disbursing stations at contract management districts and Air Force plant representative offices) submitting accounts containing almost exclusively commercial vouchers, most of which were payments under cost reimbursement contracts, which we do not audit. The one remaining disbursing station is the AFAFC which is responsible for types of transactions or payments (such as allotment payments, retired pay, and pay to Air Force reservists) uncommon to any other Air Force disbursing station. We decided that the accounts from the 29 stations containing primarily commercial vouchers and the accounts submitted by the AFAFC, because of their different characteristics, should be audited apart from the accounts of the other stations and excluded from our universe.

The remaining accounts submitted by 188 disbursing stations were similar to the extent that they all contained travel, commercial, and military pay vouchers. Also, the accounts of 138 of the 188 stations were similar to the extent that they all contained regularly and/or irregularly closed MPRs. Because of this homogeneity, the accounts from the 188 stations were considered to be the universe, subject to determination of the period of accounts to be audited which is discussed later.

Since the documents comprising the accounts from each station fall into classes (travel, commercial, and military pay vouchers, as well as regularly closed and irregularly closed

MPRs), each class can be considered as a stratum. Accordingly, our approach was based on stratified sampling.

The error rates in our prior audits of military pay disbursement vouchers and of all types of collection vouchers were insignificant (a small fraction of 1 percent). Therefore, there is relatively less importance in measuring the quality of military pay disbursement vouchers and collection vouchers when compared to other types of transactions. Consequently, we combined military pay disbursement vouchers and all collection vouchers into one stratum, which for convenience we have referred to as "other vouchers."

In other strata there are documents that the AFAS does not audit. Payments made under cost reimbursement contracts (included in the commercial voucher stratum) are audited at the sites by auditors of the various regional offices. Payments to common carriers for freight and passenger transportation services (included in the travel voucher stratum) are the audit responsibility of the Transportation Division. Also, vouchers covering advances of travel allowances require little or no audit consideration. To reduce the sizes of the applicable strata by removing such vouchers would be a burdensome task. Therefore, such vouchers were included in the population of the strata, even though it was recognized that this would create some bias in the sampling results.

The fact that MPRs cover a 6-month period led to the decision that the populations of other strata (from which samples would be drawn) also cover the same 6-month period.

This will enable us to evaluate all strata within the account of a station for the same period. Since the accounts of each station are to be audited at least once during an 18-month period, approximately one-third of the 188 station accounts are scheduled for audit during a 6-month audit period. The period of accounts audited covered the latest available 6-month period (January-June or July-December).

Our universe thus consists of accounts from 188 disbursing stations, approximately one-third of which are to be audited each 6 months. All accounts are arranged for audit purposes into three classes of documents or strata (travel, commercial, and other vouchers). For 138 of the 188 stations, there are two additional strata (regularly closed MPRs and irregularly closed MPRs).

Sampling Methods

We considered it important that the samples selected should adequately represent the populations from which they were selected, in order that they may be used to obtain valid information regarding the populations. Since it is possible to measure the reliability of estimates computed from the sample results under probability sampling, it was decided to utilize scientific statistical sampling rather than judgment sampling in our audit.

Our audit objectives require that the sampling methods we adopt provide answers to questions of the frequency of an occurrence, a quality, or characteristic. For example, in the audit of travel vouchers, our objectives require that we learn the frequency at which erroneous payments of travel allowances were made and

the frequency at which cases of waste or extravagance occur. We concluded that our sampling plan should follow the principles of sampling for attributes.

Sample Sizes

Tables of sample size provide guidance in deciding upon the number of documents to be audited in order to determine the frequency of an occurrence. With respect to attributes, we are primarily concerned with the frequency at which erroneous payments occur in each of the strata of a station's accounts. We therefore decided to base our sample sizes on this attribute.

In order to obtain from the tables an appropriate sample size, it is necessary to supply information as to the worst expected rate, the desired assurance or confidence level, the tolerable error in the estimate, and the number of units in the universe.

From the results of previous audits, we were able to determine the overall Air Force incidence of erroneous payments by the five strata (total number of errors in stratum sample divided by total documents examined in stratum sample). It was decided to use this error rate as the worst error rate in determining the sample size of the stratum for the accounts of each station. While establishing sample sizes on the basis of expected error rates for each station would probably result in more reliable estimates, it would be cumbersome to administer, considering the number of stations and strata involved.

In determining the tolerable error in the estimate for each strata, several matters were considered. First, we recognized that reasonable errors in

the estimates must be tolerated in order to avoid sample sizes in excess of our manpower capabilities. We also considered the worst expected error rate in deciding the tolerable error in the estimate by strata, since if the rate is very high (as was the case for irregularly closed MPRs), there is not as much need for precision in the estimate. Similarly, if the error rates experienced in past audits have been very good or low (as was the case for commercial and other vouchers), we would only require sample sizes that would give us sufficient precision in the estimates to demonstrate that the quality, in fact, continues to be very good.

Selection of Documents

In order for statistical sampling to be carried out correctly, it is essential that the items included in the sample be selected without bias. The basic requirement is that each unit in the universe must have an equal probability (chance) of being included in the sample. We considered the use of two selection techniques: (1) selection based on random data contained in the items, and (2) systematic selection with a random start.

The first technique involves selection by matching digits obtained at random from tables of random numbers with digits contained in the items of the universe from which the sample is to be drawn. We decided to use this technique for the selection of samples for regularly closed MPRs. Regularly closed MPRs contain the service numbers of servicemen. The last two digits of the service numbers of all servicemen listed on the final payroll for a 6-month period are a collection of random digits, which are

matched with two-digit numbers selected at random from the table. The method by which service numbers are assigned and the large size of the regularly closed MPR submissions from each station assures that each of the possible last two digits (00 through 99) is equally likely to appear.

This technique could not be applied to irregularly closed MPRs, since the form transmittals (used for identifying the total population) frequently do not show service numbers. Also, the submissions by station are frequently too small to permit the opportunity for all possible digit patterns to appear.

The technique could not be applied to the three voucher strata (travel, commercial, and others) since, although vouchers are numbered, there are frequently blocks of numbers, or individual numbers, that are not used. Also, in some station accounts, where a mechanized system is used to prepare vouchers, some transactions appear as summary vouchers, supported by subvouchers, and others on vouchers, in a manner which does not permit each transaction to be assigned a voucher number.

We decided to use a method referred to as systematic selection for selecting samples of irregularly closed MPRs and samples from the three voucher strata. This involves selecting items from the universe at fixed or regular intervals, such as every 5th or 10th item. This method can be used only if the items in the universe are in random sequence with respect to characteristics. We found that the irregularly closed MPRs were listed on the form transmittals essentially in random sequence. The same was true with respect to the manner in which

vouchers in each strata were filed. This method also requires that an objective system be established to determine that the first document to be included in the sample is chosen at random. We established such a system through the use of tables of random numbers.

Determination of Sample Sizes and Selection of Sample Documents

The techniques we decided to apply in determining the sample size and for selecting the sample documents for regularly closed (in service) MPRs are summarized below. Sample sizes for this stratum and for all other strata were based on a 95-percent level of assurance. The number of documents by strata in the station accounts were obtained from AFAFC records.

Our past audit experience has shown that, Air Force-wide, the average error rate has been approximately 10 percent for regularly closed (in service) MPRs. It was considered adequate that the error rate found in the sample not differ from the true error rate by more than 3 percent. If the prescribed sample size is not an even fraction or percentage of the universe, the sample size is increased to a number which will be an even fraction or percentage of the universe. For example, for a universe of 3,500, the sample size according to a table of sample sizes is 346. We would increase the sample size to 350, or one-tenth (10 percent) of 3,500. This even fraction or percentage facilitates the selection of documents for the sample and the projection of error data found in the audit of the sample to the universe.

The final payroll for the 6-month pay period being audited is obtained. After selecting a starting point at random on a table of random numbers, as many consecutive two-digit numbers are selected as will agree with the percentage of documents that is to be audited. Selection of five 2-digit numbers will yield about 5 percent; ten 2-digit numbers about 10 percent. The two-digit numbers selected are matched with the last two digits of the members' service numbers listed on the payroll. Those that match become the sample.

Estimating Dollar Values of Errors

Our objectives require that the sampling methods we use provide answers to certain questions concerning significance, such as the dollar value of erroneous payments of travel allowances. When a sample is so used, the process involves the principles of sampling for variables.

In terms of estimating dollar values from our sample results, we recognized at the time the scientific sampling methods were introduced that some unknown factors were yet to be overcome. We know that our sample sizes for attributes are based on a 95-percent confidence level, and we know the sample size and the size of the universe (stratum in the account). We do not know the standard deviation of the universe, nor has the reliability we require in terms of dollar value estimates been determined. We can, however, define the dollar amount of the errors found as variables, and, generally, we can follow the principles of sampling for variables on that basis.

In comparing sample sizes re-

quired for our strata on the basis of sampling for attributes, we have found that a comparable sample size for variables can be ascertained from tables. In analyzing several attribute sample sizes in each of our strata, we have found that, at the 95-percent confidence level for variables, regularly closed MPR sample sizes for variables generally introduce ratios of sampling error to standard deviation of 0.10; for irregularly closed MPRs, the ratio is 0.20; for travel vouchers, the ratio is 0.10; and for commercial and other vouchers, the ratio is 0.18.

As explained later, we are estimating the dollar values of erroneous payments by strata on the basis of the fraction of the universe included in the sample. We are tentatively accepting these estimates but will measure their reliability or precision in dollar amounts to determine whether they are acceptable for our purposes.

Estimation Procedures

We inflate (blow up) the results of the samples to estimate the total number of errors and the total amounts of erroneous payments in each stratum. This is accomplished by a simple blowup estimate by use of the sampling fraction. We previously stated that we adjust the sampling sizes so that they will be an even fraction of the universe (such as one-sixth or one-seventh). We have prepared tables to facilitate this adjustment. These tables show by worst expected error rate, the desired assurance, the tolerable error in the estimate, and the number of units in the universe, the even fraction of the units in the universe that should be included in the sample. If the sampling fraction is one-seventh, then the number and

amount of errors found in the sample are multiplied by the inverse of the fraction, or seven, to estimate the number and amount of errors in the universe.

Estimates, as described above, are made for each stratum in a station's accounts. Estimates are also made in the same manner for types of error within a stratum. To estimate all erroneous payments in a station account for a 6-month period, we add the projected number and amounts for all strata. The totals for all stations are added to give us estimates of the number and amounts of errors Air Force-wide, based on our latest audits of each station's accounts. These summaries and projections are accomplished by means of machine processing of the individual error data punch cards.

Our estimation procedures are applied to characteristics other than erroneous payments. Our objectives require that we estimate the extent to which practices which result in waste or extravagance occur, as well as their monetary significance. The number and monetary value of each such practice, as detected in the sample are projected to the universe in the manner described above.

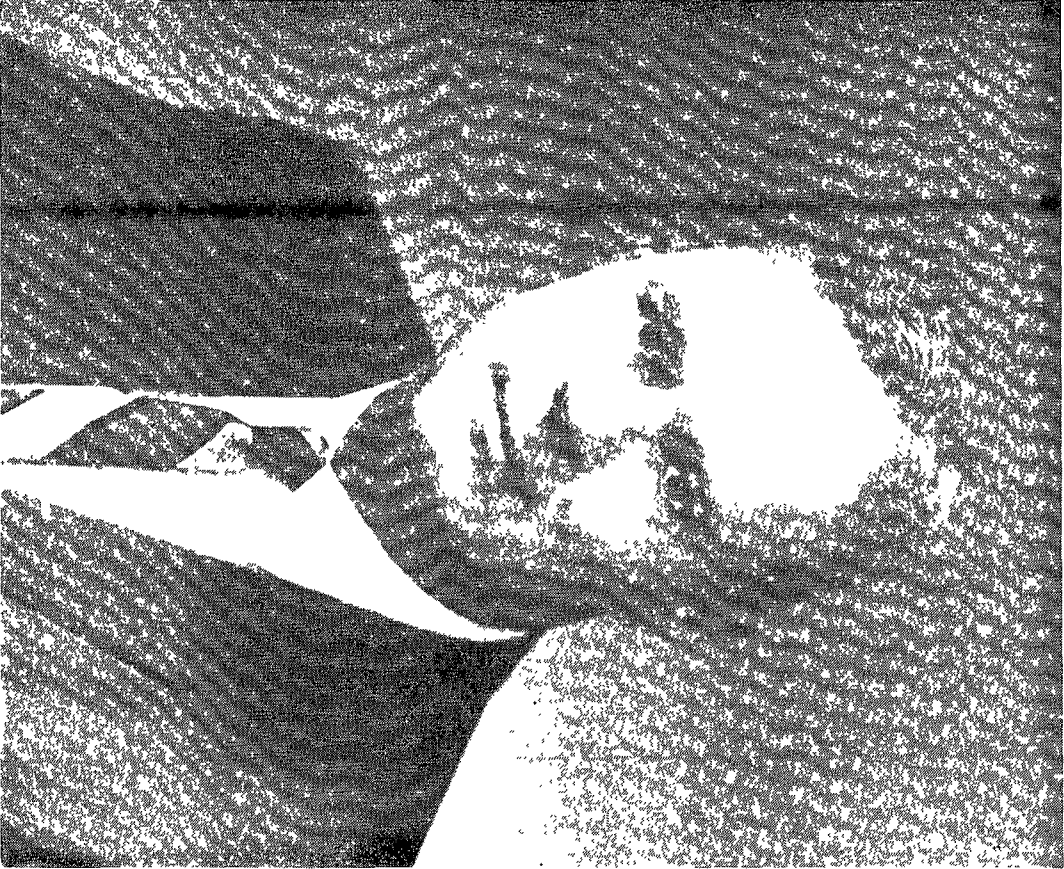
We recognize that sample sizes based on expected rates of erroneous payments, when used for estimating other attributes, can result in unreliable estimates. However, the reliability of all estimates can be measured and, as a matter of administrative procedure, the results are referred to a higher level of supervision for consideration. If further development is warranted, a new sample plan and establishment of a universe must generally be determined to fit changed ob-

jectives, since more than one station would probably be involved.

Conclusions

The sampling plan has required some adjustments in the number of documents being audited in each stratum. Also, somewhat more time is being utilized in the selection of documents for the samples. However, total operations (selection and audits) are being accomplished and scheduling requirements are being met with about the same manpower used under our former judgment sampling plan. Of course, the time spent for audit and selection may change as the various problems are resolved and as we gain more experience with these techniques.

Applying scientific statistical sampling techniques in the audit affords us with an effective and accepted method of estimating the frequency of erroneous payments or other occurrences. These estimates become data which are used for accomplishing our audit objectives. Error data will be used for evaluating the quality of disbursements by station and Air Force-wide, for identifying recurring types of erroneous payments, and for evaluating the quality of Air Force administrative audits. Other information will be used for identifying areas where management controls should be strengthened to avoid unnecessary expenditures. Internal reports used for planning reviews, as well as external reports, will contain this information. The use of probability sampling in computing estimates will give us greater confidence that the information and recommendations included in our reports are valid and likely to be accepted.



Frank H. Weitzel—Forty Years in the General Accounting Office

Among the officials and employees of the General Accounting Office who were honored at the annual career service awards ceremony in the GAO auditorium on October 14, 1966, was Frank H. Weitzel, Assistant Comptroller General of the United States. Mr. Weitzel has completed 40 years of distinguished service and is still going strong. A brief resume of his GAO career follows:

Entered the Federal service in 1923 at the age of 16 as a messenger in the Claims Division.

Worked intermittently for GAO while attending school and permanently since then.

From 1935 to 1942, served as an attorney in the Office of the General Counsel.

From 1942 to 1945, served in the Office of the Comptroller General, on legal, organizational, and procedural problems.

From 1945 to 1953, was Assistant to the Comptroller General, in charge of the legislative program and interagency relations of GAO.

October 7, 1953, appointed by the President, during a recess of the Senate, as Assistant Comptroller General of the United States; appointed by the President in January 1954, with Senate confirmation, to a 15-year term in that office.

From May 1 to December 14, 1954, functioned as Acting Comptroller General, on retirement of Comptroller General Lindsay C. Warren.

From August 1, 1965 to March 8, 1966, functioned as Acting Comptroller General, on retirement of Comptroller General Joseph Campbell.

Mr. Weitzel is a graduate of George Washington University:

A.B., 1931, with highest distinction;

LL.B., 1935, with distinction.

He is a member of the bar of the District Court of the United States for the District of Columbia, U.S. Court of Appeals for the District of Columbia, and Supreme Court of the United States.

He is a member of the American Bar Association, the Federal Bar Association, and the Federal Government Accountants Association; a trustee of the American Cancer Society, District of Columbia Division; trustee of the William A. Jump Foundation; elder in Georgetown Presbyterian Church.

From 1959 to 1965, he served as an alumni trustee for George Washington University. In June 1965 he received the Federal Government Accountants Association Award for distinguished leadership in improving financial management in the Federal Government.

7-24/60

Financial Management Terms

A number of terms are in use in connection with financial management processes in the Federal Government which have different meanings for different people.

Following are five terms in common use together with some explanatory definitions which can be used to narrow differences in understanding the functions which the terms are intended to identify.

Financial Management

This term is defined in the accounting manual of one Federal agency as follows:

Financial management is that part of total management which is concerned primarily with the financial affairs of the organization and the translation of actions, past and proposed, into meaningful, relevant, and timely information for use throughout the management process. It includes the basic function of programming, budgeting, accounting, and managerial-financial reporting. It is characterized by the integration of these functions and their correlation with other elements such as planning and internal auditing into a comprehensive financial system. This system must ensure that its components, collectively more than individually, play an integral part in the active management of the organization.

The Civil Service Commission defines the term "financial management"

in its classification literature as the management of the financial resources of an organization, including:

1. Developing, coordinating, and maintaining an integrated system of financial staff services including at least accounting, budgeting, and management-financial reporting, and sometimes also one or more of such related staff services as auditing, credit analysis, management analysis, etc.
2. Exercising effective control over the financial resources of the organization.
3. Coordinating and synthesizing financial and management data so as to interpret the composite financial results of operations to all levels of the organization's management.
4. Advising on developing, coordinating, and carrying out financial policies, procedures, and plans.
5. Reviewing, analyzing, evaluating, and reporting upon program accomplishments in financial terms.
6. Advising and assisting the management officials of the organization served by supplying financial management advice required to make management decisions, establish organizational goals and objectives, and in all respects to manage the organization.

Accounting System

As defined in subsection 8.7, title 2, of the GAO Policy and Procedures Manual for Guidance of Federal Agencies:

An accounting system comprises the formal books and accounts; the supporting records, documents, papers, and reports; and the related procedures used to provide an accounting for the resources and operations of an agency.

Resource Management Systems

This term is one used by the Department of Defense and is defined in its Directive No. 7000.1 as follows:

1. Resource management systems include all procedures for collecting and processing recurring quantitative information that (1) relates to resources and (2) is for the use of management. They also include procedures which are closely related to quantitative systems even though the systems may not themselves be primarily quantitative. Resources are men, materials (i.e., real and personal property), services and money.
2. This definition excludes all non-resources (e.g., intelligence, tactical doctrine, military justice), and all nonsystems (e.g., one-time collections of data, submission of test reports, exchange of correspondence.)
3. Resource management systems are ordinarily described in terms of the flow and processing of information, and the common denominator of this information is often monetary but

the information may be non-monetary.

4. Resource management systems include, but are not limited to, the following:
 - a. Programming and budgeting systems;
 - b. Systems for management of resources for operating activities;
 - c. Systems for management of inventory and similar assets;
 - d. Systems for management of acquisition, use and disposition of capital assets.

Management Information System

A working definition for this term follows:

A management information system encompasses all the formal and informal means used in communicating essential information to management for making the decisions required for effective management. It includes, but is not limited to, systems concerned with such matters as organization, resources, environment, programs, and projects. The information may be in the form of opinions, estimates, judgments, or facts; may be communicated orally or in writing; and may be of managerial interest from either an internal or external viewpoint.

Management Accounting

Three views on the meaning of this term follow:

1. From report of Committee on Management Accounting of the American Accounting Association, *Accounting Review*, April 1959—

Management accounting is the application of appropriate techniques and concepts in processing the historical and projected economic data of an entity to assist management in establishing a plan for reasonable economic objectives and in the making of rational decisions with a view toward achieving these objectives.

2. From *Concepts for Management Accounting* by Walter B. McFarland, Research Director, National Association of Accountants, August 1966—

Management accounting encompasses the entire range of economic information needed by those who manage a business enterprise and by those who provide its capital.

3. Eric L. Kohler. in his book *Accounting for Management* includes what he describes as a conventional definition of the term as follows:

“* * * deals with the processes associated with the conduct of management: the gathering of information required in decisionmaking and in the determination of policies relating to such diverse areas as budget preparation, budget administration, the recognition of costs as expense, depreciation policies

and methods, the creation and operation of reserves, internal auditing, and *internal* reporting.”

He goes on to point out, however, that the separability of accounting functions into such categories as financial, administrative or management, and cost accounting has always involved shadowy distinctions. He states that this traditional view is being displaced by a growing conviction that accounting activities should be articulated parts of a single process in which management at all levels participates. Financial accounting thus becomes a recapitulation within management accounting, which is taking over and reshaping the tenets of cost accounting. Kohler notes in conclusion “If we admit the all-embracing unity of *accounting* concepts, *management* as a modifier of ‘accounting’ becomes a pleonasm.”

The accounting principles and standards prescribed by the Comptroller General for Federal agencies reflect the concept that the accounting function in each agency must serve all levels of management in the Federal Government and that no real purpose is served by using labels such as “financial accounting” or “management accounting.”

E. H. Morse, Jr.

DIRECTOR, OFFICE OF
POLICY AND SPECIAL STUDIES.

Planning-Programming-Budgeting

Planning - programming - budgeting systems were prescribed for development in all major executive agencies by Presidential memorandum of August 25, 1965. A follow-up memorandum on this subject was issued from the White House on November 17, 1966. Because of the current and future interest of GAO staffs in PPB concepts and the developing systems, the text of the new memorandum is set forth below.

THE WHITE HOUSE

MEMORANDUM FOR HEADS OF ALL EXECUTIVE DEPARTMENTS AND AGENCIES

There is no subject of greater importance to the people of this country and to me than the efficient and effective operation and evaluation of our programs. At my recommendation, the Congress has entrusted the Executive Branch of the Government with a wide variety of far-reaching social programs of unparalleled significance in the history of this country. It is essential that we in the Executive Branch, as the trustees of the public's funds appropriated for these programs, make certain that they are operated at a maximum level of efficiency and effectiveness for all Americans, and particularly for the people they are designed to reach. This can only be accomplished by bringing into the Federal Government the most modern management techniques, available through our free enterprise system in American business.

My deep concern to make certain that this be done was the basis for my memorandum of August 25, 1965. That memorandum directed the institution of a Government-wide planning-programming-and budgeting system of the type that has proven successful in so many wide-ranging,

large corporate and defense and space activities. We now are receiving the benefits of the first year's experience with this system. Some agencies have put it into effect even more rapidly than we anticipated. Too many agencies, however, have been slow in establishing effective planning-programming-and budgeting systems. And, even when established, they have often not been used in making top management decisions. It is my desire that every agency of the Federal Government have such a system, and use it effectively.

For through this system, as I stated at the outset, we will have the ability to

- Identify our national goals with greater precision.
- Determine which of those goals are the most urgent.
- Develop and analyze alternative means of reaching those goals most effectively.
- Inform ourselves accurately of the probable costs of our programs.
- Improve the performance of the Federal Government to insure the American taxpayer a dollar's worth of service for each dollar spent.

It is clear that these are not easy tasks. In too many cases the quality of analysis needs substantial improvement. I recognize that it takes time to develop the personnel, the skills, the data and the understanding of what needs to be done. But it is essential that all of us work to reduce this time to a minimum. This means that you must:

- Train and recruit the necessary staff.
- Subject your objectives, programs, costs, and accomplishments to systematic and continuous review.
- Search for new and more effective ways of accomplishing their objectives.
- Relate analysis explicitly to budget requests so that those requests follow from and support comprehensive and well-thought-out agency plans.

Most important, this effort requires your personal interest and participation. Objectives will not be questioned unless you make it clear you want them questioned. Existing programs will not be evaluated critically unless you insist upon it. Alternatives will not be presented unless you demand them. The hard choices will not be made well unless you make them, and do so on the basis of critiques and analyses prepared by your own staffs. Getting these things done is up to you.

I intend, on a Government-wide basis, to question objectives, evaluate progress, seek alternatives and make the hard choices on the basis of careful analyses. And I want you to do the same thing within your agen-

cies. I have, therefore, asked the Budget Director to sit down with each of you to review your Planning-Programming-Budgeting Systems and give you his objective analysis of its effectiveness.

He will then report to me on a quarterly basis, beginning with the first quarter of Calendar 1967, on the progress of your implementation of my directive.

As I make my budget and legislative decisions in the period ahead, I will look to the materials you have produced in the Planning-Programming-Budgeting System process for your appraisal of priority needs and the most effective ways of meeting them.

American Institute of CPAs—Annual Meeting Notes

The 79th annual meeting of the American Institute of CPAs was held in Boston, Mass., October 2-5, 1966. Several members of the accounting and auditing staff were authorized to attend this meeting because of the direct concern and interest of the General Accounting Office in the work, problems, and future of the public accounting profession. The professional accounting and auditing staff of the General Accounting Office includes about 400 CPAs many of whom are members of the Institute. Those attending from GAO were:

E. H. Morse, Jr., director, Office of Policy and Special Studies.

A. T. Samuelson, director, Civil Division.

Leo Herbert, deputy director for staff development.

Robert Drakert, regional manager, New York.

Joseph Eder, regional manager, Boston.

Douglas E. Cameron, audit manager, Portland suboffice.

Space does not permit a comprehensive reporting in this publication on the professionally interesting sessions that were held. Many matters were discussed that are of continuing interest in our accounting and auditing work. The following commentaries from those attending are provided for the information of the GAO staff generally.

An Overall View of the Profession's Environment

This session was conducted by Malcolm G. Devore, vice president of the AICPA. Two of the three speakers were economists. Prof. Ezra Solomon, Stanford University, discussed current economic problems from a national standpoint. He expressed disagreement with current feelings of pessimism and provided his estimate that real output in 1970 will be about 25 percent above 1965 levels. He stated that the real challenge of the late 1960's from an economic standpoint was to master the problem of staying at high economic levels without generating wage and price pressures.

Richard J. Kruiuzenga, an economist from the Standard Oil Co. (New Jersey) discussed economic problems from an international standpoint. Two persistent long-range problems cited were inadequacies in the international monetary system and unsatisfactory growth of low income countries. On the latter item, he noted that the disparity between the rich and poor countries continues to grow wider and that aid programs have not been enough to eliminate it. He also noted that international economic problems need more attention than they have been getting and that the United States should provide more leadership in solving them.

Prof. Russell L. Ackoff, Wharton School of Finance and Commerce, University of Pennsylvania, spoke vigorously on the impact of the changing environment on management itself. He asserted that the major changes over the next decade in management would be internal but their major effect would be external. He cited electronic computers and the management sciences as two factors that would have a major impact on management. These will lead to more mechanical decisionmaking by managers (production decisions, assigning salesmen to territories, setting advertising budgets, etc.). He stated that in 10 years the major portion of tactical decisionmaking would be automated but that management would not be done away with. Instead it will be free to worry about the problems it should have been worrying about right along, namely, long-range planning and strategy.

Professor Ackoff also made several interesting remarks about his ideas that long-range planning should involve more recognition of the inevitable rather than guessing at the future for making forecasts. He suggested that managements ought to spend more time studying why consumers really buy their products as the basis for realistic future planning. During the question period, Professor Ackoff was asked why clients bought public accounting services. In stating that he thought the matter ought to be studied, he observed that accountants will, or should, switch to accounting for future operations, rather than for those of the past. He also stated that the accountants of the future would defi-

nately have to be experts in mathematics and statistics.

The Common Body of Knowledge for CPAs

This session, which provided four views on this important subject, was conducted by Elmer G. Beamer who was Chairman of the Commission on the Common Body of Knowledge.

It focused the attention of an accounting educator, a mathematician, an accounting practitioner, and a behavioral scientist on the suggestions made in a study prepared for the AICPA after much inquiry and deliberation. The study¹ attempted to spell-out the knowledge (the educational background) a young man or woman just entering the public accounting field should have.

The study's recommendations, and the comments of the panelists, indicated that there was general agreement that important additions to the common body of knowledge now possessed by the college graduate are being forced on the professional accountant. These included much greater knowledge of the computer, more advanced mathematics, statistical sampling, more understanding of management organization and controls, and some background and understanding of the behavioral sciences.

Prof. Herbert E. Miller of Michigan State University noted that the study provides little guidance in revising curricula, that it gave the impression that the knowledge needed by the starting CPA was about the same

¹ A summary of this recently completed study was printed in *The Journal of Accountancy* for September 1966. The complete report on the study was scheduled for publication by the AICPA early in 1967.

as for starting business managers and that it accordingly did not really identify areas of knowledge peculiar to CPAs. He also observed that the part of the study devoted to auditing will have to be reconsidered if public accountants ever get around to auditing management performance and that the study tended to overstate the case for mathematical knowledge by accountants.

Prof. Howard Raiffa (mathematics) of the Harvard Business School concurred generally in the study recommendation that accountants should know more about mathematics. He thought the best argument in support of the recommendation was that the CPA will become part of a team and he will be better able to contribute to team effort if he is broadly trained in mathematics. Another factor is that accountants are trained to handle data; a mathematics hurdle will not hurt very many and may help weed out some who should not be entering the profession.

Harry C. Zug, a practitioner, expressed concurrence with the accounting and mathematics recommendations but had some reservations about behavioral sciences. He also noted the need to differentiate between areas of knowledge to be acquired academically and through on-the-job training.

Prof. Thomas L. Whisler (behavioral scientist) of the University of Chicago endorsed the study recommendations for increased knowledge by accountants in this field. He stated that the CPA works in the world of organizational behavior and that pressures are mounting to increase his involvement. He con-

siders economics a behavioral science, defining economics as man's behavior as an economizer.

While there was far from unanimity on which subjects were most important, it was clear that the profession is genuinely concerned about its changing educational and training requirements. The challenge of these changes also confronts the professional accounting and auditing staff of GAO—present and future.

The Art of Consulting

This session was conducted by Gerald C. Schroeder, vice president of the AICPA and there were five speakers who dealt with (1) the framework of consulting, (2) behavior in consulting relationships, (3) opportunities for management services, (4) motivating management on the need for such assistance, and (5) the engagement cycle.

A great deal of emphasis was placed on being able to recognize areas of substance where management consulting services are needed. It was pointed out that an awareness of potential areas can be developed through training and the analysis of information obtained through the operational audit. Financial statements and internal audit reports were cited as potential sources for analysis. To obtain analytical competence and the requisite knowledge in this field, there must be a willingness to invest the time and effort to develop needed skills. Conceptually, an important requisite analytical ability involves the identification and definition of the important underlying problem. Once this is done, future improvement rather than the repair of mistakes

of the past should be the objective of a management services project.

Many management service projects involve significant and far reaching changes in methods and procedures and in personnel and equipment requirements. The consultant, it was stressed, should be able to perceive emotional and environmental aspects that would tend to resist changes, and to devise, accordingly, techniques to overcome and handle such resistance. It was suggested that projects be sponsored at as high a level as possible and that every effort should be made to avoid defensive attitudes. The consultants should not work in groups and they should know when to stop or compromise.

On the engagement itself, the consultant should make sure that the appropriate level of management is committed to the project and that the installation is capable of accomplishing or carrying out the proposed project. It was suggested that a key to success was the setting down in writing of precisely what is or what is not to be done. The actual work involves fact finding, analysis, preliminary development and a final report. It is imperative to be sure the actual problem is known and care must be taken not to implement the new procedures too soon. In reporting, it was suggested that a series of progress meetings and progress reports were of utmost importance.

Changing Concepts in the Profession's Ethics

This session was under the chairmanship of James Vanderlaan, vice president of the AICPA, and included the following speakers: Ralph S.

Johns and Ralph E. Lee, members of the AICPA Ethics Committee, and Matthew F. Blake, member of the AICPA Council.

This was a discussion rather specifically concerned with the AICPA's Code of Professional Ethics and its application to management service, tax practice, and auditing and reporting. As has been said of all policy, including GAO's, the point was made that ethics grow from practice; thus, the body of ethical cannons can be expected to grow as experience demonstrates a need.

Concerning ethics and tax practices, a significant point was made of the difference between the role of an attorney, as his client's advocate, and a CPA, who has the specific ethical responsibility for full disclosure. According to a recent survey, taxpayers are more interested in avoiding than in evading taxes. By insisting on full disclosure, the competent CPA tax practitioner furnishes a needed service by providing clients with a clear conscience as well as the knowledge that unnecessary taxes have been avoided. But a void that needs to be filled still exists between the ethical standard of independence associated with an opinion on financial statements and the accountant's role as a client's representative, if not advocate, assumed in tax practice.

The discussion of auditing and reporting ethics also dealt in part with independence, both apparent and actual, and management services. The management services dealt with, however, were confined to statistical services provided by a computer center, analytical services provided as a basis for management decision, and the like.

No clear reference was made to the function of evaluating management performance—an area with which GAO has been deeply concerned. This area of performance presumably has yet to become a well defined and important one for the practicing CPA.

The Use of the Computer in Aiding Small Business

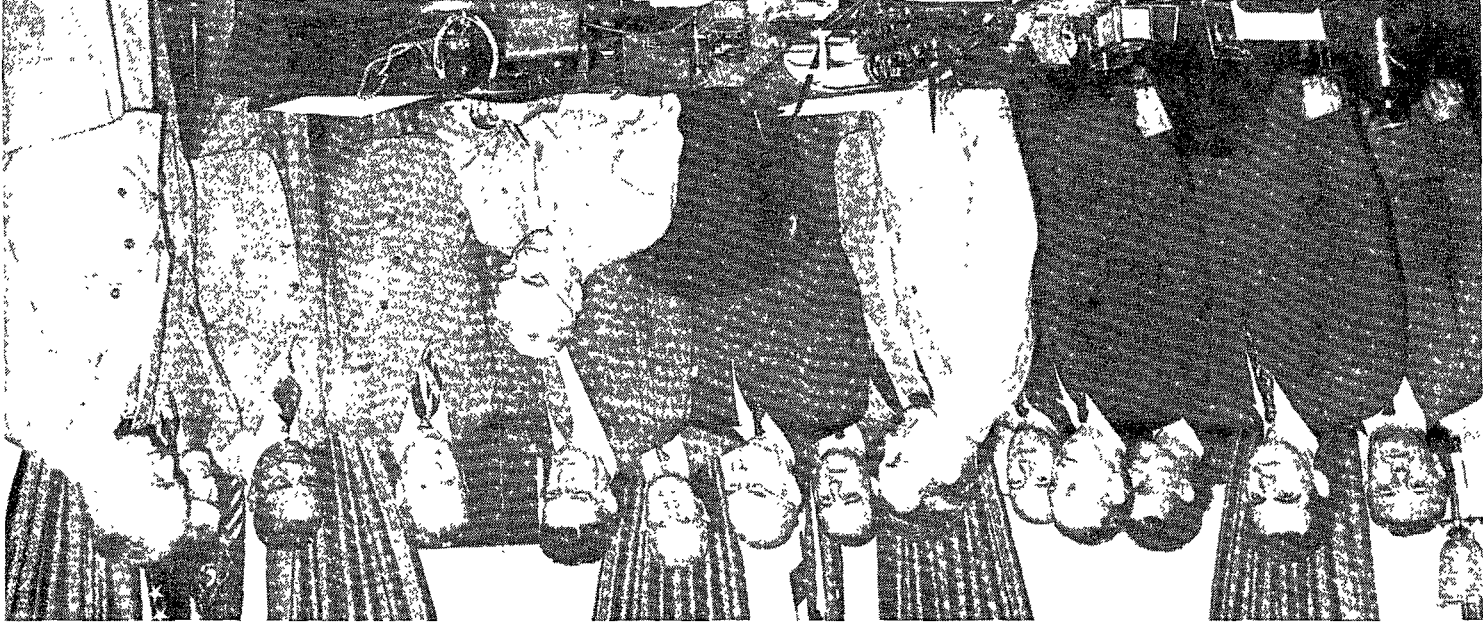
Claude M. Hamrick, Jr., vice president of the AICPA, chaired this session which included five speakers. They stressed that the key is not the computer but the achievement of a fuller integration of the management information system (MIS). It was pointed out that there are four major parts to MIS: strategic planning, management control, operational control, and financial accounting. A computer can assist in the integration of these facets since it (1) will facilitate the centralization of like operations, (2) can foster the consolidation of files containing common data, (3) offers the possibility of using routine data for planning operations, (4) pulls together a number of operations formerly done on a specialized basis, (5) can shrink dimensions by reaching out beyond a company thereby altering relationships with outsiders, (6) alters reporting needs and reporting time requirements, and (7) vastly expands the scope of systems thinking. A result of all this is better coordination of major interdependent but independent functions; such as procurement, inventory control, billing, cost analysis, etc.

As to the installation of a computer, it is essential to know what is needed and to have a predevised system, the resources selected, and the jobs to be

done defined. Management must also become involved in programming and day-to-day operations to insure that the information being generated is useful and correct. The top data processing technician or manager must be competent and be able to communicate to management what the computer can accomplish.

It was also pointed out that pre-programming packages to be applied at a number of installations and the time sharing of central processing units is an increasing trend. A large part of routine audit activity will be eliminated through internal control features and because of the ability of the computer to print out data. It was suggested that many new standardized programs for applications to function not now computerized need to be developed and that there will be a tie-in of these programs to the attest or verification function of the auditor.

It was apparent that some of the expressed concepts on consulting and on computers coincide with many of the approaches that have been and are in process of being devised in the General Accounting Office. The discussion of consulting services placed considerable emphasis on motivating personnel to accepting the changes that inevitably take place when an operation or procedure is about to be changed. As to computers, there seemed to be a growing awareness that the input of data from many sources to a large scale computer is making it possible to more closely correlate with greater efficiency inter-related operations not only within an organization but among independent organizations in the same general field.



PRESIDENT TRUMAN SIGNS THE BUDGET & ACCOUNTING PROCEDURES ACT OF 1950

WALTER F. FURSE Chief, Truman
 (Systems Div., G-10)
 THOMAS A. KENNEDY General Counsel
 House Expenditures Comm.
 WALTER L. REYNOLDS (Chief Clerk and
 Staff Director,
 Senate Expenditures Comm.
 JOHN L. MACLELLAN Chairman, Senate
 Expenditures Comm.
 FRANK L. YATES General of the U.S.
 First Comptroller
 FRANK H. WITZEL Assistant to the
 Comptroller General
 CHARLES B. STAUDACHER Executive Asst. Director
 Bureau of the Budget
 ROBERT F. RICH Member of House
 Expenditures Comm.
 KARL E. MURDT Member of Senate
 Expenditures Comm.
 FRANK M. KARSTEN Chairman
 Public Accounts Subcommittee,
 House Expenditures Committee
 LINDSAY C. WARREN Comptroller General
 of the United States
 HARRY S. TRUMAN President of the United States
 EDWARD F. BARTLETT Fiscal Assistant
 Secretary
 WILLIAM L. DAWSON Chairman, House
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 EDWARD F. BARTLETT Fiscal Assistant
 Secretary
 WILLIAM L. DAWSON Chairman, House
 Expenditures Comm.

Budget and Accounting Procedures Act of 1950

The picture on the opposite page was taken during the signing of this act by President Truman on September 12, 1950.

The enactment of this law was an important milestone in financial management legislation in the Federal Government. It was of particular importance to the General Accounting Office because it modernized and clarified the authorities and responsibilities of the Comptroller General for accounting and auditing in the Federal agencies.

Although many improvements in financial management procedures and practices have taken place in many agencies since this law was passed, it is also clear that much remains to be done and that the improvement job is almost never finished. The President's statement made on the occasion of signing this act is thus well worth reading today because it highlights the objectives sought.

STATEMENT BY THE PRESIDENT

September 12, 1950.

I have today signed the Budget and Accounting Procedures Act of 1950. This is the most important legislation enacted by the Congress in the budget and accounting field since the Budget and Accounting Act, 1921, was passed almost thirty years ago.

The budget provisions will enable the President to present the financial program of the Government in simpler and more meaningful terms. It will provide the basis for a better evaluation of Government programs and activities in terms of where the funds come from, the purposes to which they are to be applied, and the costs involved.

The accounting and auditing provisions lay the foundation for far-reaching improvements and simplification. For the first time, clear-cut legislation is provided which nails down responsibility for accounting, auditing and financial reporting in the Government. The legislation embodies the principles and objectives of the Joint Accounting Program which has been successfully carried forward for several years under the leadership of the Comptroller General of the United States, the Secretary of the Treasury, and the Director of the Bureau of the Budget, in collaboration with all other agencies of the Government. This program has had my indorsement and support from the start.

A sound system of accounting in each agency, appropriately integrated for the Government as a whole, is fundamental to responsible and efficient administration in the Government.

This Act provides a firm foundation for modernizing the Government's accounting along efficient lines to serve management purposes, safeguard the public funds, and inform the Congress and the taxpayers clearly of what happens to the funds provided for Government activities.

The implementation of the provisions of this Act represents a tremendous task and will require a continuation of the same teamwork which has been demonstrated in the Joint Accounting Program.

NEWS and NOTES

GAO Asian Offices

GAO has established an office in Saigon and is establishing one in Manila to facilitate performance of audit and investigative work in the southeast Asian area. Present plans are for these offices to operate as sub-offices under the general direction of our Far East Branch in Honolulu.

Our immediate efforts are being directed toward obtaining office space and making arrangements for housing in Manila, and developing prospective assignments for an initial small group to open the office there as early as possible in the spring of 1967. We expect within the next 6 months to build a staff of from 12 to 15 professional members and 3 or 4 clerical and stenographic employees. It is expected that some members will transfer from either our Frankfurt or Honolulu offices to the Manila office and that other individuals will be selected from the various GAO divisions in the continental United States.

A few additions will be needed over the next few months for assignments in Frankfurt and in Honolulu to replace members who are transferring or returning to the United States and for a slight further increase in those two branch offices.

For Saigon we hope to select individuals as soon as possible for 18 months resident duty at that location. Meanwhile, needed additional administrative arrangements are being worked out and we are exploring the prospects for arrangements whereby

members in Saigon for a resident assignment will be able periodically to have temporary assignments in other locations or occasional travel to other areas.

Plans for establishing an office in New Delhi are being worked out to follow the establishment of the Manila office which has more urgency at this time.

GAO staff members who are interested in assignments in Manila, Saigon, or New Delhi and who wish further information should communicate directly with the Director, International Division.

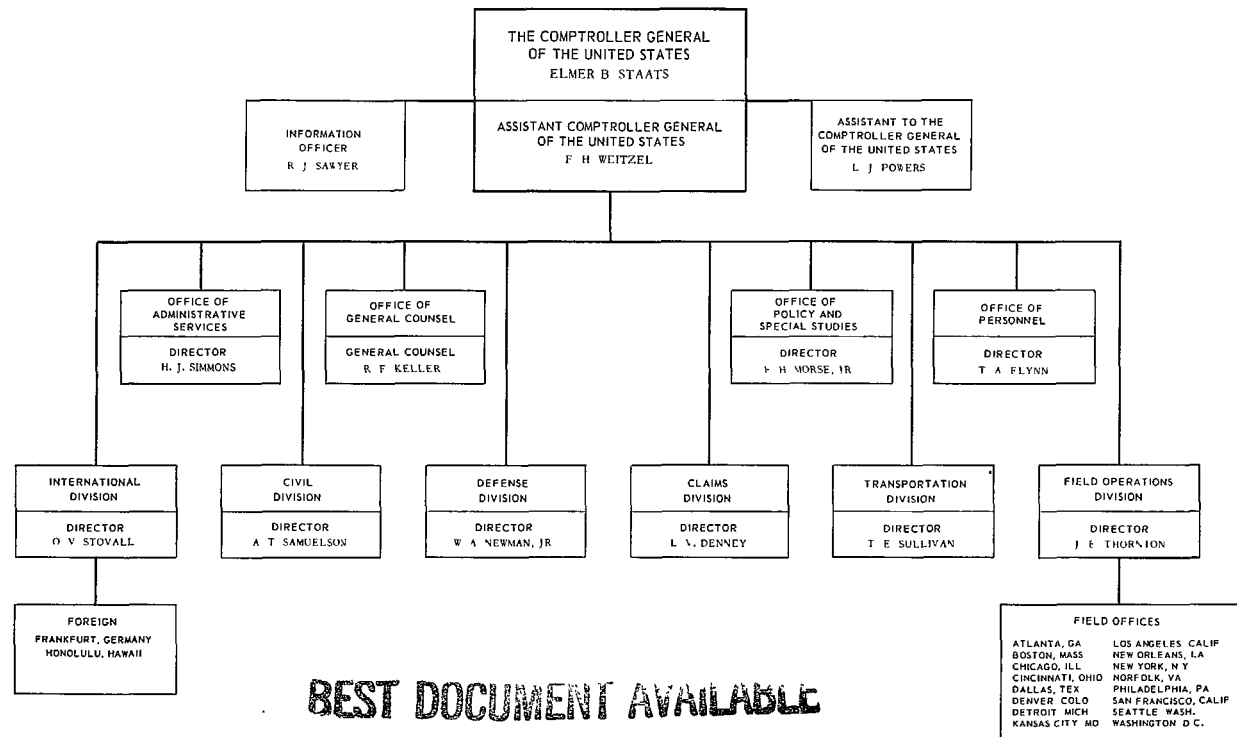
Organizational Changes and Designations

By memorandum dated November 9, 1966, the Comptroller General made the following changes in organization and in office and division designations in the General Accounting Office.

The Accounting and Auditing Policy Staff was redesignated as the Office of Policy and Special Studies. The Office of Staff Management was transferred to the Office of Policy and Special Studies and *Leo Herbert* was designated Deputy Director for Staff Development.

The transfer of the functions formerly performed by the Office of Staff Management to the Office of Policy and Special Studies is intended to assure a closer relationship of both internal and external training and professional staff development activities with the work of the General Account-

UNITED STATES GENERAL ACCOUNTING OFFICE



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BEST DOCUMENT AVAILABLE

ing Office concerned with the development of accounting and auditing policies, professional standards, and improvements in financial management practices generally. Mr. Herbert will continue to have primary responsibility for recruitment and staff development of professional accounting, auditing, and investigating staff and the maintenance of relationships with colleges and universities in connection with these functions.

The following redesignations were also made:

<i>Previous title</i>	<i>New title</i>
Defense Accounting and Auditing Division.	Defense Division
Civil Accounting and Auditing Division.	Civil Division
International Operations Division.	International Division
Division of Personnel.	Office of Personnel

Congressional Use of GAO Audit Report

The House Committee on Government Operations released a report on September 26, 1966, entitled "Better Management Needed of Medical Research on Aging." (H. Rept. No. 2080, 89th Cong., 2d Sess.) This report was based on an investigation made by the Research and Technical Programs Subcommittee. The subcommittee investigated two parallel long-term medical research studies on the aging of aviation personnel, one financed by the Federal Aviation Agency and the other by the National Institutes of Health, Public Health Service.

These projects were the subject of a GAO review and a report to the Congress entitled "Review of Long-Term Medical Research on Aging of Aviation Personnel." (B-158515,

Apr. 12, 1966.) The report brought out that both FAA and NIH were supporting long-term research into the processes of aging and that these projects would cost nearly \$10 million if carried to completion. One of these was for the purpose of developing criteria for judging the safety aspects of aging pilots, and the other was for the more general purpose of gaining knowledge of the aging processes. Since each project was using pilots and other aviation personnel as the study population, and the projects otherwise were quite similar, the report suggested that with adequate coordination one project could serve the legitimate interests of both agencies. As stated in the report:

In our opinion, the need for the Federal Aviation Agency to undertake a separate long-term project on the aging of pilots and other aviation personnel is questionable because (1) the general objectives of each project are similar and each project is based on the same planning study and (2) the information being developed under the Public Health Service-supported research project could, it seems, have been adapted to meet the objectives of the project which the Federal Aviation Agency had recently initiated.

The agencies concerned expressed disagreement with these conclusions. However, on April 21, 1966, FAA terminated its project and avoided an expenditure of nearly \$4 million.

The subcommittee undertook its own investigation and recorded the following conclusions:

1. FAA was to be commended for its decision to terminate its long-term study of pilot aging on the ground that the results and costs of the study did not justify its continuance. How-

ever, a period of 6 years and an expenditure of \$1,200,000 was required before this decision was made. "The history of the study as well as inadequacies only now confronted indicate to the committee that funds were wasted through poor management."

2. NIH failed to propose a joint project to FAA despite many opportunities to do so.
3. The NIH study on pilot aging was approved in 1961 and extended in 1964 despite weaknesses in statistical design and analysis.
4. The need for NIH to undertake a long-term study of pilot aging at all is questionable.

The GAO report pointed up two important control problems in the management of research functions in Federal agencies. These aspects of management controls, which the auditor must consider in examining into research programs, are:

1. Effectiveness of interagency coordination where research is undertaken in same fields.
2. Adequacy of advanced technical planning and related administrative assurance as to such planning.

The subcommittee's subsequent investigation dealt with the same problems. In addition, the subcommittee report identified another aspect of research management which the auditor should consider, namely, the nature and effectiveness of procedures for periodic review of accomplishments and continued need or desirability of research projects.

The GAO review was carried out under the direction of *Bernard Sacks*, assistant director, and *Robert Burns*, supervisory accountant, Civil Division.

Cost Reduction Policy

On September 16, 1966, the President issued a statement to the heads of Federal departments and agencies intended to further reduce costs by improving procurement and supply management systems. The objectives of cost control, avoidance, and reduction were cited as "more important than ever before in terms of relieving inflationary pressures in the economy."

The President stated further: "I expect each Federal employee to do everything within his power both to take actions which reduce Federal costs and to avoid actions which place unneeded demands upon the private economy."

The statement noted that the Federal Government spends more than \$40 billion a year to procure supplies, materials, and equipment plus over \$25 billion for services and substantial amounts for purposes directly related to procurement such as transportation, warehousing, and distribution. Specific instructions were included for a Government-wide effort to improve the procurement and management of property. Each department and agency head was requested to—

- Establish effective controls over proposed procurement actions to prevent purchases of items that are not actually required. Eliminate procurement of excessive quantities or of items being

requested only to satisfy a desire for latest styles or designs. The entire organization must be instilled with a "make do" attitude.

- Review pending procurement orders which have not been delivered. If delivery will result in inventory levels higher than necessary, take action to cancel orders or reduce quantities where this can be done without incurring penalty charges.
- Review inventory levels of all supplies and equipment on hand in your agency. Whenever the quantity of an item is larger than necessary, take action to correct the condition by (1) stopping procurement until inventories are brought down to the proper level, or (2) transferring a portion of the inventory to an office or agency which needs it and can use it effectively, or (3) returning a portion to the wholesale manager, or (4) reporting it excess.
- Eliminate slow-moving items from your supply inventories which can be obtained readily when needed from the wholesale supply activities of the Department of Defense or the General Services Administration, or from commercial sources.
- Initiate a review of equipment which has been assigned to individuals or to organizations within your agency. If any items are not being used effectively, require that they be returned to stock or placed in pools from which they can be assigned as needed. If this "house-

cleaning" effort results in an accumulation of items which are not needed, transfer them to a place in your organization where they will be used effectively or report them excess.

- Review the handling of excess property lists in your agency to assure that (1) such lists are carefully examined and excess or rehabilitated property is used in lieu of new procurement whenever possible, and (2) property is not claimed from excess lists unless it actually is needed for known programs.
- Review the procurement and property management programs of your contractors which purchase supplies and equipment for which the Government must pay or which have Government-owned supplies and equipment in their custody. Such contractors should observe the same policies prescribed for Government agencies for avoiding unnecessary procurement, eliminating frills, curtailing inventories, using excess property, and insisting upon full utilization of assigned equipment.

This array of directed actions is of interest to us in the General Accounting Office because it identifies many of the kinds of weaknesses in property management controls that have been brought to light in the past through GAO examinations and most of them, at one time or another and with respect to various Federal agencies, have been the subject of audit reports.

The President's directive also requires the Secretary of Defense and the Administrator of General Serv-

ices to take certain improvement actions relating to such important aspects of property management control as—

- Redistributing Government property;
- Eliminating avoidable duplication and overlapping in inventory management;
- Devising better procurement and inventory reporting systems;
- Reducing number of items in the Government's supply systems;
- Identifying components and spare parts for competitive procurement and supply to prime end item contractors;
- Replacement standards.

These officials were directed to report on the results of this program on February 1, 1967, and from time to time thereafter. (The full text of the directive is printed in vol. 2, No. 37, (Sept. 19, 1966) of the Weekly Compilation of Presidential Documents.)

Published Articles on GAO

Armed Forces Management magazine for November 1966 has an article by Scot MacDonald entitled "GAO Improves Procedures, Reorganizes Defense Audit." The article is based largely on excerpts from the March 23, 1966, report of the House Committee on Government Operations which grew out of the Holifield subcommittee investigation of GAO defense contract audits. It also refers to the 1966 reorganization of the Defense Division and contains an organization chart of the entire office which highlights the organizational components concerned with GAO functions in the Department of Defense.

Nation's Business for December 1966 has an article entitled "Where Government Can Cut Spending." This article is based on an interview with the Comptroller General and consists largely of a series of specific questions with Mr. Staats' comments on them.

Review of Cash Advances Outstanding

In 1963 a study was made under the joint financial management improvement program to determine how to improve the timing of advance payments so that cash can be retained in the Treasury until actually needed by the recipient to carry out the purpose of the advance and thus reduce the impact of cash advances on the level of the public debt on Treasury financing costs. Treasury Department Circular No. 1075 was issued on May 28, 1964, requiring timing of advances in accordance with actual cash requirements of recipients and establishing a letter of credit procedure to facilitate this objective.

A further review of these procedures is being made by the Bureau of the Budget, the Treasury Department, and the General Accounting Office. On November 16, 1966, the Fiscal Assistant Secretary of the Treasury requested all agencies to report as of June 30, 1966, the balances of unused Federal funds in the hands of all recipients of advances made to them at the rate of at least \$1 million a year. Listings of all programs involving advance financing and the aggregate amount of advances made under each program for the fiscal year 1966 are also required. The

reports were requested to be submitted by December 31, 1966.

Financial Management in the Treasury Bureau of Accounts

This agency, whose functions include disbursing for Federal agencies, central accounting and financial reporting for the Government, and providing banking and related services, has prepared an interesting brochure describing the basic methods used in managing its financial affairs.

Of particular interest is the section on operating cost budgeting. This part of the system is cited as useful at all operating levels for defining goals, measuring the attainment of goals, and supplying a basis for analyzing deviations from targets.

Copies of the booklet were distributed in the accounting and auditing divisions of the General Accounting Office as an illustration of how one civil agency has designed an effective financial management system.

The accounting system of the Bureau of Accounts was formally approved by the Acting Comptroller General on March 1, 1966.

Financial Management Developments in NASA

The Financial Management Division of the National Aeronautics and Space Administration has as one of its objectives the research and development of new techniques for performing financial management functions. A current joint project with the Management Information Systems Division is to provide to NASA headquarters a real-time accounting and

reporting system. From a recent published résumé of this project—

Real-time, in this sense, means that when a transaction is recorded, all affected accounts (or files) are immediately up-dated. Further, at any time the status of an account or a contract may be determined by query of the relevant ADP files.

The main feature of the system will be the installation, in the Headquarters Accounts and Reports Branch, of two remote input-output terminals which will be tied directly into the Headquarters IBM 1410 computer system.

Through these input-output terminals, we will put financial transactions into the accounts—that is, the computer files—as the documents flow into the Division. All files which are affected by a particular transaction will be immediately and simultaneously up-dated.

Important benefits of the new system will be:

- At the end of the month, we will be able to receive our monthly reports immediately.
- There will be a daily print-out of control and transaction listings to permit timely validation of transactions.
- The new month's transactions can be entered without waiting until the previous month's activity has been summarized, which will enable us to have a more even and manageable work flow throughout the month.
- We will be able to query the data bank when we need to validate funds available for travel authorizations, or purchases and contracts thereby avoiding the maintenance of manual records.
- And, in cases where special information is occasionally required by management, through inquiry at the input-output stations located within our Division, we will be able to respond in a timely fashion.

The system should be operational later on this Fiscal Year. * * *

Another project of NASA's Financial Management Division is the training of scientific, technical, engineering, and administrative people in-

volved in project management in the uses to be made of financial and cost data reported to NASA by its contractors. Using training materials developed under the Financial Management Division's direction, a contractor was engaged to conduct week-long seminars. Through October 31, 1966, 28 such seminars had been held at 7 different field installations. Over 500 persons attended them. About half were scientific, technical and engineering personnel and half were administrative support personnel.

Implementation of Defense Project PRIME

In November 1966, the Comptroller General received for formal approval two basic policy documents issued by the Department of Defense as a part of Project PRIME (Project Improvement Management Efforts). The first is to establish the objectives and basic policies for improvement of Defense Resource Management Systems (Department of Defense Directive Number 7000.1, Aug. 22, 1966). The second is to define the financial contents of the 5-year Defense program, Defense budgets and management accounts including the criteria to be applied in the classification of Expense and Investment Costs (Department of Defense Instruction Number 7040.5, Sept. 1, 1966). The main features of proposed Defense actions to improve resource management systems, Project PRIME, were discussed in the Fall 1966 issue of the *Review*.

The Defense Division is working with the staff of Assistant Secretary of Defense Robert N. Anthony in reviewing and commenting on proposals developed by several PRIME

projects. Comments have been made on the proposed accounting structure and procedures for expenses of operations budgeted under the operations and maintenance and military personnel appropriations. Also, comments have been made on a proposed system of cost accounting for hospitals and a proposed revision of the stock fund regulations.

In November 1966, the Department of Defense published "A Primer on Project PRIME." Although not directive in nature, the primer is intended to provide an overlook of the concepts and objectives of the actions being taken to integrate programming, budgeting, and accounting, the development of more useful information on the consumption of operating resources (expenses), and the uses of this information in the management of military activities.

In November the Navy published a handbook on "Financial Management of Resources" (Departmental and Field Activities) (NAVSO-P-3006). This handbook provides detailed definitions, procedures, and guidance for establishing expense operating budgets and expense accounts by operating shore activities. The Navy plans to issue similar separate instructions for the operating forces afloat.

Department of the Interior Financial Management Improvement Seminar

During the weekend of November 18-20, 1966, the Department of the Interior held a financial management improvement seminar in Harpers Ferry, W. Va. The seminar was attended by the Under Secretary of the Interior, Assistant Secretaries. Bu-

reau heads and assistant Bureau heads.

This seminar was the first time that all top executives of the Department of the Interior had been called together to exchange views on an area of common interest. The seminar was highlighted by an address on November 19 by the Comptroller General, *Elmer B. Staats*, on the use of cost data in decision making and reviewing as related to the management of Department of the Interior activities by the officials in attendance.

Following a question and answer period after the address *James T. Hall, Jr.*, assistant director, Civil Division, and *Donald C. Pullen*, supervisory accountant, Civil Division, discussed several sample formats of basic cost-based reports that could be used in the internal management of Department activities.

During the afternoon of November 19, three work groups were formed to continue discussions on what cost data was needed at the various levels of management and what forms of reports could be used to present this data for beneficial use. *A. T. Samuelson*, director, Civil Division, *Frederic H. Smith*, deputy director, Office of Policy and Special Studies, and Mr. Hall and Mr. Pullen attended the work group sessions. *Walter F. Frese*, consultant, led the discussion for one of these sessions. In the evening, the Secretary of the Interior, *Stewart L. Udall*, addressed the group and emphasized the need to improve departmental practices in using cost data for management purposes.

On November 20 representatives of each work group presented oral reports describing the conclusions

reached by the groups with regard to cost data needed and types of reports that would be beneficial. The Under Secretary of the Interior, *Charles F. Luce*, concluded the seminar by summarizing problems to be resolved to improve cost-based internal management and requesting all those in attendance to make a concentrated effort towards resolving these problems.

Although many varied opinions were in evidence as to the value of using cost data for internal management purposes, the seminar was declared an unqualified success by the Department because it provided a much needed step towards achieving recognition from top level program managers of the usefulness of cost information.

The Language of Audit Reports

Most GAO staff members are familiar with this label since it is the title of a booklet that has been in wide use in the General Accounting Office since it was first printed in 1957. It was prepared as a writing aid for GAO report writers by *Laura Grace Hunter* who, at one time, was a report editor in the former Corporation Audits Division.

The Government Printing Office has found this booklet to be in impressive continuing demand. To mid-November 1966, it had printed 74,000 copies and had scheduled the printing of 8,000 more copies. The Superintendent of Documents sells the booklet for 35 cents a copy.

DOD Receives Briefing From GAO

On November 2, 1966, representatives of GAO gave a 2-hour briefing

to top DOD officials headed by John M. Malloy, Deputy Assistant Secretary of Defense, Procurement, and William B. Petty, Director of the Defense Contract Audit Agency (DCAA). The purpose of the briefing was to encourage the Department to take a stronger leadership role in a program to have contractors develop, improve, and formalize their estimating systems for price proposals. During the briefing several charts were presented, one of which displayed typical conditions found in our survey of contractors' estimating systems. The survey was made in conjunction with a GAO review of the new Defense Contract Audit Agency. This agency has been given the responsibility for establishing and managing a program to review estimating systems of all major contractors in the United States. Making the briefing for GAO were *Robert B. Hall, Jr.*, assistant director, Defense Division, and *Charles H. Moore*, regional manager, Detroit.

Distribution of Selected Audit Reports

The following audit report was selected for distribution to interested college and university faculty members in October 1966:

Long-term Leasing of Buildings and Land by Government Contractors, Department of Defense, B-156818, September 20, 1966

This report summarized the results of our review of the long-term leasing of buildings and land by one major contractor. The report concluded that the contractor's practice was more costly to the Government (by about \$19 million over a 25-year period)

than would have been the case if the contractor had constructed and retained ownership of the property for use on Government work. The report also noted that the Armed Services Procurement Regulation provided an incentive for contractors to use the more costly rental method of acquiring facilities. A recommendation was addressed to the Department of Defense calling for it either to consider the costs of rented buildings and land used by contractors to be allowable to the extent that they do not exceed ownership costs or to distinguish between owned and rented facilities in establishing profits or fees.

In November 1966, the following report was selected for distribution:

Potential Savings through Greater Use of Available Government Gasoline Outlets, General Services Administration, B-159072, October 31, 1966

This report examines into the possibility of relatively significant savings that can be obtained through buying more gasoline for use in GSA vehicles through Government gasoline outlets and less by credit-card purchases from commercial service stations. The report estimates that the Government could save about \$600,000 a year by using Government gasoline outlets for GSA vehicles to the maximum extent practicable. A report on a similar finding for vehicles of the military services was submitted to the Congress July 15, 1966 (B-159072).

Procedures Relating to Federal Claims Collection Act of 1966

This law (Public Law 89-508) authorizes agency heads under specified circumstances to compromise claims

of the United States for money or property, or to terminate or suspend collection action, where the principal amount is not over \$20,000.

Agency collection action, including compromise and termination or suspension, is required to be in accordance with standards prescribed jointly by the Attorney General and the Comptroller General. These standards were published in the Federal Register for October 15, 1966 (pp. 13381-13385).

The Comptroller General issued a circular letter on October 19, 1966 (B-117604), urging heads of all agencies to issue appropriate regulations for their agencies.

***Financial Management
Training Course***

The Office of Policy and Special Studies, Staff Development, in keeping with the Comptroller General's

memorandum of June 3, 1966, has developed a 2-week financial management training course in cooperation with the operating divisions. The first session was held in Washington headquarters, November 28-December 9, 1966, attended by 30 selected staff members.

The purposes of this course are to provide more comprehensive, formal training in accounting and financial management and to better equip our professional accountants and auditors to carry out their responsibilities in reviews that involve planning, programming and budgeting systems; accounting and reporting systems; internal audit systems; and in assignments that involve cooperative accounting systems development work. It is planned to give this course, in one form or another, to all members of the professional accounting and auditing staff.

and stale lawsuits against private parties,⁸ and to permit recovery of costs when the Government loses a lawsuit.⁹ When he signed these measures President Johnson stated that they were "long overdue reform measures" that will promise a more "reasonable, effective and efficient approach to controversies with the Government."¹⁰

When the Congress broke new ground and enacted the Presidential Election Campaign Fund Act of 1966,¹¹ it turned to the GAO to establish the rules and regulations and supervise the fund under the plan. (See more detailed résumé of this act below.)

The Congress gave more recognition in public laws to the need for GAO to have access to records of contractors and recipients of new Federal grant and aid programs than ever before. During the 89th Congress, 19 separate laws contained language specifically authorizing GAO to have access to the records incident to the new programs.¹²

Additionally, permanent legislation providing alternative methods for the GAO examination of records of foreign contractors was enacted by the 89th Congress, thereby eliminating the necessity for such authority in annual appropriation acts.¹³

Another duty vested in the GAO by the Congress was the audit of the cancellation and destruction of unfit Federal Reserve notes.¹⁴ This legis-

lation specifically gives GAO access to the necessary records to facilitate the audit of the currency destruction program.

Under the Meritorious Claims Act authority in the act of April 10, 1928, the GAO recommended legislation to settle three claims. All three recommendations culminated in enactments.¹⁵

Representatives of the GAO testified at formal hearings of congressional committees on 46 different occasions during the 89th Congress. During the Congress, 785 reports on bills were issued to congressional committees.

Laws Authorizing GAO Access to Records Enacted in the 89th Congress

Public Law 89-4, March 9, 1965, Appalachian Regional Development Act of 1965

Public Law 89-80, July 22, 1965, Water Resources Planning Act

Public Law 89-105, August 4, 1965, Mental Retardation Facilities and Community Mental Health Centers Construction Act Amendments of 1965

Public Law 89-106, August 4, 1965, To Facilitate the Work of the Department of Agriculture

Public Law 89-136, August 26, 1965, Public Works and Economic Development Act of 1965

Public Law 89-182, September 14, 1965, State Technical Services Act of 1965

Public Law 89-220, September 30, 1965, High-Speed Ground Transportation Research

⁸ Public Law 89-505, July 18, 1966, 80 Stat. 304.

⁹ Public Law 89-507, July 18, 1966, 80 Stat. 308.

¹⁰ 2 Weekly Compilation of Presidential Documents 957 (July 25, 1966).

¹¹ Public Law 89-809, Nov. 13, 1966, 80 Stat. 1587.

¹² See list following.

¹³ Public Law 89-607, Sept. 27, 1966, 80 Stat. 850.

¹⁴ Public Law 89-427, May 20, 1966, 80 Stat. 161.

¹⁵ Public Law 89-76, July 16, 1965, 79 Stat. 242; Private Law 89-49, Aug. 28, 1965; Private Law 89-309, Sept. 17, 1966.

Public Law 89-234, October 2, 1965,
Water Quality Act of 1965

Public Law 89-239, October 6, 1965,
Heart Disease, Cancer, and Stroke
Amendments of 1965

Public Law 89-249, October 9, 1965,
Concession Policies in Areas Ad-
ministered by the National Park
Service

Public Law 89-287, October 22, 1965,
National Vocational Student Loan
Insurance Act of 1965

Public Law 89-291, Medical Library
Assistance Act of 1965

Public Law 89-309, October 31, 1965,
Supplemental Appropriation Act,
1966, Economic Opportunity Pro-
gram

Public Law 89-329, Higher Educa-
tion Act of 1965

Public Law 89-701, November 2,
1966, Fish Protein Concentrate
Contracts

Public Law 89-751, November 3,
1966, Allied Health Professions
Personnel Training Act of 1966

Public Law 89-774, November 6,
1966, Washington Metropolitan
Area Transit Authority Compact

Public Law 89-785, November 7,
1966, Veterans Hospitalization and
Medical Services Modernization
Amendments of 1966

Public Law 89-794, November 8,
1966, Economic Opportunity
Amendments of 1966

***Presidential Election Campaign
Fund Act***

One of the last laws passed by the 89th Congress places a new responsibility on the Comptroller General. This law is the "Presidential Election Campaign Fund Act" which was approved by the President on November

13, 1966—Public Law 89-809. It is an interesting—and potentially highly significant—development in the financing of presidential elections.

The law allows a Federal taxpayer to designate \$1.00 of his income tax payment to be deposited in a special fund in the Treasury known as the "Presidential Election Campaign Fund." The amount in the fund will be available for the financing of campaigns of presidential candidates subject to certain limitations.

The Comptroller General, under the law, is required to certify to the Secretary of the Treasury the amounts payable from the fund to qualifying political parties on the basis of the formula set forth in the act, and subject to appropriations made by the Congress. The amounts found to be payable must be based on a determination by the Comptroller General that the political parties incurred expenses in carrying out presidential campaigns totaling the amounts certified.

Since the formula for payment is based on the popular votes received by candidates of political parties in the preceding presidential election, the Comptroller General must determine the popular votes received by the candidates in that election.

In order to carry out his responsibilities, the Comptroller General is given authority to prescribe such rules and regulations and to conduct such examinations and investigations as he determines to be necessary. The law also provides for the establishment of an Advisory Board to counsel and assist the Comptroller General in the performance of his duties.

The taxpayer designation is authorized with respect to tax liability for taxable years beginning after December 31, 1966. Consequently, the first payments from the fund will be made in the presidential election year 1968.

Hearing on Submissions of Agency Accounting Systems for GAO Approval

The Executive and Legislative Reorganization Subcommittee of the House Government Operations Committee held further hearings on this subject on September 19, 1966. The Comptroller General, *Elmer B. Staats*, testified. He was accompanied by *E. H. Morse, Jr.*, director, and *Fred-eric H. Smith*, deputy director, OPSS; *Arthur Schoenhaut*, deputy director, and *Otis D. McDowell*, assistant director, Civil Division; *Daniel Borth*, associate director, Defense Division; and *John W. Moore*, Office of the General Counsel.

Proposed Legislative Reorganization Act of 1966

H.R. 17963 and S. 3848, reported to the House and Senate in September 1966 (the Monroney-Madden bill), but not acted upon prior to adjournment of the 89th Congress, proposed to assign several new responsibilities to the Comptroller General of the United States. These proposals are reviewed briefly in this issue since they can be expected to receive attention during the next session of the Congress. There are three principal areas of activity involved:

- Budgetary and fiscal information
- Cost effectiveness studies
- Administration of Federal Regulation of Lobbying Act

Budgetary and Fiscal Information System.—The Comptroller General, the Secretary of the Treasury, and the Director of the Bureau of the Budget are directed to develop, establish, and maintain a standardized information and data processing system for budgetary and fiscal data. These officials are also jointly directed to establish and maintain standard classifications of programs, activities, receipts, and expenditures of Federal agencies. The bill states the twofold purpose of the standard classifications as: “* * * (1) to meet the needs of the various branches of the Government; and, (2) to facilitate the development, establishment, and maintenance of the data processing system through the utilization of modern automatic data processing techniques.”

The three principals to the joint responsibility for standard classifications and data processing are directed to perform these functions as part of the Joint Financial Management Improvement Program which was established pursuant to the Accounting and Auditing Act of 1950.

The bill directs the Comptroller General, upon request of any member or committee of the House or Senate, or of any joint committee, to furnish the requester information on location and nature of agency fiscal data and, to the extent feasible, prepare for the requester summary tables of such data.

The bill also directs the Comptroller General to collect data available in the Federal agencies with respect to changes in the figures shown in the budget for any fiscal year submitted by the President. This information

is to include “* * * changes caused by—

- “(1) New or supplemental requests for appropriations;
- “(2) the enactment of appropriation Acts, or the action of either the House or Senate on appropriation bills, or of the Committee on Appropriations, or any subcommittees thereof, of the House or Senate on appropriation bills or requests for appropriations;
- “(3) increases or decreases in expenditures of prior appropriations;
- “(4) increases or decreases in revenue receipts or estimated revenue receipts; and
- “(5) increases or decreases in expenditures or estimated expenditures by reason of the enactment of laws (other than appropriation Acts).”

The bill would also require the Comptroller General to furnish, from time to time, a report to each member of Congress and to each congressional committee setting forth revised budget information and totals. Upon request by any member of Congress or any congressional committee, the Comptroller General would also furnish, to the extent feasible, tabulations of such budget information and data.

Cost Effectiveness Studies.—Section 205 directs the Comptroller General to do two things:

- 1. “* * * have available in the General Accounting Office employees who are expert in analyzing and conducting cost effectiveness studies of Government programs * * *”

- 2. Upon request by any congressional committee, he is to assign, on a temporary basis, such experts to assist the requester:
 - a. “* * * in analyzing cost effectiveness studies furnished by any Federal agency to such committee or joint committee, or”
 - b. “* * * in conducting cost effectiveness studies of programs under the jurisdiction of such committee or joint committee.”

Administration of Lobbying Act.—

The bill proposed to amend the Federal Regulation of Lobbying Act to make the administration of the act the responsibility of the Comptroller General who would be authorized to:

- 1. Develop and prescribe forms, methods, and regulations for administration of the act.
- 2. Make available for public inspection all reports and statements filed pursuant to the act.
- 3. Ascertain whether persons required to file have failed to file or have filed inaccurate or incomplete reports and to notify such persons of their obligations under the act.
- 4. Refer to the Department of Justice for appropriate action violations of the act.
- 5. Make studies and submit such recommendations to the Congress as the Comptroller General deems necessary or appropriate to carry out the objectives of the act.
- 6. Retain for not less than 5 years each report and statement filed under the act and make such reports and statements, or copies

thereof, available for public inspection.

7. Make an annual report to the Congress of the administration of the act.

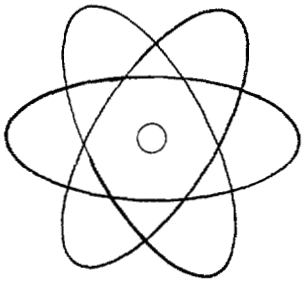
Other portions of the bill, although not proposing entirely new authority or responsibilities, clarify other sections or reemphasize existing authority and responsibility of the Comptroller General. Of particular interest are the sections on utilization of GAO reports.

Section 241 of the bill directs the Comptroller General, at the request of any congressional committee, to designate employees of the General Accounting Office to explain and discuss any report made by the General Accounting Office which would assist the requesting committee in considering proposed legislation or in reviewing programs or activities of any Federal agency.

Section 242 directs the Comptroller General to furnish copies of each re-

port submitted to the Congress to the Committees on Appropriations of the House and the Senate, the Committees on Government Operations of the House and the Senate, and any other committee having jurisdiction over any program, or any Federal agency, which is the subject of the report. (Note: This practice has been followed for many years as a matter of operating policy.)

Section 243 of the bill requires a written statement by a Federal agency to the Committees on Appropriations of the House and Senate of the action taken by such agency on recommendations directed to the head of the agency by the General Accounting Office in a report. The affected agency must submit its written statement in connection with the first request for appropriations it makes to Congress which is submitted more than 60 days after the date of the General Accounting Office report.



AUTOMATIC DATA PROCESSING

19th Annual International Systems Meeting

This meeting, sponsored by the Systems and Procedures Association, was held in Montreal, Canada, September 25-28, 1966. GAO officials attending this meeting were *Edward J. Mahoney*, associate director, Office of Policy and Special Studies, and *Donald L. Eirich*, assistant director, Defense Division. They have provided the following commentary on this meeting.

The meeting was heavily oriented toward the use of computers in business systems. Additionally this year, much emphasis was placed on the subject of overall management information systems.

Concentrated attention by the Association on this subject reflects current widespread interest in the potential for using ADP techniques for the development of total management systems based on integration of information systems in an overall management information system.

Some of the thinking on this latter point involves the adoption of theories and techniques which are evolving from military efforts in the command and control field. These theories, underlying the management in-

formation systems concept, are geared to the proposition of having all pertinent material needed for decision-making available in related computerized files for interrelated processing and interaction where needed to provide the best solutions for management decisionmaking. Also, related to this concept is the idea that routine processing of detailed transactions in subsystems constitutes building blocks on which to build the decision processes while, at the same time, allowing for automatic retrieval of selected subsystem information to support the various levels of aggregated information provided to management.

In addition to the discussions on management information systems, a number of technical sessions were devoted to topics such as: (1) Computer time sharing; (2) converting decision tables directly into programs; (3) developments in software; (4) EDP design; (5) design and implementation of an integrated production and inventory management system; and (6) conduct of a systems study.

Several sessions were devoted to time sharing of computers. One highly technical session dealt almost exclusively with computer-design ef-

forts of manufacturers as related to the development of third-generation, communications-oriented computer systems for use in timesharing applications. This session covered current design efforts as related to multiprogramming, multiprocessing, and multiaccess of computers as used in advanced timesharing applications.

At one of the sessions, stress was placed on the development of software packages as related to timesharing applications, particularly the evolving use of "operating systems" to make better use of the computer hardware and to provide lower "through-put" costs for computer processing by permitting parallel execution of independent programs under control of the operating system. Several examples were presented covering timesharing applications of different types ranging from the use of terminals by many users simultaneously on up to real-time process control operations and on to the computer utility timesharing concept.

Other software discussions covered the concepts of use of operating system software under a variety of situations such as:

1. Batch processing with small hardware configurations.
2. Batch processing in a multiprogramming mode.
3. Data collection and file interrogation.
4. Data collection and file interrogation together with batch processing.
5. Highly dynamic multiprogramming applications as characterized by conversational mode timesharing.

Systems design presentations were for the most part concerned with design of computer-based systems using techniques of responsibility reporting, performance reporting, management-by-exception techniques, and other advanced methods for providing management with accurate, pertinent, and analyzed data for use in decisionmaking.

Use of decision tables for system design and systems analysis operations were presented. Although this is a development of fairly recent times, a number of progressive data processing organizations are making use of this technique. Also, efforts are being made to use a COBOL-like language—DETAB-65—to permit direct conversion of decision tables to computer programs by using a computer to compile object programs for use with live data in actual data processing operations.

Attendees at the meeting were presented with a copy of a book covering papers presented at the meeting entitled "Ideas for Management" which was published by the Association. This book is available in the GAO for use by staff members who are interested in inquiring, in more depth, into the various matters covered at the conference.

Presidential Memorandum on ADP

In his memorandum to the heads of departments and agencies dated June 28, 1966, the President of the United States established a requirement for the Director of the Bureau of the Budget to report to him on December 31, 1966, and every 6 months thereafter on the progress being made

throughout the Federal Government in improving the management and use of this new technology. (The full text of the President's statement appeared in the fall 1966 edition of the *GAO Review*.)

On October 5, 1966, the Bureau of the Budget issued its Circular No. A-79 which established the requirement for semiannual reporting of accomplishments being made in both the application and management of ADP by Federal agencies.

The circular defines the area of report coverage and establishes reporting guidelines and the reporting format to be used by the agencies. The reporting system calls for a description of the following items:

1. Accomplishments in the use of electronic digital computers.
2. Accomplishments in the management of ADP activities.
3. Plans for the future.
4. Areas in which management improvement of ADP activities requires action on the part of other agencies.
5. Organization.

These reports will help keep GAO staffs informed on current developments in the agencies and should provide information of value in connection with our work in providing assistance in improving agency financial management systems and in audit and review activities.

Training of Auditors in ADP

On September 19, 1966, the curriculum task force for auditor training in ADP submitted its proposed curriculum report to an ad hoc parent committee composed of representatives of GAO, the Civil Service Com-

mission, and the audit arms of DOD and the military departments.

On October 10, 1966, the members of the parent committee reached agreement on using the proposed curriculum for two pilot courses to be conducted by June 30, 1967. They also accepted the general plan and overall projected timetable as follows:

- By Oct. 15, 1966. . . Task force report considered, modified, and approved by ad hoc parent committee.
- By Dec. 1, 1966. . . Minimum of four instructors selected and available, at least on TDY.
- By Jan. 1, 1967. . . Instructor training and course materials development commenced.
- By Jan. 15, 1967. . . Announcement of pilot courses distributed to all Federal agencies.
- By Apr. 1, 1967. . . Agencies advised of accepted nominees.
- By May 1, 1967. . . Case problem and course materials completed.
- May 8-26, 1967. . . Pilot Program No. 1.
- June 12-30, 1967. . . Pilot Program No. 2.
- July 1, 1967. . . . Regular schedule commences.

Four auditors from the participating agencies were selected and assigned to the United States Civil Service Commission as full-time instructors and employees of the ADP Management Training Center. *Earl M. Wyson, Jr.*, supervisory accountant, Defense Division, was assigned as an instructor from GAO and reported to the Civil Service Commission on December 1, 1966. He will be detailed on this assignment for a period of 18 months.

Administrative Terminal System

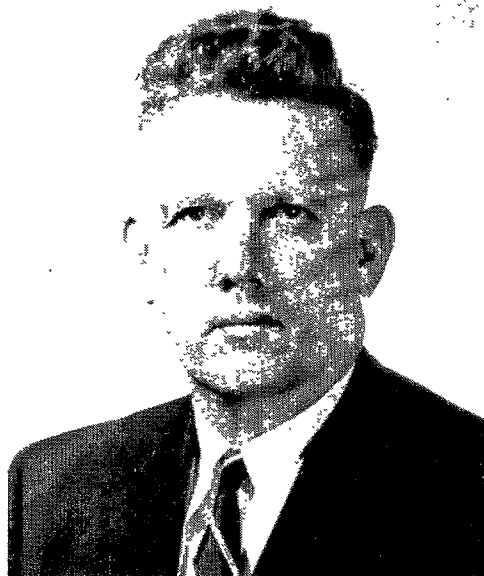
IBM has developed a new system whereby management is able to edit and control the content and size of manuals, reports and other publications. Called the Administrative Terminal System (ATS), it provides up to 40 terminals which can be used to revise or change written material. As a result, manuals can be maintained on a more up-to-date basis and editing time can be drastically reduced.

Separate communications lines lead directly from each of the 40 terminals to a central computer. When a report or manual is first drafted, it is entered directly into the computer via one of these terminals. Any portion of the text can be retrieved from the computer as changes are required. The changes are made by retyping only the word or words to be altered. The corrected text is then restored in the computer until the completed publication is ready for printing.

At publication time the master sheets for reproduction are printed directly from the computer, saving the time usually required for final typing. This master sheet can be produced with the pages numbered, headings, and right margin justified if needed. In addition, any text entered into the computer can be converted to punched cards, magnetic tape, or other common input devices for entry into other programs or computers.

In modern business and governmental activities, the ATS has wide application. Douglas Aircraft Corp. utilizes it to establish and maintain control over DC-8 and DC-9 technical publications. The Oregon Motor & Vehicle Department has been using an ATS to convert driver records from paper to machine readable form. As the complexity and volume of modern business publications expand, such systems will become increasingly more important.

Recent Staff Designations



Ernest C. Andersen

Ernest C. Andersen was designated as assistant staff development officer of the Office of Policy and Special Studies, effective December 4, 1966.

Mr. Andersen served in the U.S. Army from 1941 to 1946. He received his LL.B. degree from Westminster College of Law in 1952, and his B.S.B.A. degree from the University of Denver in 1956.

Prior to joining the General Accounting Office in 1957, Mr. Andersen practiced public accounting, worked in the field of accounting and related activities for private industry and government including 2 years as Deputy State Auditor of Colorado.

He is a certified public accountant (Colorado), a member of the Colorado bar, and of the Federal Bar Association.



Dominick A. Binetti

Dominick A. Binetti of the State, Finance, and Commerce Financial Management and Systems Group, International Division, was designated as assistant director, effective September 25, 1966.

Mr. Binetti graduated, with honors, from Fordham University in June 1950, with a bachelor of science degree in business administration. He is a CPA (New Jersey and the District of Columbia) and a member of the National Association of Accountants. He served in the U.S. Army from 1943 to 1946 and in the U.S. Navy from 1950 to 1951.

Before joining the General Accounting Office in June 1960, Mr. Binetti was an audit manager with a national firm of public accountants.



Arnett E. Burrow

Arnett E. Burrow was designated as assistant manager of the Kansas City regional office, effective November 7, 1966.

Mr. Burrow is a certified public accountant (Missouri) and is a member of the Missouri State Society of CPAs. Prior to joining the General Accounting Office in 1953, he had extensive experience in business and in public accounting. He has worked in both the St. Louis and Kansas City offices.



Eugene L. Pahl

Eugene L. Pahl, who is currently assigned to the Department of the Interior audit group, was designated as assistant director in the Civil Division, effective November 7, 1966.

Mr. Pahl has been with the Office since 1950 when he graduated from the University of Maryland. He is a certified public accountant in the State of Maryland and is a member of the National Association of Accountants and the Federal Government Accountants Association.



Charles Weinfeld

Charles Weinfeld was designated as an assistant director, Defense Division, effective October 9, 1966. He is currently assigned to the Procurement group.

Mr. Weinfeld was employed by a public accounting firm in New York City before joining the Washington staff of the General Accounting Office in 1942. From 1943 to 1958, he was on the staff of the New York regional office where he served as an audit manager.

Mr. Weinfeld has a bachelor of arts degree with a major in public accounting from George Washington University and has also attended the City College of New York. He is a member of the Federal Government Accountants Association.



Frank M. Zappacosta

Frank M. Zappacosta was designated as an assistant director in the International Division, effective September 25, 1966. Mr. Zappacosta is currently assigned to the Agency for International Development where he is in charge of the financial management development work in connection with the economic assistance program.

Mr. Zappacosta is a 1946 graduate of the Baltimore College of Commerce and has also had specialized training in the field of data processing.

Prior to joining GAO in 1952, Mr. Zappacosta was associated with a national public accounting firm. He is an accounting instructor on the faculty of Southeastern University and a member of the National Association of Accountants and the American Accounting Association.

Professional Activities

Office of the Comptroller General

The Comptroller General, *Elmer B. Staats*, addressed the following groups in recent months:

The Joint Symposium of the Philadelphia chapters of the Federal Government Accountants Association and the Pennsylvania Institute of Certified Public Accountants, in Philadelphia on September 26, 1966, on "New Directions in Accounting and Auditing."

The Second Annual Federal Government Paperwork Management Awards Banquet sponsored by the Administrative Management Society on September 27, on "Paperwork Management—Its Importance to Business and Government." This speech was printed in the Congressional Record for October 6, 1966.

National Security Industrial Association, New England regional chapter in Bedford, Mass., on September 29, 1966, on "The Audit of Government Contracts by the General Accounting Office."

Department of the Interior Financial Management Improvement Seminar on November 19, at Harpers Ferry, on "Using Cost Data in Decision Making and Reviewing."

Audit Leadership Night Meeting of the Washington chapter of the Institute of Internal Auditors, November 21, on "The Growing Importance of Internal Auditing in the Federal Government."

Joint Meeting of the Medical Association and Bar Association of Syracuse, N.Y., November 29, 1966, on "The General Accounting Office and the Part We Play in the Conduct of Public Affairs."

Joint Technical Seminar on Defense Contracts Accounting, New York City, November 30. This seminar was sponsored by the New York State Society of CPAs, and local chapters of the National Association of Accountants and the Federal Government Accountants Association. Mr. Staats spoke on "Examination of Defense Contracts by the General Accounting Office."

The Assistant Comptroller General, *Frank H. Weitzel* represented the General Accounting Office at Cookeville, Tenn., on October 18, 1966, the celebration of "Joe Evins Day," honoring Representative Joe L. Evins, Chairman of the Independent Offices Subcommittee of the Appropriations Committee, House of Representatives. The program included the designation of one of the buildings of Tennessee Technological University at Cookeville as the "Evins Building."

Mr. Weitzel addressed the following groups in recent months:

The Philadelphia chapter of the Federal Government Accountants Association on October 19 on "Accounting and Auditing in Field Operations."

Participants in the Navy Graduate Financial Management Program at George Washington University, Washington, D.C., on November 28, on "The Role of the General Accounting Office."

The Civil Service Commission's interagency training course in "Management of Government Finances" on December 12 on "The Roles of Congress and the Central Agencies." Other GAO officials participating in this course were: *Daniel Borth* and *Hassell B. Bell*, associate directors, Defense Division, and *Francis W. Lyle*, assistant director, OPSS.

Office of the General Counsel

Robert F. Keller, general counsel, addressed the Aerospace Industries Association, Procurement and Finance Committee, in San Francisco, Calif., on October 20, 1966, on "GAO Audits of Defense Contracts." On October 21, Mr. Keller addressed the Strategic Industries Association Conference in Los Angeles, Calif., on the "Truth in Negotiations" Act, Public Law 87-653.

On November 30, Mr. Keller participated in a roundtable discussion before the Joint Technical Seminar on Defense Contract Accounting in New York City.

J. Edward Welch, deputy general counsel, spoke on "The Role of GAO in Government Contracting" at the University of Minnesota Law School on October 20-21, 1966.

On September 28 and October 26, Mr. Welch spoke at the Department of Agriculture Graduate School on "Government Procurement."

On October 28 and November 22, in Washington and in Los Angeles,

respectively, Mr. Welch appeared as a lecturer on "Lectures on Formal Advertising" sponsored by Federal Publications, Inc., in cooperation with George Washington University.

Stephen P. Haycock, assistant general counsel, was a panelist on October 6-7 at the 5th Annual Institute on Government Procurement in Boston, Mass., sponsored by the Boston chapter of the National Contract Management Association.

On October 13, Mr. Haycock spoke at the 8th Annual Western Briefing Conference of the Federal Bar Association—Bureau of National Affairs, held at the U.S. Navy Postgraduate School at Palo Alto, Calif. The subject of the conference was Government contracts. Mr. Haycock spoke on the "Truth in Negotiations" Act.

Mr. Welch addressed a class of the DOD advanced procurement management course given at Fort Lee, Va., on September 23. His subject: "Problems in Formal Advertising." Mr. Haycock addressed similar classes in this course on the same subject on October 21 and December 2.

Milton J. Socolar, attorney, spoke on October 28 at the Department of Agriculture School on "Grants."

M. E. Miller, assistant general counsel, addressed a class of the DOD advanced procurement management course, Fort Lee, Va., on October 18. Subject: "The Role of the GAO in Defense Procurement."

Office of Policy and Special Studies

E. H. Morse, Jr., director, and *Charles Moore*, Detroit regional manager, met with the entire staff of the Auditor General of the State of Michi-

gan in Lansing, Mich., on November 21, 1966, to discuss GAO audit policies and practices.

Frederic H. Smith is serving on the Board of Governors of the District of Columbia Institute of CPAs. Mr. Smith is also a member of both the Federal Government Accountants Association national committee and Washington chapter Committee on Cooperation with Other Professional Organizations.

William L. Campfield has an article published in the spring 1966 issue of the Federal Accountant entitled "Education for Management Auditing." Mr. Campfield is serving on the following committees:

American Accounting Association—Committee on Governmental Accounting.

Federal Government Accountants Association—National Committee on Education.

Federal Government Accountants Association—Washington chapter Committee on Cooperation with Other Professional Organizations (chairman).

Francis W. Lyle is chairman of the Membership Committee, Washington chapter of FGAA and is also serving on the National Research Committee of FGAA.

Staff Development

Leo Herbert, deputy director for staff development, participated on November 6 as a discussion leader at a National Association of Accountants meeting in Washington on the topic "Importance of Continuing Education." On December 7, he gave a talk at a seminar at the Ohio State University, Columbus, Ohio, and on Decem-

ber 8, at a Beta Alpha Psi meeting at the University of Arkansas, Fayetteville, Ark., on "Audits of Management Performance: A Conceptual Framework for Training, Communicating and Analyzing."

On October 18 and 19, *Edward Breen*, assistant director, conducted a 2-hour session on the functions of the General Accounting Office and its career development program for 25 trainees from the Bureau of Public Roads.

During the months of October–November 1966, five 2-day faculty programs were conducted during which 51 faculty members and 3 placement officers from as many different colleges and universities visited our offices to become acquainted with our accounting and auditing operations. The following offices were hosts for these programs: Washington headquarters, Atlanta, Denver, New York, and Seattle.

On October 24 and 25, 1966, in the Los Angeles regional office, and on October 27 and 28, in the Washington headquarters, two 2-day pilot programs for college students of accounting were held. The main objectives of the program are to acquaint college students of accounting with the professional activities of the Office, with our accounting, auditing, and investigative policies and practices, with our program of training, staff utilization, and professional development and with our recruitment policy with respect to hiring college graduates.

Civil Division

A. T. Samuelson, director, has been awarded the Member of the Year award by the Washington chapter of

the National Accounting Association for his outstanding work as an individual member. Mr. Samuelson, a past president of the Washington chapter, has been recommended as a nominee for national director of the National Association of Accountants.

James T. Hall, Jr., assistant director, and *Donald C. Pullen*, supervisory accountant, participated in the Department of the Interior's financial management improvement seminar held November 18-20, 1966, at Harpers Ferry, W. Va.

M. A. Neuwirth, assistant director, is serving as director of manuscripts of the Washington chapter of the NAA.

W. N. Howell received the achievement award from the Society for Advancement of Management for his contribution to its objectives. Mr. Howell was also given permanent custody of the Society's Harrington Emerson Citation previously awarded for piloting the Washington chapter to first place under its international chapter performance rating plan during his term as president in 1962-63. Mr. Howell, a member of the international board of directors of SAM now serves as vice president, central Atlantic region.

J. J. Cronin, supervisory accountant, in cooperation with Bureau of the Census officials organized and acted as moderator at a presentation of cost-based budgeting practices in the Bureau of the Census on October 28, 1966. The presentation was attended by the Comptroller General, Assistant Comptroller General, other GAO officials, and representatives of the Treasury Department and the Bureau of the Budget.

D. M. Mutzabaugh, assistant to the director, received the Remington Rand Cup for the outstanding service team of the Washington chapter of the National Association of Accountants for the 1965-66 chapter year. Mr. Mutzabaugh, an associate director for member attendance, also received an award as the runner-up to the Member of the Year award.

Defense Division

William A. Newman, Jr., director, participated in the Conference for Federal Executives on Business Operations as a part of an executive leadership program conducted by Brookings Institution, Washington, D.C., December 4-9, 1966. Seminars were held in Los Angeles and San Francisco, Calif., with presidents, vice presidents, board chairmen, and other high officials of corporations and institutions representing a variety of businesses.

Daniel Borth, associate director, participated as section speaker and panel moderator of the following career programs of the U.S. Civil Service Commission:

Financial Management Course, November 3, 1966, an interagency program for grades GS-11-14. Management of Government Finances, November 15, 1966, an interagency program for grades GS-11-15.

Naval Postgraduate Course, George Washington University, November 13, 1966. Subject: The Newer Financial Management Concepts in Defense.

Hassell B. Bell, associate director, addressed the Quad-Cities chapter of the Federal Government Accountants

Association, Moline, Ill., at their first annual symposium on October 8, 1966. Mr. Bell discussed how the function of internal audit and control can serve as the eyes and ears of top management.

Richard W. Gutmann, associate director, addressed the Thirteenth National Conference of the Armed Forces Management Association on October 11, 1966. His speech was entitled "Audit As An Aid to 'Management By Results.'"

Charles W. Kirby, and *Frank P. Chemery*, assistant directors, participated as panel members at a management seminar held on November 15, 1966, at the Air Command and Staff College, Maxwell Air Force Base, Ala. Over 600 military officers, including some from allied countries, attended the seminar. As a part of the discussions, Mr. Kirby gave a brief talk on GAO's view of Air Force management.

William F. Coogan, assistant director, is serving on the National Chapters Committee of the FGAA.

John F. Flynn, assistant director, spoke on November 15, 1966, to the Army supply management class at the Army Logistics Management Center, Fort Lee, Va., on GAO review work in the area of Army logistics.

Hyman S. Baras, supervisory accountant, spoke at the Defense Procurement Executive Refresher Course for senior officials of the Department of Defense in Washington, D.C., on November 30 and December 7, 1966. His subject was the role of GAO, particularly as it relates to Defense procurement.

International Division

Frank C. Conahan, supervisory accountant, participated as speaker and

panelist on December 3, 1966, at the King's College Business Administration Seminar on the role of the business administration graduate in industry, government, and business. Mr. Conahan appeared at the invitation of the college, which is located in Wilkes-Barre, Pa., and spoke on financial management in the Federal Government and career opportunities available to business administration graduates in the Federal Service.

Regional Offices

Russell H. Pauling, supervisory auditor, Detroit, was elected vice president of the Federal Government Accountants Association, Detroit chapter, for 1966-67.

Rose E. Ash, accountant, Cleveland suboffice, has been appointed a member of the Research Committee of the Cleveland chapter of the American Society of Women Accountants for the year 1966-67.

Richard J. Gannon, audit manager, Los Angeles regional office, gave an informal talk before the Supervisory Procurement Committee of the Air Force Space Systems Division, El Segundo, Calif., on November 10, 1966, on GAO audits of procurement and the manner in which these audits are performed.

Robert Drakert, regional manager, New York, addressed the New York chapter, FGAA, on October 13, 1966, on opportunities for cooperation between the executive departments, contractors, and the GAO. From October 23 through 28 Mr. Drakert took part in a Brookings Institution program in Pittsburgh in which representatives of a number of Federal agencies visited several of the largest industrial, financial, and union orga-

nizations in the country to discuss management operations and problems with key executives.

Vincent J. Palazzolo, supervisory auditor, New York, participated in the Civil Service Commission seminar on Federal training at New York, N.Y., on September 30, 1966. Mr. Palazzolo was one of the workshop speakers for the session on "Improving Communications with the Public." He spoke on the recently completed public relations review performed at numerous Federal agency sites by the General Accounting Office.

Harry C. Kensky, assistant regional manager, Philadelphia, spoke to the Beta Alpha Psi chapter of Temple University on the subject "Accounting and Auditing Activities of the General Accounting Office" on October 26, 1966.

Charles F. Vincent, assistant regional manager, San Francisco, was a guest lecturer October 13, 1966, at the Civil Service Commission's Federal Executive Seminar held at Berkeley, Calif. He discussed GAO as a control agency in Federal program management.

Harold J. D'Ambrogia, audit manager, San Francisco, addressed a luncheon meeting of the American Society of Military Comptrollers at Treasure Island on November 8. He spoke on the effect of the reorganization of the Defense Division on our work at the installation level and on our closer working relationships with DOD.

Stewart D. McElyea, regional manager, Denver, is president of the Educational Foundation of the Colorado Society of CPAs. The Foundation offers scholarships to college fresh-

men, cash awards to outstanding college students, and grants to graduate students and faculty members engaged in accounting research projects.

Transportation Division

T. E. Sullivan, director, addressed the semiannual meeting of the Southeastern Accounting Conference of the Association of American Railroads at New Orleans, La., October 6, 1966, on the work of the GAO in assisting Government agencies to improve their financial management and accounting systems. Mr. Sullivan also addressed the annual conference of the Household Goods Forwarders Association of America, in Washington, D.C., on November 18, 1966, concerning the serious problem facing the Department of Defense on the use of forwarders for overseas shipments of household goods as a result of the thousands of subsequent claims and court suits filed to resolve disputes over the correct charges.

E. B. Eberhart, acting chief of the passenger branch, participated in the annual meeting of the National Bus Traffic Association, in Phoenix, Ariz., on November 1 and 2, 1966.

Thomas C. McNeill, assistant to the director, represented the GAO at the semiannual meeting of the Freight Liaison Subcommittee of the Freight Revenue Committee, Association of American Railroads, at Detroit, Mich., on November 15 and 16, 1966, to discuss problems in billing the Government for freight shipments; E. B. Eberhart represented the GAO at the Passenger Revenue Committee meeting that followed, and discussed passenger billing problems of the railroads.

New Staff Members

The following professional staff members joined the accounting and auditing divisions and reported for work during the period September 13, 1966, through December 15, 1966.

**Civil
Division**

Lashier, Lawrence D.
Perdue, Elizabeth L.
Ramsey, Jack B.

Walla Walla College
Concord College
Texas A. & M. University

**REGIONAL
OFFICES**

Boston

McDonough, John E.
O'Connor, Jeremiah J.

Boston College
Suffolk University

Chicago

Wilson, Paul I.

University of Minnesota

Detroit

Miller, Neil N.
Vieregge, Ronald A.

David Lipscomb College
Western Michigan University

New York

Rashes, Bernard D.

New York Institute of
Technology

Philadelphia

Piskai, Michael R.

Pennsylvania State University



Learning by Experience

In the fall 1966 issue appeared my article entitled "The Importance of Good Working Relationships." Because some readers may have asked how the author became interested in human relations, I would like to relate a few of my experiences in industry and in State and Federal Government which, among other things, taught me the importance of understanding and practicing human relationships and, I believe, helped me immensely in establishing and maintaining good working relations with the agencies and the many contractors located in the Los Angeles region during my 13 years as a GAO regional manager and 9 years as area chief. I recognize that everyone makes occasional mistakes and errors in judgment; however, there is, in my opinion, no excuse for a person not to learn something from every mistake he makes, or to make the same mistake again.

Early in my career, while employed in industry, I was placed in charge of a small accounting office of 13 employees. The records were kept manually and the employee who maintained the general ledger worked at the traditional high desk. In those

days bookkeeping machines were a rarity and after a few months I recommended orally to our Controller that we purchase two Elliott-Fisher machines at a cost of about \$5,000 which I believed would result in not only keeping better and more accurate records but reduce the staff to 10.

The Controller asked a few simple questions about procedures, forms, projected cost of operation, etc., which I was not prepared to answer. Although very embarrassed, I asked for a chance to again present the matter after making a thorough study of the proposed operation. Utilizing certain information obtained from the Elliott-Fisher sales representative, I prepared a detailed report showing the benefits to be derived by the installation of this more modern equipment which would partially mechanize the office operation. The report was accompanied by exhibits showing the present and proposed equipment, forms, procedures, proof methods, daily and monthly reports, operating costs, manpower requirements, etc., and by requisitions for purchase of the necessary equipment and supplies to make the changeover. The proposal was promptly approved.

What did I learn by this experience? I learned to thoroughly develop and document the facts on which a conclusion and recommendation is based, and second, to present the recommendation in a manner most likely to sell it to the buyer—in this case, the Comptroller.

A year or two later, while still in industry, I became aware of a procedure which resulted in the payment of additional taxes because certain items purchased for special purposes were allowed to rest in inventory at yearend instead of being charged to an operating or maintenance account.

I wrote a very critical report on the matter and sent it, through channels, to the Assistant General Manager, who was then making a plantwide study of operations. Being quite young and inexperienced, but very enthusiastic, I not only criticized the existing policy but, indirectly, those responsible for such a policy. Needless to say, I was called “on the carpet” and given a lecture in diplomacy. I was told that a suggestion directed toward improvement of a policy or procedure was very welcome but that criticism of company policy or company officials was not.

My suggestion was referred to our national CPA firm which recommended its acceptance. The firm also recommended that a similar procedure followed by one of its other nationally known clients be changed accordingly. I was subsequently promoted.

This experience taught me more about human relations—to present suggestions for improvement and thereby help others and keep their goodwill, rather than to criticize and cause resentment and ill feelings.

The executive who called me “on the carpet” and gave me advice subsequently became president and later chairman of the board of one of the Nation’s largest corporations. It is evident that his philosophy on how to obtain improvement by diplomatic, courteous, constructive suggestions rather than caustic, harsh, overcritical judgments paid off.

While serving as State Comptroller of an emergency relief program utilizing both State and Federal funds, it was necessary to obtain the State Board’s approval of any new policy or changes in policy. Board meetings were attended from time to time by a representative of the Federal Administrator.

As always with a new program, many problems were encountered and, to properly resolve some of them, new policies or changes in present policy were required. Since most of the funds for the program were provided by the Federal Government, the State Board was hesitant to make any changes without the Federal Administrator’s approval and/or direction.

On the next visit to the State by the representative of the Federal Administrator, I explained to him five policy matters which I had presented through the State Administrator to the Board for consideration and which had not been acted upon although I felt they were of vital importance. He agreed to take them up with the Board at the meeting to be held the next day since he agreed that they would improve the operation of the program.

The next day three of the five recommendations were approved and I was disappointed when the representative did not even bring the other two

up for discussion. When I asked "Why," he said "Never press your luck" and then proceeded to give me some good advice. He said that when the Board showed signs of resistance toward further suggestions (he had discussed many other matters in addition to those I had recommended), he quit while the Board was still in a good humor. He said he would then be in a much better position to "sell" the other two recommendations at the next Board meeting.

This official gained such a reputation in Government for getting things done in a tactful, diplomatic manner that he later became administrator of a large Government agency which constantly deals with State and city officials as well as industry. In my opinion, this shows that the person who becomes proficient in human relations has a much better chance of becoming a successful top executive than one who does not.

While with the Treasury Department, it was my good fortune to be associated with the Commissioner of Accounts, later the Fiscal Assistant Secretary, who was dedicated to the improvement of accounting procedures and business methods of the U.S. Government. He sought to accomplish this by a plan for integration of the various systems of accounts maintained in the several activities of the Government, thereby obtaining more effective accounting control, more informative reports concerning the Government's financial condition, and a more complete accounting to the Congress concerning the use of the public money. He made numerous speeches and released several papers on the subject but was unsuccessful in "selling" the idea. A

selected number of these papers were published in book form. (Accounting Procedures of the U.S. Government by E. F. Bartelt: Public Administration Service, Chicago, 1940.)

Finally realizing that most of the other departments and agencies would never agree to change their fiscal procedures to conform to a standard system of accounts prescribed by another agency, the Commissioner, with the Secretary's approval, enlisted the support of the Comptroller General to head up a joint effort by the Treasury Department, the Bureau of the Budget, and the General Accounting Office to improve accounting in the Federal Government. As we all know, the Joint Financial Management Improvement Program, originally known as the Joint Program for Improving Accounting in the Federal Government, was begun in December 1947, and has accomplished many improvements in financial management practices.

The fact that joint efforts toward improvement have been highly successful whereas the attempt to require change was unsuccessful shows, in my opinion, that we should be persuasive and cooperative in our actions to accomplish our goals rather than to try to force people to agree with our opinions.

The above experiences, and many others, have taught me the value of practicing human relations. As stated in my article, human relations is the development of productive, satisfying group effort. A thorough knowledge of human relations, and the development of the skill required to apply it to their work are, in my opinion, necessary parts of the job of any GAO accountant, auditor, or investigator.

Harold L. Ryder

STATEMENT OF EDITORIAL POLICIES

1. This publication is prepared for use by the professional staff members of the General Accounting Office.
2. Except where otherwise indicated, the articles and other submissions generally express the views of the authors, and they do not necessarily reflect an official position of the General Accounting Office.
3. Articles, technical memoranda, and other information may be submitted for publication by any professional staff member. Submissions may be made directly to liaison staff members who are responsible for representing their offices in obtaining and screening contributions to this publication.
4. Articles submitted for publication should be typed (double-spaced) and range in length between 5 and 14 pages. The subject matter of articles appropriate for publication is not restricted but should be determined on the basis of presumed interest to GAO professional staff members. Articles may be submitted on subjects that are highly technical in nature or on subjects of a more general nature.

THE GAO REVIEW
LIAISON STAFF

Office of Policy and Special

Studies	<i>E. H. Morse, Jr.,</i> Coordinator
Civil Division.....	<i>Jack L. Mertz</i>
Defense Division.....	<i>Ralph M. Kee</i>
International Division.....	<i>Irving Martin</i>
European Branch.....	<i>Joseph DiGiorgio</i>
Far East Branch.....	<i>Charles H. Roman</i>
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