

The GAO Review

Summer 1977





The seal comprises a shield segmented by a right angle containing 13 stars, representing the organization of the accounting office when there were but 13 united states. Below the stars is set out in relief the dome of the Capitol and the figure of freedom thereon representing the independence of judgment to be exercised by the General Accounting Office, subject to the control of the legislative branch. Above the right angle of stars there appears the balance beam and scales symbolizing the justiciable principles on which the activities of the Office are based, and to the right thereof is shown an account book and quill on which is the crossed key of the Treasury symbolizing the keeping of books on the accounting and auditing of public moneys. The combination represents an agency of the Congress independent of other authority auditing and checking the expenditures of the Government as required by law and subjecting any question arising in that connection to quasi-judicial determination.

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Fire Safety Standards

Do Not Insure Life Safety

During 1974, GAO made a study of nursing home fire safety and found that many nursing homes did not meet Federal fire safety requirements. In 1976, GAO again studied the problem and concluded that Federal fire safety requirements were not adequate to insure life safety. These are indeed two very bold conclusions.

Scotch essayist Thomas Carlyle once wrote, "Fire is the best of all servants; but what a master!" Fire is truly a great servant, but nevertheless, each year thousands of people are injured or killed in fire-related tragedies. In the case of the young and mobile person, evacuation is the most effective means of avoiding tragedy when fire strikes. Currently, a national campaign is underway to encourage the general public to install smoke detection devices in their homes, which give warning in case of fire, so that prompt evacuation can be accomplished.

But what about our frail, nonambulatory elderly? In many cases elderly people cannot walk, and evacuation may be all but impossible.

Panic Is A Problem

Another problem is that of panic. In a fire situation, even the most stable individual could panic and act in a most irrational manner. Cases have been noted of people running into burning rooms to salvage personal belongings even after they were at places of safety. If stable people could panic, what about the frail, fragile older person who has lapses of memory, who suffers from chronic brain syndrome otherwise called senility, or who has other mental impairments which prevent consistent rational behavior? These people simply may not be able to act rationally in a situation where they can see the possibility of all their worldly possessions be-

*Mr. Zipp is a supervisory auditor in the Human Resources Division. He has a B.S. degree from the University of Tennessee in Accounting and Finance and is a Certified Public Accountant (Maryland). He has served on assignment to the Subcommittee on Health and Long-Term Care of the House Select Committee on Aging, and drafted a Subcommittee report on nursing home fire safety. He joined GAO in January 1971, and received a GAO Meritorious Service Award in 1974. He was selected to appear in the 1976-77 edition of *Who's Who in the East*.*

ing destroyed by fire. This is a very real problem.

A nursing home may be an institution as far as the government is concerned, but to its residents it is their home. That home usually contains all of the things these people own, including: money, clothes, pictures of family, children, and loved ones, and other mementos of their lives.

These tangible items are all that some people have left after 70, 80, or 90 years of life. These items are sacred to them, and their destruction is tantamount to the destruction of the person and his past. When the risk of loss is so great, even a rational person would probably make every effort to prevent such loss.

These are only some of the problems to consider regarding nursing home fire safety. Nursing home residents present a particular problem because of several factors: (1) their advanced age (average 82), (2) their failing health (average 4 disabilities), (3) their mental condition (55 percent are mentally impaired), (4) their reduced mobility (less than half can walk), (5) their sensory impairment (loss of hearing, vision, or smell), (6) their reduced tolerance to heat, smoke, and gases, and (7) their greater susceptibility to shock.

Evacuation May Be A Waste of Time

Evacuation may be the most effective means of avoiding loss of life for a mobile person; but in the words of a nursing home physician who lived through a tragic nursing home fire, "evacuation of nursing home residents is a waste of time."

The physician testified before a congressional committee that:

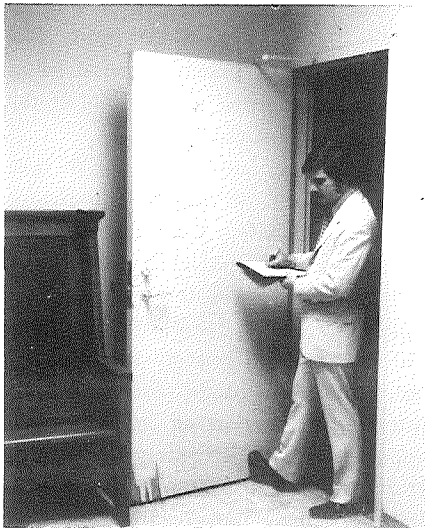
I think it is well to point out that if we were to go right now, to any nursing home, and drag 30 people down from the third floor, we are going to kill a substantial number. I think we have got to remember, and remember throughout the day, that evacuation is really futile. It is a waste of personnel and precious time. This tragedy took place in such a short number of minutes, that we had to limit our efforts to those which would save lives, and evacuation would not.

The physician further clarified the problem:

To move a patient, without hurting a senile, fragile body, requires two members of the staff over a couple of minutes. When you think of the chaos and the pandemonium that reigned under the circumstances, and remember you are dealing with human elements, you have to remember that people are not functioning quite on the level that they would in a drill.

Federal Concern Began in 1970

Historically, nursing home fire safety had not been a major concern of the Federal Government until 1970. The Social Security Act, as amended, required Medicaid skilled nursing homes to comply with the fire safety standards of the Life Safety Code as of January 1, 1970. In October 1971, HEW extended this requirement to Medicare skilled nursing facilities. Intermediate care facilities did not have to meet the standards of the Life Safety Code until June 1, 1976. At that time, there were about 7,500 skilled nursing facilities certified for Medicare or Medicaid and about



The author inspects door to a hazardous area (incinerator room) in a nursing home. The door had locking hardware. Although patients would not normally be in this room, they did use other rooms in the area and could be trapped in it if there were a fire.

9,000 intermediate care facilities certified for Medicaid.

The Code Contains Fire Safety Standards

The Life Safety Code contains fire safety standards for the construction of various building elements, such as walls, roofs, floors, exits, supporting assemblies, hazardous areas, and others. The Code contains a section of standards especially for institutional facilities, which includes nursing homes. According to the Code:

All institutional buildings shall be so designed, constructed, maintained, and operated as to minimize the possibility of a fire emergency which requires the evacuation of occupants.

The safety of occupants of institutional buildings cannot be assured adequately by dependence on evacuation of the building, so their protection from fire shall be provided by appropriate arrangement of facilities, adequate staffing, and careful development of operating and maintenance procedures composed of the following:

- proper design, construction, and compartmentation;*
- provision for detection, alarm, and extinguishment; and*
- fire prevention planning, training, and drills.*

After investigating numerous multiple death nursing home fires, Congressman Floyd Hicks, Chairman of the Special Studies Subcommittee, House Committee on Government Operations, asked GAO to determine if skilled nursing homes were in compliance with the Federal fire safety requirements of the Life Safety Code.

Many Nursing Homes Did Not Meet Code Standards

In March 1975, after GAO presented testimony on its findings on two occasions before the Subcommittee, a report on the study was issued. GAO reported that many nursing homes did not meet major fire safety requirements. Specifically, based on a random sample of nursing homes, which were inspected by professional engineers, 72 percent were found to have one or more deficiencies in major Life Safety Code requirements. In the event of fire, every Life Safety Code deficiency noted could contribute to the spread of fire and smoke.

The most frequently observed deficiencies were violations of the require-

ment for automatic sprinkler protection and 1-hour fire-resistance separation for hazardous areas.

The Code requires complete automatic sprinkler protection in all nursing homes except those of certain fire resistant construction. However, GAO reported that 41 percent of those classified as exempt from the sprinkler requirement were improperly classified with regard to construction type.

According to the law, the automatic sprinkler requirement can be waived if the facility provides adequate protection through other means. HEW established standards which must be met before a sprinkler waiver could be granted. After its review, GAO reported that 79 percent of the waivers issued were improper, as the facilities did not meet the waiver standards.

With regard to the correction of previously identified Life Safety Code deficiencies, GAO reported that 60 percent of the nursing homes inspected for corrections had not made the corrections within the time required. The deficiencies

had been identified from 9 to 25 months prior to the GAO visits. The average period of time the deficiencies remained uncorrected at the time of the GAO visits was about 22 months.

GAO recommended that HEW take specific actions to insure compliance with the Life Safety Code and improve fire safety conditions in federally funded nursing homes. In spite of the findings reported by GAO, HEW did not agree that it had not effectively administered and enforced Federal fire safety requirements for nursing homes. HEW recognized that Life Safety Code problems remained to be resolved, but said that its efforts had resulted in safer nursing home environments.

Code Standards Do Not Insure Life Safety

In February 1976, after 2 more tragic nursing home fires killed 31 people and injured 50 others, Congressman Claude Pepper, Chairman of the Subcommittee on Health and Long-Term Care, House Select Committee on Aging, asked GAO to investigate these fires and recommend appropriate action to avoid similar situations.

In June 1976, GAO reported on the results of the investigation. GAO found that multiple deaths occurred in these, and several other nursing home fires in recent years, even though the buildings were of fire resistant construction and were in substantial compliance with the Federal fire safety requirements. Neither facility was fully protected with an automatic sprinkler system designed to activate an alarm and begin fighting the fire immediately. Although local fire departments responded promptly to both alarms, the fire departments were



The author (on left), in company with GAO auditor Bonnie Bittman from the New York regional office and HEW engineer Nelson Hettler, inspects a fire-rated door at a New York nursing home.

unable to prevent the deaths which occurred. Experts said that automatic sprinklers would have prevented the deaths in these homes.

Automatic Sprinklers Prevent Multiple Death Fires

According to official records of the National Fire Protection Association, there has never been a multiple death fire in any nursing home fully protected with an automatic sprinkler system. The National Safety Council and the American Nursing Home Association have stated that:

Automatic sprinkler systems provide the greatest safety to life feature available in the fire protection field. Not only can they automatically sound an alarm, but they will immediately start fighting the fire when activated. Automatic sprinklers are by far the most reliable and effective means of fire extinguishment. Other forms of protective equipment, as well as automatic alarms, have their special place, but none can ever be an effective substitute for automatic sprinkler systems.

Shortly after the two nursing home fires which resulted in tragedy, another nursing home fire was reported. This fire could have been as serious as the other two, except for one thing: the facility was fully protected with an automatic sprinkler system. The local fire chief attributed the absence of injuries and the prompt control of the fire to the sprinkler system and the quick employee response. The fire activated one of two sprinklers in the room which sprayed water on the fire. The sprinkler extinguished the fire before the firemen

arrived, which was shortly after the alarm. Because the fire was promptly controlled, it did not generate sufficient heat to activate the second sprinkler in the room.

GAO Recommends Automatic Sprinklers

These two tragic nursing home fires demonstrated that deaths do occur because of fire, even in fire resistive buildings that meet the Federal fire safety requirements. GAO concluded that Federal fire safety requirements do not insure life safety in nursing home fires. As a result, GAO recommended that legislation be enacted to require that all federally funded nursing facilities be fully protected by automatic sprinkler systems.

Legislation for Sprinklers Was Introduced

In September 1976, the Subcommittee on Health and Long-Term Care issued a report based on its investigation, including joint hearings with the Senate Subcommittee on Long-Term Care, on the subject of nursing home fire safety and the need for a national commitment to safety. Included in the report was a bill, H.R. 14406, introduced by Chairman Claude Pepper, which would require all nursing homes to install automatic sprinkler systems, and provide for direct low-interest loans to assist in financing the installations. At the close of the 94th Congress, this bill was cosponsored by 89 members of the House of Representatives. It was reintroduced by Congressman Pepper as H.R. 1129, on January 6, 1977, for action during the 95th Congress.

Today's Standards Provide Only a Limited Degree of Safety

The current status of nursing home fire safety is considerably better than it was in 1970. The 1973 edition of the Life Safety Code has replaced the former 1967 edition. Improvements in Code standards and enforcement have been noted. However, the standards today provide only a limited degree of safety, not the maximum degree of safety which should be expected in our Nation's nursing homes.

New standards are being considered and tested, particularly with regard to toxic gases resulting from burning carpets and other materials. The National Bureau of Standards is testing flame spread ratings of carpets to establish nationally acceptable standards for institutional facilities. And ongoing research is being done at numerous testing facilities throughout the country on the many phenomena of fire.

HEW Rejects Sprinklers Because of Cost

The cost of nursing home fire safety has become a significant factor in the acceptance of new standards. Adoption of an automatic sprinkler system requirement has been consistently rejected by HEW officials on the basis that it is too expensive and not cost effective. The cost effectiveness of any proposal is determined by comparing cost to benefits received. If the benefits received are greater than the cost incurred, the proposal is considered cost effective.

Sprinklers Cost Pennies a Day

The cost of an automatic sprinkler system has been shown to be from \$1.21 to \$1.75 per square foot. For a 100-bed nursing home of 25,600 square feet, the total cost could range from \$31,000 to \$43,000. As GAO reported, when the total cost is spread over a loan payment period of 20 years with a 9 $\frac{1}{4}$ percent interest rate, the monthly cost of a sprinkler system is \$5.57 per bed, or about 19 cents per patient each day.

Considering cost effectiveness, it is hard to conceive that insuring the life safety of nursing home residents against death by fire is not worth 19 cents per day. From the perspective of the nursing home owner, there is minimal out-of-pocket cost, since under current law Medicare and Medicaid pay nursing homes for operating expenses which include depreciation and interest charges.

Future Direction of Nursing Home Fire Safety

The future direction of nursing home fire safety looks very promising. There is little doubt that the Congress will enact legislation requiring automatic sprinkler systems in all nursing homes, and provide either grants or low interest loans for their financing. Also, it appears that flammability and toxic gas standards will be established for carpets and furnishings.

Cost benefit analyses will also be a key factor. Construction trade-offs for existing facilities will become more frequent and acceptable with the requirement for automatic sprinklers. Nursing homes may be granted waivers from

costly improvements required by the Code because of the proven effectiveness of automatic sprinklers.

New construction, on the other hand, will face a much more critical analysis. Legislation or regulations may be enacted which will prevent any nursing facility, constructed after a specified date, from being certified for Medicare or Medicaid unless the facility complies

with the Federal fire safety standards in every regard and without waivers.

As a result of this direction, national attention can again be focused on the need to upgrade the quality of care in nursing facilities. This will be the case, because the problem of multiple death nursing home fires will be limited to past history, not current events.

Program Evaluation Problem

A more basic problem, however, is the difficulty of attributing impact to the Federal dollar. While in theory most Federal programs which operate through the States can be evaluated, in practice it is very difficult. For example, fungibility (the comingling of Federal, State, and local spending) makes it next to impossible to measure the true impact of Revenue Sharing. From our experience in GAO, we have found that it is usually possible to evaluate what is going on at the local level of Federally assisted programs, but determining which effects are attributable to the Federal dollar is much more difficult.

Comptroller General Elmer B. Staats
 Testimony on "sunset" legislation
 March 28, 1977

Weapon System Duplication : Problems and Reforms

The system acquisition reforms, devised by the Commission on Government Procurement, should help curb unnecessary duplication of weapon systems. Much depends on how the Department of Defense installs these reforms.

I.

One underlying issue of national defense budgeting is not often touched upon in the media and usual defense forums. It is the possibility of savings through more effective curbs on duplicative weapon system capabilities in the tactical armed forces. Duplication of strategic systems, widely and publicly debated, is a case apart. As seen from Capitol Hill, the four military services, Army, Navy, Marine Corps, and Air Force, not infrequently field tactical weapon systems that overlap each other's. For instance, the Congress sees possible redundancy in guided missiles designed for the same enemy targets, (1*) equipment to find and identify these targets, (2) and countermeasures to disguise the attack.

Such systems may differ just enough in design and in mission mode to warrant separate identities. These differences are not injudicious; missile designers may disagree about how to trade off among warhead type, propulsion, guidance subsystem, configuration, etc. But once in the latter stages of the acquisition process, comparison often suggests that the design differences or service preferences could have been reconciled into fewer types without degrading palpably the effectiveness of any user.

There is no outright "duplication" of military systems at issue but rather *degree of similarity*. It ranges from tolerable to excessive depending on individual perceptions of tactical needs, desired balance of military capabilities, and budget affordability. It is the scarcity of resources, however, that ignites concern and debate about possible overlapping systems.

*Footnotes are in parentheses throughout and included at the end of this article.

Timothy D. Desmond is a supervisory management analyst in the Major Acquisitions Group of PSAD. An industrial engineer-management consultant and MBA, University of Chicago, he joined GAO in 1969. He was on the systems acquisition staff of the Commission on Government Procurement.

Restricting the truly unnecessary redundancy in our Armed Forces inventory could be a more acceptable economy than the often proposed across-the-board defense cuts that disaffect seasoned defense observers. Not all cases of duplication in military capabilities are unnecessary, as this article will show, but there is undoubtedly more redundancy in the U.S. arsenal than a less affluent nation could allow.

Duplicative military systems in the inventory imply that defense strengths are out of balance and that scarce resources have been imprudently allocated. As the ultimate resource allocator and judge of military adequacy, the Congress is perennially concerned with the possibility of weapon system duplication and Department of Defense means of containing it. As the House Committee on Appropriations said in its fiscal year 1977 annual report:

*This year's hearings identified * * * developing hardware that duplicates equipment already in the inventory or under development by another service. The Committee has admonished the Department (of Defense) in the past * * * yet duplication continues to occur. (3)*

It is very difficult to tell, from the congressional vantage point, whether the differences among seemingly equivalent, complex weapon systems are trivial, useful if affordable, or truly essential to national security. Voluminous Defense hearings show that weapon differences can be a semantical as well as a technical thicket for many observers. The distinctions are not simple even among the experts, as the hearings show. In any event, the choice among military systems should seldom be thrust

up to the congressional level; by and large these decisions out to be settled within an efficient system acquisitions process, as this article will discuss.

Certain reforms in the system acquisition process, fostered by the Commission on Government Procurement of 1970-72, are now being installed in the Department of Defense. One reform requires that new R&D weapon system programs be listed in the defense budget according to their *mission category*. By grouping programs in this way, it is hoped that emerging proliferation in any particular mission will be more evident.

Another reform requires that a new defense need or gap be clarified with the Congress before any new weapon systems are planned or started. This is the opportune time to discuss the relevance of any existing capabilities to the mission problem. Further, competition of several system ideas (including existing-system modifications if feasible) for filling the mission need is to be encouraged up to the entry point to full-scale (engineering) development.

The Department of Defense is taking the lead in installing these reforms. The author suggests some clarifications for new Department of Defense directives.

II. The Duplication Setting

Weapon system acquisition is a unique, dynamic process endlessly studied and criticized. The Department of Defense dwarfs all other system-oriented agencies and even many leading nations in its scope of system activities. The great cost and complexity of weapon systems and their role in the Nation's security justify rigorous scrutiny. There have been many policy

and procedural reforms offered for the weapon acquisition process over the years, many of which the Department of Defense has invited or encouraged, but management and technical criticisms continue to occur. Some of the reforms have been for the problems of the day and others have passed by the political realities of the defense establishment.

The frustration to many well-intentioned critics is that weapon system developments, the many-faceted Department of Defense organization, and government procurement are not easily amenable to standardized procedures and the familiar design practices of other enterprises. The Department of Defense is not as monolithic as it might seem. There is more management-by-negotiation in the Department of Defense than many critics appreciate.

Adhering to the theme of this article, reforms installed in the past have not minimized weapon system duplication to the satisfaction of the Congress—or of Defense executives, for that matter. The congressional committees who deal with defense matters, for instance, have spoken out frequently on the issue; the House Committee on Appropriations cited earlier also observed:

Although there are existing mechanisms to review and eliminate duplication, the Committee is not convinced that they are operating in an effective manner. (4)

There are actually two acquisition processes discernible in the Department of Defense. There is one for “major” systems and another for “minor” ones. These are categories to help to ration administrators’ time and attention among a very large population of sys-

tems, each one involving a sequence of decisions.

Major systems include fighter aircraft, battle tanks, ships, and missiles. Generally, but not always, the major system acquisition procedure is designated for new weapons whose R&D and procurement costs are expected to exceed \$75 million or \$300 million, respectively (until recently the thresholds were \$50 million and \$200 million). There are now about 120 such major systems in development. Their combined R&D and procurements costs are estimated at \$240 billion. Thus, an average major weapon system costs \$2 billion to field. Operating and maintenance costs may be several times the initial investment.

There is a panoply of directives, procedures, and authorization events prescribed for major system acquisitions, many of which evolved from outsider recommendations over the years. For instance, there are carefully spaced decision points, “milestones,” when Defense administrators—the Defense System Acquisition Review Council (DSARC)—meet formally to decide whether a new system development is ready to proceed into the next stage of completion. These sequential stages can be conveniently termed exploratory development, advanced development, full-scale (engineering) development, and procurement.

The sequencing of decisions is not unlike the more private process in industry except in scale and frequency. For example, when a new multimillion dollar facility is under consideration in private industry, the first milestone decision for company top executives would be about need and justification; the next session would pass on architectural

plans, probable cost and layout of equipment; the third milestone decision would be whether to actually go ahead when the design is nearly complete; and the last milestone would be for approval or disapproval of the financing plan and erection schedule.

"Minor" weapon systems and sub-systems, many of which are categorized as "Other Equipment" but are no less sophisticated, include tactical radars, electronic countermeasures, less expensive weapons, and a host of components (not counting special programs elected to major system status). There are hundreds of minor systems at present in one stage of development or another, many of which would be considered major undertakings in other system-oriented agencies. The minor-system acquisition process in DOD is not as highly structured or "papered" as is the major system procedure; nor are duplication of effort, cost overruns, schedule slippages, and performance problems so widely advertised.

III. Some Causes of Duplication

Duplicative weapon systems evolve from both tolerable and unjustifiable reasons. There is a drive for excellence spurred by the technological contest with the U.S.S.R. which encourages system replacement. Rivalry within the defense establishment causes proliferation, but on the other hand there is a need for differentiated weapons to suit the special environment of each military service. A new technology may dictate pursuit of several similar designs as part of the learning process. Parallel experimentation with prototypes, however, is

a thing apart from duplicative or even triplicative weapon systems getting into the military inventory.

A. Technology Pursuit

Technological superiority over the U.S.S.R. is the worthy goal of a multiplicity of groups, but their efforts sometimes parallel each other closely. The dominant philosophy of excellence in the defense establishment is impatient with existing weapon system capabilities. "The requirements process," said the Defense Science Board, "does not foster minimum adequate solutions * * *." Often, adds the Board, "military requirements will express a need for characteristics that later knowledge will disclose to be excessive." (5)

The technologist's case, a respected one, is that systems to be fielded 10 to 20 years from now *have* to be different; he argues that to require multiple use of his system design or interchangeability with today's components, e.g., standardization, would hobble design freedom and pursuit of military superiority. But, "Each proven component or subassembly that can be used," counters the Defense Science Board, in advocating weapon system simplification, "is one less potential source of unexpected problems." (6)

The motivation for system replacement in the weapons community in general is accompanied by a tendency to deprecate existing systems as "old" technology. Modification or updating of existing systems is much harder to usher through the defense acquisition process than are entirely new systems that promise to advance the technology markedly. (7) Incremental, evolutionary improvements, on the other hand, are

often the way of our potential adversaries, the Soviets. Their design bureaus may be more methodical by temperament or perhaps less affluent in their budgets. The contest between the United States and the Soviet Union is essentially technological, but neither side has the resources to finance new, highly advanced systems for every mission need.

"Greater than expected" threats and remote contingencies sometimes exaggerate new weapon system requirements. They tend to demand technological escalation and to outdate present capabilities. (8) Weapon laboratories, contractors, and other special interest groups, rather than the Defense Intelligence Agency, have sometimes forecast special threats or mission needs.

Rival weapon laboratories tend to shun the "not invented here" ideas and want to promote their own technical variants. Private sector contractors are advocates of product differentiation. Commonality of product is not a natural objective of governmental enterprises any more than it is in commercial ones.

B. Interservice Rivalry

Another cause of duplication is inordinate competition among the military services, their development organizations, and contractor allies. A new technological advance that may overshadow rival, but similar, weapon systems could be perceived by a service hierarchy as the key to mission leadership and a larger budget share. There is rivalry within the services, too, as in other high-energy organizations. Admiral Elmo Zumwalt, Jr., former Chief of Naval Operations, speaks in his memoirs of the three "unions" in the

Navy—the pilots, submariners, and surface seamen. (9).

New mission needs (weapon requirements) are stated by a service independently, even though most military missions are shared. (10) There has been no formal process in Defense to harmonize mission needs of the separate services. The Joint Chiefs of Staff have not been authoritative in these matters. The Director, Defense Research and Engineering, is charged with reconciling service requirements and curbing duplication, but results have been, at best, mixed. The sheer number of military systems in development is one thing, but strong arbitration powers may be lacking too. *Ad hoc* committees have been set up to curb proliferation in data links, air munitions, and position navigation equipment, but they have not been very successful. A plethora of special committees in an enterprise is usually a fair indication that basic reform of the underlying process is the real need.

Military requirement statements (for new weapon systems) have often been tailored for a preconceived system and no other. The preordained design fences out other possible solutions, including modifications to another service's equipment or adaptation of other systems in development. The quasi-autonomous military services, each with its traditions, unique combat experience, and distinctive professional competence, have their own respected points of view of what is needed to assume national security. They are hard to reconcile. The TFX program (F-111 aircraft) intended for multiservice use was a signal failure in this regard.

"Better coordination" of the military services is often recommended, but few

prescriptions are offered on how to do this. There has been multiservice use of systems, such as the Sparrow and Sidewinder missiles, once they are in the inventory, but no requirements document, according to one researcher, was ever "developed in harmony by all participating services prior to the initiation of program development." (11)

Some observers view interservice duplication, by and large, as a tolerable cost of sustaining four hard-driving military services; vigorous competition for excellence, they say, ought not to be inhibited even though some waste is inevitable. The argument is hard to rebut. Almost everyone will agree that interservice competition of ideas in development is beneficial, but to actually procure and field two or three systems to do essentially the same job is rather hard to justify.

C. Differing Operational Needs

Some overlapping of capability among weapon systems is clearly necessary. To illustrate, one service's environment may require a special system variant; there may be a need to tie in with an existing command and control net-

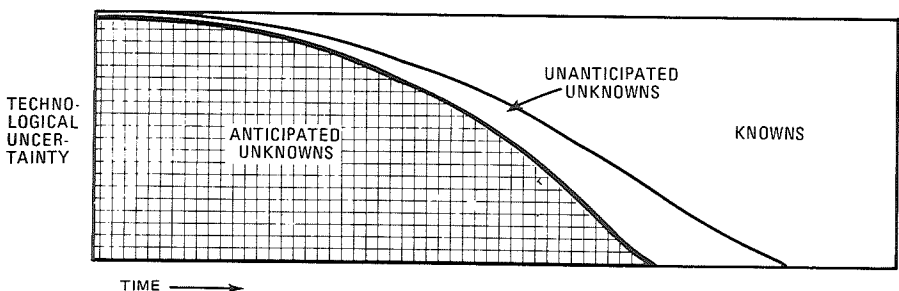
work or an existing family of weapon systems; an aircraft carrier's limited accommodations place special demands on aircraft; over-the-beach Marine forces have logistical requirements different from the Army's. Then too, a proposed new system may fill a genuine mission gap but coincidentally overlap elsewhere, and such duplication has to be accepted, generally. In any case, if there is considerable commonality in subsystems—identical air frames, power plants, electronics, etc.—the remaining differences of two systems are more tolerable.

D. Technological Imperatives

A new breakthrough such as laser technology may warrant full exploitation along several design paths to resolve uncertainties and to accumulate learning (see fig. 1), even though the findings may in the end overlap or duplicate. In times of great urgency a second "back-up" system may be worth continuing to the point of procurement.

An arms race is inherently proliferatory. In the tactical arena the "mini arms race" between electronic countermeasures (to confuse the enemy) and

FIGURE 1. RESEARCH AND DEVELOPMENT LEARNING



SOURCE: COMMISSION ON GOVERNMENT PROCUREMENT

counter countermeasures (to nullify his) has accelerated obsolescence and spawned a considerable variety of equipment in the Armed Forces. Precision guidance, command control and communication, and target acquisition are other very active fields where the technological lead may seesaw.

E. Early R&D

It is important to discriminate between overlapping hardware *in the field* and budding ideas in *research and development*. Sometimes the difference is misunderstood. In early R&D, a realm of technical unknowns, it is useful and profitable to explore a number of promising concepts. And to reduce uncertainties, "breadboard" models should sometimes be carried to a preliminary test stage or further. In some cases there may be no way to choose confidently between rival concepts without "hands on" hardware to compare. These models need not be hard-tool production items or any kind of downpayment on procurement.

Multiple experimentation, in other words, can be very useful proliferation if kept within bounds. In fact, lively competition in R&D can sometimes breed valuable innovation, especially if diversity in approaches is fostered. (But when near-identical projects are being pursued, competition is a misnomer since there can be little differentiation in capability and a marked difference in price would be suspect.) R&D competition is a small premium to pay compared to pursuing a single problematic system that must be canceled later or, for want of an alternative, must be suffered to continue into procurement.

F. Program Momentum

To sustain several exploratory R&D projects, to maximize the yield of technical information, to hedge and thereby postpone a choice is prudent—up to a point. Trouble comes when marginal designs are ridden too far and the barriers to procurement are too weak. An essentially duplicative program of little distinguishing merit, for instance, if shrewdly expedited and managed, may gather so much momentum as to sweep it into procurement. "Sunk" money, contracts, jobs, and other vested interests often provide great impetus to continue a weapon program beyond prudence.

In essence, hardware contract approval is the critical event; this is when great resources, often billions, are committed. Follow-on production and operating activities alone incur about 80 percent of a weapon system's entire cost, so the decision to procure is not a light one. In any case, it is much easier to stop a duplicative program earlier, that is, before entry into full-scale (engineering) development when the real momentum begins to set in. (12)

The important thing, in other words, is to nip a duplicative system in the bud before it blossoms into a *fait accompli*. Again, this is the job of the Director of Defense Research and Engineering, but if he does not act opportunely—in other words, in early development—neither he nor the Secretary of Defense may be able to deal with parallel programs steaming full ahead, and sometimes similar systems are so close that a decision becomes one of arbitration. Problematic systems sometimes acquire powerful constituencies. Military rivalry and defense establishment politics are per-

vasive in many weapon development programs and beleaguer the most efficient administrators (a fact of life that policy and procedural reformers have sometimes overlooked in the past). (13)

One administrative option is to postpone the go-ahead decision by requiring more design work, restudy, or testing, and thereby slow the momentum, but now and then a program becomes a "hot potato" passed on to the Congress. The political "heat" there, however, may be more direct and intense—home district jobs, contracts, and votes hanging on both system programs. Besides, the Congress cannot make military decisions or improve the rationality of choice between like systems; the most that can be done at this late stage is to induce agency executives to bite the bullet and make the choice, however narrow are the grounds. (14)

G. Congressional Handicaps

The Congress, under present arrangements, cannot intervene when it could do so most effectively, that is, before a duplicative program acquires a powerful constituency and "life of its own." The present acquisition procedure is not conducive to timely, that is, *early* congressional visibility into the formative program decisions. New weapon programs, whether duplicative or not, have been born and nurtured out of sight, as it were, of the principal committees (and agency administrators, for that matter). The present defense budget format also yields little insight about incipient duplication.

1. Acquisition Procedure

One trouble is that, when a mission need arises, it is quickly married to a

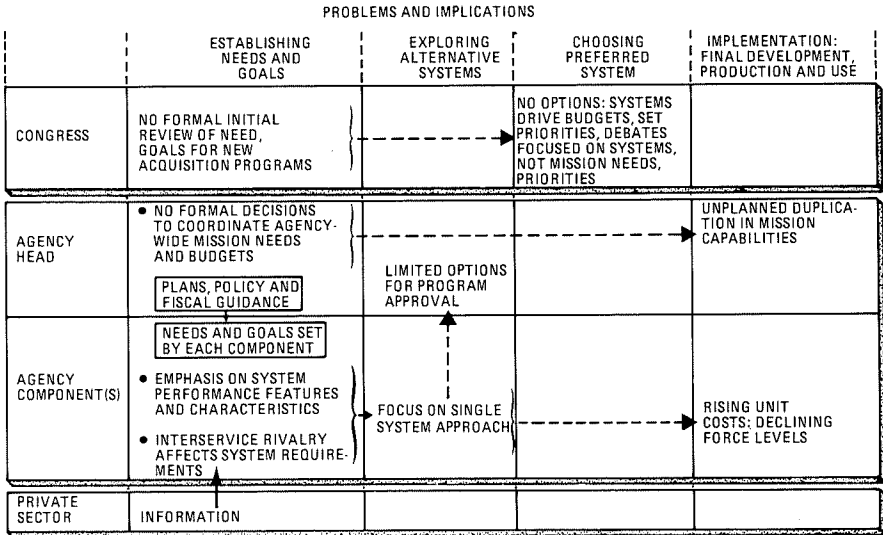
particular system design. When military planners specify rather exactly, and early on, what the new system is to be, other designs or ideas have little chance. Modifications to existing systems, for example, are often excluded. Also, downstream effects, such as large procurement and operating costs and overlapping capability, are preordained by this little-noticed action. Congressional views about the new capability are not invited until long after. By then, jobs, employment, and contracts are being counted upon, and special-interest blocs are in place.

Thus, the principal congressional committees are behind the power curve: when a new system emerges into their view the formative decisions are long past (see fig. 2). Questions about urgency of need, affordability, and other ways to go, i.e., existing capabilities, are rather late in the game.

2. The Defense Budget

The burgeoning of technology in recent years and the accompanying changes in military missions have overwhelmed a once-satisfactory budget format. It is now of little help in spotting emerging duplication, for instance. The number of systems under development, their mission purpose, separately listed components, and total estimated cost are very hard to pin down. There is now no convenient way to collocate the hundreds, if not thousands, of line items into groupings—by mission, priority, etc.—useful to the legislative side. For instance, radar development programs—and their subprograms—are distributed widely through the several military service budgets. Budget headings, nomenclature, and line item

FIGURE 2. CURRENT PATTERN OF ESTABLISHING NEEDS AND GOALS FOR NEW ACQUISITION EFFORTS



SOURCE: COMMISSION ON GOVERNMENT PROCUREMENT

groupings tell little about possibly superfluous programs or significant gaps in the defense array. Thus, the present budget format affords little more to the Congress than a perusal of "nuts and bolts" and a search for "red flag" items.

In a word, the defense budget as presently structured offers few clues to the main legislative concern: whether the Nation's defenses will be really secure across the board, and if scarce resources are being prudently allocated.

IV. Pending Reforms

There are certain changes now in motion which will affect management and procedures in systems-oriented agencies. These reforms were developed by the Commission on Government Procurement. (15) They are now embodied in

governmentwide Office of Management and Budget Circular A-109 (April 5, 1976). Department of Defense directives are being rewritten. (16) The overriding aims of the new reforms are to get the major system acquisition back to basics and to facilitate congressional-executive branch agreement that a mission need exists *before* development programs are started. There is to be an improved setting for active competition in system development, long advocated by the Comptroller General as a more effective policing mechanism than over-the-shoulder monitoring of contractor behavior.

The reforms contemplate: (a) a new budget format "missionized" to group system programs more conveniently for congressional review, (b) more competition and innovation in R&D, and (c) the acquisition process reordered to give

the principal committees early previews of mission needs, possible capabilities, and tolerable costs. Among other things, these reforms are expected to help forestall unnecessarily duplicative systems.

The objectives are sound, and the reform theory is logical and persuasive. No panacea is promised but these proposed improvements deserve congressional approbation and support—but without relaxation of customary vigilance.

Implementation of the new ideas is now underway in the Departments of Defense and Transportation, NASA, and other system-oriented agencies. (18) The reforms deserve a good honest try by the establishments. Agency cooperation up and down the line will be more likely if congressional backing—especially that of the principal committees—is manifest.

The Department of Defense, with its many weapon system programs, is the bellweather agency for demonstrating the worth of these broad reforms. This discussion will be about how the reforms are expected to apply to Defense activities.

A. "Missionizing" the Budget

One major reform requires agency budgets, including R&D sections, to be organized by mission areas. In Defense the budget would be structured by military missions, such as, perhaps, "land combat," "air warfare," and "sea-based power projection." (Mission definitions and categories are still being developed at this writing.) They would be subdivided further. For instance, land combat would subsume elements like "battlefield surveillance," "close combat," and "air defense." Battlefield

surveillance, in turn, should group all the radar, infrared, laser, electro-optical, and other such search programs (including data processing and analysis) bearing on the land combat mission.

Thus, the missionized budget format should collect mission-combat weapon programs now scattered under various service, technology, and product headings. It is hoped that superfluties as well as gaps in the particular mission will be better illuminated when mission-related systems are listed together. The mission budget should enable legislative-executive branch agreement on the best ways to cut back on emerging proliferation in some missions and the extent of redundancy to be tolerated in others.

For the first time it should be possible to raise or lower individual mission budgets to accord with legislative-executive branch agreements on the importance of discrete missions and the size of funding most appropriate for them. (19) Thus, the Congress should have a direct hand in advising and instrumenting defense policy.

B. Mission Needs and System Choices

The other major reform seeks to get the system acquisition process back to the rationale always intended: a discrete mission need defined and agreed upon first; competition of innovative ideas in development encouraged; and milestone decisions paced by R&D findings rather than the other way around. One new event in the Defense sequence is to be milestone "0," at which starting point a broadly stated mission need is to be approved by the Secretary of Defense. Another new concept is to fund development stages separately—that is, to con-

tract and pay for increments of R&D knowledge, but implying no commitment to the next development stage for any system idea. The intent is to make it easy for DOD to discard problematic systems early on and to provide ground for supporting and continuing those ideas of demonstrated merit.

A new Department of Defense document, the "mission element need statement," is to be the milestone 0 vehicle. It is to define the mission need and its urgency, threat dimensions, combat environment task to be performed, a cost "ball-park" limit, and other assessments and plans. (19) The mission need is to be clarified with the Congress along with the request for first-stage exploratory funding. Again, no particular kind of capability is to be specified, but existing systems that could possibly fill the bill through modification (and possibly forestall duplicative effort) will be cited for preliminary exploration. The mission element need statement is to be a Secretary of Defense decision reverified at each subsequent milestone.

C. Competition in Development

Following congressional approval of the mission need at milestone 0, a number of capabilities will be evaluated preliminarily (in exploratory development). The mission element need statement is to be a liberal one—that is, there will be few constraints on design freedom, imaginative ideas, or kinds of capability to be offered. For example, a target identification problem will be stated, but whether it should be pursued with radar, laser, acoustical means, hybrid equipment, or something quite new, will be left entirely open to the developers. In other words, the theme will be innovation, creativity, prag-

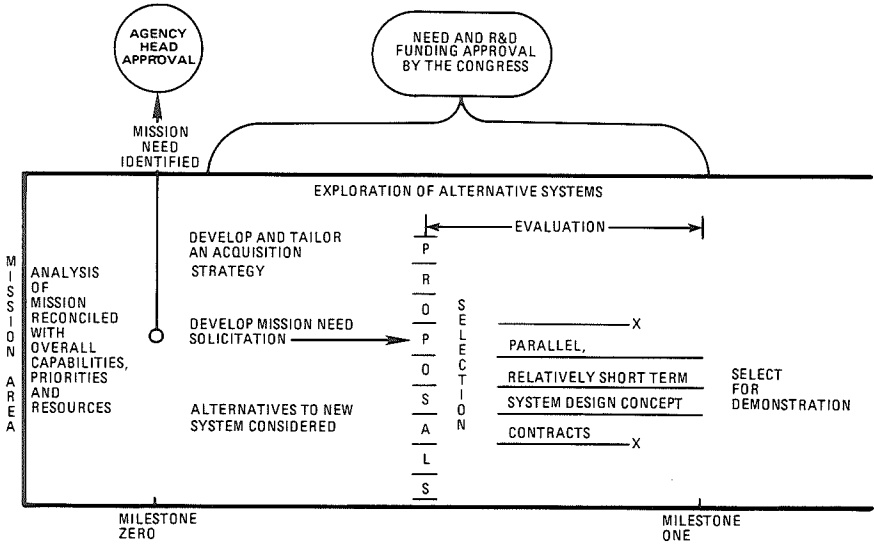
matism. For instance, contractors may chose to design their own components or use ones off the shelf. The only real constraints will be the ballpark cost allowance and bounds of the mission need statement.

The Secretary of Defense may invite two or more services to compete in devising a solution to the broadly stated mission need. This could be very productive military rivalry, especially if it is made clear that only one system will go on after the "acid test" flyoff competition. As GAO suggested in 1970:

** * * if weapons rivalry can be harnessed toward healthy competition for performance and price the country could be well served. This would mean allowing the services [and their contractors] freedom in exploratory and advanced development to try different approaches, [to a broadly stated mission need] and then bring these designs to the proving ground for selection of the winner. The winning service would then supervise the balance of the acquisition process (with the other services' help) and the distribution of the weapon to the inventories. (21)*

At the second decision point, milestone I, the gate to advanced development, the most suitable of the ideas explored earlier are to be competitively demonstrated and validated, presumably with prototypes. This stage, like the others, will be funded independently with no further commitment laid down. Then at milestone II the best of the remaining candidates will be selected for full-scale (engineering) development. (22) Major milestone III, to procure or not to procure, will occur in due course (see fig. 3).

FIGURE 3. MILESTONE ZERO TO MILESTONE ONE



These are the deliberative choices, based on incremental R&D, to be discussed with the principal committees while commitments are still under control, investments are moderate, and options are yet viable. The issues of great interest to the Congress, such as the presence of effective competition, magnitude of downstream costs, "procurementless" solutions to the need (changes in force structure tactics, logistics, and doctrine instead of new systems), (23) and duplication of effort are still open and debatable.

D. Curbs on Duplicative Systems

The issue of duplication should be alive at each major milestone according to the new procedure. At *milestone O*, mission need definition, for instance, the availability of modifiable weapon systems in inventory or development can be examined. At *milestone I*, following preliminary exploration of various concepts, there should be sufficient grounds

to reject the modification idea or have it compete further through demonstration and validation. At *milestone II*, where performance and cost are firming up acceptably, it should be clear whether a modification is promising enough to warrant engineering (full-scale) development.

E. Cost Management

The cost ballpark figure set at milestone O will be an upper limit amount negotiated between the principal committees and the Congress. In other words, the cost limit will be the agreed maximum "worth" of whatever capability evolves to fit the mission need.

At milestone I, after experiment and study of several promising capabilities, the less attractive and the too expensive ones should fall out. The next phase, demonstration and validation of those still in the running, should provide enough design and performance data to

derive (a) the number of units needed of each kind of system in contention, and (b) a usable program cost estimate for each (see fig. 4).

Thus, cost effectiveness comparisons at the milestone II gate (to engineering development) should disqualify those candidates not worth pursuing further; at this juncture program cost and deployment schedule predictions should be firm enough to enable a confident choice (see fig. 5).

The other cost innovation is that each R&D state is to be funded independently. Again, the idea is to buy blocks of R&D knowledge with no commitment to go further. The intent is to prolong energetic competition and to let no one system idea gather such large "sunk" cost as to predispose decisionmakers.

V. Department of Defense Implementation

Defense's plans for installing the new reforms are still incomplete although the primary system acquisition directives 5000.1 and 5000.2 have been rewritten. (16) The problem areas anticipated by this author lie in structuring the military missions, gaining widespread acceptance for mission definitions and boundaries, and ensuring that minor system developments are fully responsive to the new practice.

A. Mission Definitions and Boundaries

Although the new format will bring together development programs for each mission area, such as all battlefield surveillance programs grouped together under land combat, there will need to be access to programs that are alike but belong in different mission areas. For

example, anti-air major developments may be listed under fleet air defenses (Navy), counter air (Air Force), and air defense (Army). Unless program descriptions and nomenclature are simplified and harmonized, and some kind of keying back and forth is used in the budget format, inter-mission commonality of design and operation—and emerging weapon duplication—may not be evident. (22)

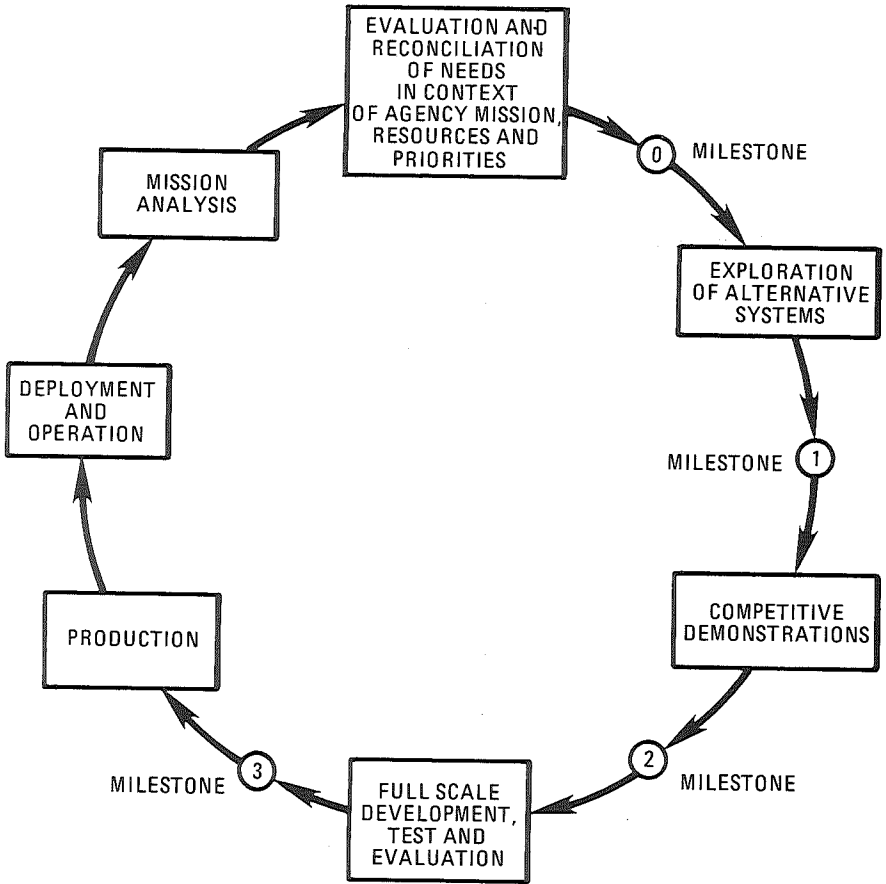
The most critical issue in Defense mission budgeting, however, will be whether widespread acceptance can be won within the defense establishment for clear-cut mission definitions and boundaries, since traditional roles and missions of the services will undoubtedly be affected. Military rivalry over mission ownership has sometimes been intense. Roles and missions of the four services have evolved out of "political" negotiation rather than from rigorous logic, so that some present mission definitions are awkward and vaguely bounded. The missionized budget idea will be seriously compromised unless there is a strong consensus in the service hierarchies for a symmetrical mission structure.

B. Existing Capabilities

The mission element need statement (at milestone O) should be comprehensive and objective in identifying those existing systems in inventory or development with modification possibilities. Still, if the ever-higher-performance philosophy is not managed judiciously, prosaic capabilities and modifications to "old" systems may get short shrift as they have in the past. The "just good enough" may be no more attractive than heretofore.

At milestone I, in instances when the

FIGURE 4. MAJOR SYSTEM ACQUISITION CYCLE



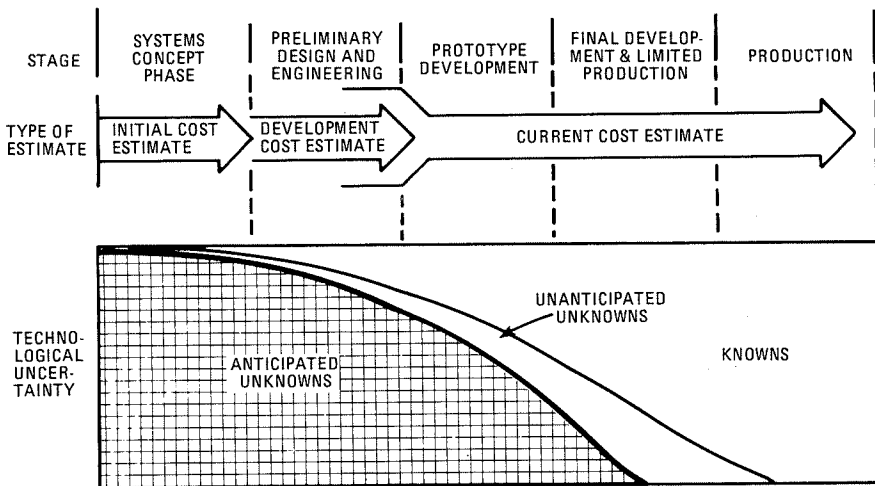
SOURCE: "A DISCUSSION OF THE APPLICATION OF OMB CIRCULAR A-109" OFFICE OF MANAGEMENT AND BUDGET.

(tactical) mission need is a single-service one, the one service is to recommend which weapon system candidates should be ushered into the competitive demonstration phase. Existing capabilities that carry another service's "brand" may not always get a fair shake. The new procedure will not necessarily soften inor-

dinate interservice rivalry or win the hearts and minds of service allies.

As was mentioned earlier, some mission needs might be resolved not by new military tooling, but by changes in force structure, tactics, logistics, and doctrine. The cost effectiveness of such "procurementless" options deserves com-

FIGURE 5. RELATIONSHIP OF COST ESTIMATES TO TECHNOLOGICAL UNCERTAINTY



SOURCE: COMMISSION ON GOVERNMENT PROCUREMENT

parison with possible system approaches.

The real point here is that if the competition is a "closed" one, some useful solutions will have little or no chance. But if the goal is the best combination of performance and price, and the competition is indeed open from the start, existing-system modifications should win out in deserved proportion. The *need* for similarity between new and existing capabilities, if any, will be clear well before the procurement milestone.

C. Scenarios

The war games, or conflict scenarios, used to simulate and compare weapon system effectiveness against an adversary can be drawn to favor one candidate weapon system over another. Assumptions about the battle location, timing, enemy tactics, the sophistication of the threat, and other considerations

need to be objective and plausible to see which is the best weapon candidate. It is not clear as yet who will draw up the war game or scenario and at which milestone it will be presented. Also, when an emerging enemy threat constitutes a new mission need, it ought to be one promulgated by the Defense Intelligence Agency rather than by some lesser group.

D. Demonstration and Validation

Demonstration and validation of promising weapon system candidates is to begin at milestone I (the need for a system was decided at milestone O), according to the new procedure. It is to be hoped that competing contractors will offer developmental "soft tool" prototyping—breadboard and brassboard models—to be tested and compared. After milestone II, when the choice narrows considerably, preproduction proto-

types tested in operational modes may be necessary. (Testing in a near-combat environment continues to be the *sine qua non* of weapon system acceptance.)

In view of congressional interest in competitive flyoffs and disenchantment with "paper" studies, and considering the reforms now being installed in Defense, perhaps the Department should reiterate its prototyping policy in directives now being rewritten.

E. "Major" versus "Minor" Systems

It is not clear how "minor" systems, those estimated to require less than \$75 million in R&D or \$300 million in procurement, will be handled in the new procedure. There are many such minor systems now in development. Although they may fall short of the \$75 million or \$300 million threshold, they are indeed major undertakings likely to entail huge life-cycle costs.

DOD Directive 5000.2 says that "The management of system programs not designated as major systems will be guided by the provisions of this directive." The language does not entirely assure that so-called minor weapon systems will begin with a discrete mission need statement approved by the Secretary of Defense, require a choice of capabilities at a milestone I (including existing systems), or a competitive selection at a milestone II.

Without similarly explicit guidelines for minor weapon systems as for major ones, there is a danger that mission need will be married with a preordained system concept, and a possibility that milestone decisions will be telescoped rather than treated as spaced, deliberative events.

The very number of minor systems in

work multiplied in each case by at least four difficult milestone decisions will no doubt require more decentralization of responsibilities than is the case with major system acquisitions. Separate directives may be advisable to define minor systems and to spell out who will make the milestone decisions.

F. Congressional Participation

Finally, it is not entirely clear as yet that the Congress will be offered the information contained in DOD's mission element need statements and in the rationales supporting the subsequent milestone decisions. One basic purpose of the new reforms—timely legislative-executive branch meeting of minds—will be thwarted if the information presented to the Congress is incomplete, or withheld as executive-privileged.

* * * * *

The causes of duplication in weapon systems are many, and there are powerful forces in competition pursuing differentiation that may be in the end critical or trivial. Some duplication is necessary and worthwhile. Not all unwarranted duplication can be arrested, nor can all system "disasters" be avoided, however well-ordered may be the acquisition process. All weapon system decisions are speculative, at best, and surprise outcomes are not unknown.

But the reforms and recommendations cited here, if they live up to expectations, should at least mute the frequent criticisms of the past: that (a) the mission need was tenuous or ill defined, (b) decisions were hasty or *ex parte*, (c) cost estimates had little basis in fact, (d) program momentum got out of control, or (e) congressional views were ignored.

Footnotes

- (1) U.S. Congress, Senate Committee on Appropriations, *Department of Defense Appropriation Bill, 1975, Report, 93d Cong., 2d sess., 1974, p. 20.*
- (2) U.S. Congress, House Committee on Appropriations, *Department of Defense Appropriation Bill, 1977 Report, 94th Cong., 2d sess., 1976, p. 120.*
- (3) *Ibid.*
- (4) *Ibid.*
- (5) *Report of the Panel of Weapon System Simplification* (Department of Defense, Office of the Director, Defense Research and Engineering (ODDR&E), August 1970, pp. 1 and 2.
- (6) *Ibid.*, p. 4.
- (7) Charles J. Supko, *Today's Weapons—Tomorrow's Requirements: Upgrading Existing Systems vs New System Development* (Defense Systems Management School, May 1976).
- (8) There is a tendency to "mirror image" ourselves when the threat picture is ambiguous or incomplete, as it usually is—that is, to presume that the Soviets will match, if not cap, our technological advances rather automatically. Mirror imaging and threat exaggeration lead to new and stiffer U.S. requirements.
- (9) Zumwalt, *On Watch, A Memoir* (New York Times Book Co., 1976), p. 63.
- (10) For instance, the Army, Air Force, and Marine Corps defined close air support needs independently, and the Cheyenne helicopter, A-10, and Harrier aircraft evolved separately. Each system was to fill a putative mission gap not covered well by the others. For instance, the Cheyenne was not to do close air support but "close aerial fire support."
- (11) Major Frank D. Henry, USAF, *Program Management in a Joint Service Environment* (Fort Belvoir: Defense System Management School, Nov. 1973), pp. 7 and 8.
- (12) "Once a system gets into full scale development, you've had it," one OSD official told the author.
- (13) Michael H. Armacost, *The Politics of Weapon System Innovation: The Thor-Jupiter Controversy* (New York: Columbia University Press, 1969), pp. 4 to 6.
- (14) "It would not bother me," said a Secretary of Defense to a Senate Committee Chairman, "if you held our feet to the fire and forced us in connection with this budget." *Ibid.*, p. 282.
- (15) "Acquisition of Major Systems," Vol. 2, Part C, *Report of the Commission on Government Procurement* (GPO, December 1972).
- (16) Revisions to DOD Directives 5000.1, *Major System Acquisitions*, and 5000.2, *Major System Acquisition Process* are of January 20, 1977. New system programs started since then should follow the new procedures described in this article.
- (17) Implementation of these reforms is being monitored and reported on periodically by the Procurement and Systems Acquisition Division of GAO.
- (18) One interesting variant of this plan, proposed elsewhere, would hold a mission's budget rather constant for long periods and let the services manage investments and costs within the ceiling imposed. The service would be free to use savings gained in one mission area to finance wanted equipment in another. This scheme of decentralizing responsibility to the services is worthy of further study. See J. L. Stockfisch, *Incentives and Information Quality in Defense Management*, R-1827-ARPA (Santa Monica, Cal.: RAND, Aug. 1976).
- (19) According to DOD Directive 5000.2 the mission need may be " * * * a deficiency in the existing capability, a projected physical obsolescence or a technological or cost saving opportunity" (p. 4).
- (20) The Comptroller General, *Action Needed to Reduce the Proliferation of Tactical Air-to-Ground Missiles* (B-166212, Dec. 31, 1970).
- (21) Up to milestone II at least, there will be duplication of effort in the strictest sense. That is, the one mission need will drive competing contractors, military services, and other protagonists to develop the best solution. To prohibit generally such "duplication of effort" or to require early competitors to merge their efforts would tend to emasculate competition and discourage innovation.
- (22) One way would be to identify programs according to their technical area. "Technical Area Descriptions," replacing Technology Coordinating Papers, are now being developed to gather like technologies which may cross mission lines. For example, "search"

may be one technical area comprising all means of detecting, classifying, recognizing and localizing, and identifying targets in the air, on land, water, and underseas. Radar system programs in several mission areas could be keyed to the "search" designation and collated for evaluation.

(23) *Report to the Deputy Secretary of Defense by the Acquisition Advisory Group* (Sept. 30, 1975), p. 36.

Viewpoint

* * * assembling many thousands of clerks and other employees, as must be done in the departments, we must have civil service, with all its faults, to prevent still greater wrongs. Under it the large majority of employees are thoroughly high class, but not all. Inefficient employees, like clinkers in a furnace, hamper the work. They are in all departments, killing time, disturbing public business, writing answers to letters that do not answer, stupidly pretending to do work that live employees must do over again or waste their good time coaching the dullards. To get rid of the worthless when once installed is the bane of department heads. We all know of clerks who are shunted from division to division, department to department, because they can not make good, and chiefs very kindly help them to a transfer rather than make a fight to dismiss them entirely. "Let George do it" is the motto as these Government failures are passed on for another chief to dispose of. I am told that it is almost impossible to get rid of worthless help when once installed.

Representative Burton Lee French of Idaho

1919 debates on legislation that became the Budget and Accounting Act, 1921

Congressional Record, October 17, 1919, p. 7101

GAO and Its Image

Some thoughts on how staff members can help improve GAO's image.

Have you ever wondered how others see us? I have. My answer is that we have generally a well-deserved reputation and are given high marks in our efforts as congressional watchdog. Our image, however, might differ among Members of Congress, congressional staff, agency personnel, and the public.

My perception is that Members of Congress generally have a more favorable image of GAO than do their staffs. One reason may be that we work more closely with staffs than we do with Members. The information received about GAO by Members through the media, hearings, briefings, or a report is generally less frequent and on more significant GAO work. The irony is that, under the more microscopic view at the staff level, we are more susceptible to the occasional disappointment as to report timing, subject matter, or content. This does not suggest that we change anything in our dealings with staff. It merely points out the greater opportunity to please or displease staff.

Agency officials probably see us in an adversary role, which is to be expected.

Again our image with agency officials varies and depends to a great extent on our staff at the audit sites in Washington and in the field who deal with them on a continuing basis.

Our image with the public is better than the impression they have of the Federal Government as a whole. This is partly because the public's concept of GAO received through the media or elsewhere is one of an effective "watchdog" over Federal expenditure of funds, while at the same time an erosion of citizen confidence in the effectiveness of Government has taken place.

One author has said "only in the U.S. has 'bureaucracy' become an ugly word." We need only look at the second meaning of the term "bureaucrat" in Webster's dictionary; that is, a person who *strives for increased functions and power, lacks initiative and flexibility, defers decisions to supervisors, and impedes action with red tape.*

A recent Washington newspaper article referred to government employees in an insulting way. The writer said we can't seem to make decisions, hide

Mr. Bowlin is a legislative adviser in the Office of Congressional Relations. He has a B.S. degree from Virginia Commonwealth University. He is a CPA (Virginia) and was a fellow in the Congressional Fellowship Program in 1971-72.

behind regulations, speak with repressed hostility, and lack responsibility and dignity. He also made a few sweeping observations that the bureaucracy is stultifying, unfree, unimaginative, self-serving, and protected from reform. Such statements are patently unfair and should bring out any repressed hostility we may have. You recall similar negative statements made by Presidential candidates and other political aspirants. I'm sure we have often discounted these statements by thinking it must be some other department or agency, or that they are not warranted. But, let's face it, we are all public servants; we are all bureaucrats in the public's eyes and can help improve the image.

Even though GAO has a generally good reputation, there have been instances which detract from this image and it's these exceptions which all too often are remembered. Thus, we ought to be constantly alert concerning the image we reflect. Here are some thoughts about how we can maintain our hard-earned credibility and possibly improve the image of the public servant generally.

What Can We Do

We in GAO invest our careers talking and writing about ways to cut red tape, reduce paperwork, untangle regulations, or improve programs. Yet we must sometimes become frustrated with our own administrative requirements which tend to impede action rather than further our objective. We should avoid requesting information too detailed to our needs, or requiring reports for reporting's sake, or encouraging useless and/or careless work through use of numbers games to measure performance.

Federal programs often have unclear purposes and appear to grow uncontrollably. In GAO, we should strive for clarity of purpose in our assignments which constitute our "program." We should not hesitate to comment on proposed assignments which may have marginal value. Also we need to communicate the results of our work in simple, concise language. Though this policy has been professed for years, our practice often falls short of the goal.

Lest we are accused of a double standard, we should insist on excellent performance in GAO. We should not give agency officials cause to wonder as a result of our work habits. Remember, they are watching. How many times have you wondered whether a particular activity or procedure in GAO might be criticized by our audit staff if similarly found to exist elsewhere in Government? While rules and procedures are necessary and desirable for good communication and management, they should not be allowed to become an end in themselves or a substitute for good judgment.

Within GAO, though we should self-critique, we should not be so quick to criticize others. Undue criticism tends to create an environment of fear and thus stifles initiative and flexibility. That is not to say we should reduce emphasis on "a day's work for a day's pay." We should, however, publicize our successes and emphasize praise of effective products. In this way, open, frank discussions should increase and individuals will be encouraged to voice new ideas.

Obviously, no cookbook solutions exist to improve the image of the Federal bureaucracy. All institutions are being questioned, and mismanagement is not limited to the public sector. We should

keep in mind though, the overriding impression of the American public is that government functions poorly. The vague, persistent complaints about a faceless bureaucracy, entangled red tape, extravagance, and presumed ineffectiveness in government will continue.

It is important, therefore, that you remember that you are the government to the public and you are GAO to other agencies. Be courteous, fair, and accessible, and insist on hard work. We must relate our efforts to the people. Let's put "people" back into the government and GAO. We get into the habit of talking in terms of programs,

dollars appropriated, assignments, or numbers of things done, which tends to perpetuate the image of indifference to human needs. We are real-life persons with names, hometowns, and families. So are the people we serve.

Remember also, people who have served in GAO helped earn a good reputation for the institution. The extent that we, as individuals, get into exciting and diverse areas depends on GAO's continuing reputation for dependable work. The opportunities provided the individual GAO staff person are many but the responsibilities placed on that individual are equally great.

A Simultaneous-Parallel Approach To Testing Computerized Systems

The co-authors believe that traditional audit methods will not suffice for auditing computerized systems. They have, therefore, developed a new methodology for evaluating both the internal controls and system performance of large, complex computerized systems.

In the past auditors have used many methods to evaluate computerized systems. Their objective was to see whether the systems were operating in accordance with design specifications and applicable policies and procedures. The methods used gave the auditor the ability to evaluate specific aspects of computerized systems (input controls, programing controls, output controls, or system performance), but seldom was

the entire system reviewed, at one time, unless the auditor integrated a test facility into the system's design.

To add an integrated test facility to an ongoing system apparently has required almost an entire redesign of the system. However, we have developed a methodology (the simultaneous-parallel approach to an integrated test facility) for testing both the internal controls and performance of an entire comput-

Mr. Lainhart is a supervisory management auditor in the Financial and General Management Studies Division. He received his bachelor's degree from Davis and Elkins College, and his master's degree from Central Michigan University. He is fall seminar chairman of the National Capital Chapter of the EDP Auditors' Association. He has pioneered GAO's use of automated data retrieval and analysis techniques and manages reviews of large, complex computer systems. He has been with GAO since June 1969.

Mr. Snyder is a management auditor in the Financial and General Management Studies Division. He is a graduate of West Virginia University and a member of the National Capital Chapter of the EDP Auditors' Association. He has had extensive experience in using automated data retrieval and analysis techniques and in reviewing large, complex computer systems. He has been with GAO since June 1974.

erized system, even though that system has been operational for several years.

But why all this interest in testing computer systems anyway? Well, in recent years, computer systems have gone from simple punched card input systems to highly complex on-line systems. Also, more systems are interfacing, or electronically exchanging data. In the future, use of on-line systems and real-time updating of master files will increase. As systems become increasingly complex, the independent auditor will be called upon more and more to insure that systems are functioning properly.

This means that the independent auditor will have to play a larger role in system design to make sure that proper controls and audit trails are built into the system. He will have to be highly proficient in data retrieval and analysis techniques so he can evaluate the information accumulated on the computer files. He must be able to (1) test the computerized system's internal controls, since manual controls are being incorporated into the systems, and (2) evaluate the computerized system's performance, since the speed and reliability of output is becoming increasingly important. Techniques like the integrated test facility and our simultaneous-parallel approach should be helpful in evaluating internal controls and system performance.

Definition of Terms

It might be best at this point to define what is meant by internal controls and performance of a computer system.

Internal controls, as defined by AICPA, are those functions which assure the independent auditor that errors and irregularities are discovered with rea-

sonable promptness, thus assuring the reliability and integrity of financial records.¹ In other words, internal controls are those checks and balances that tell the auditor that errors have not occurred in processing, that all records have been accounted for, and that irregularities, such as bad data, cannot enter the system.

System performance, as we define it, is how responsive a computer system is to its user. By this we mean: Does the system provide output reports promptly? Are output reports useful? Does the system lose data during data transmission? Does the system provide enough time for corrective action?

By evaluating these two areas together, the auditor can draw conclusions and make specific recommendations for improving system controls and performance.

Previous Approaches To Computer System Audits

As we mentioned earlier, auditors have used several different methods to evaluate computerized systems. The pros and cons of each follow.

Auditing Around the Computer

Auditing around the computer is probably the cheapest, easiest, and most widely used approach for auditing computerized systems, but to us it is the least effective method because it ignores the "big black box"—the computer. Reconciling input documents to output reports (and vice versa) informs the auditor of nothing more than the fact

¹ *Auditing Standards and Procedures*, American Institute of Certified Public Accountants, 1963, p. 32.

that information sent through the computer system came back in a particular manner. But suppose that transactions are rejected by the system? Why were they rejected? What happened to them after they were rejected? These and many other questions cannot be answered when auditing around the computer.

Auditing around the computer does not address internal controls such as edit checks, limit checks, etc., unless a particular transaction being monitored has an irregularity. Dreaming up possible conditions of errors is not normally done by the initiator of a transaction. However, the auditor should do this because, by monitoring only the normal transactions running through a system, the auditor cannot be sure that all errors or irregularities can and are being discovered.

Furthermore, suppose an output document is not received for a particular input. How can auditing around the computer identify where the data was lost? It can't! Not knowing where the data was lost certainly decreases the chances of improving the system. Also, if there are delays in processing transactions, auditing around the computer will not point out where the bottlenecks are, only that they exist.

It is for these reasons that auditing around the computer is now only part of a computer system audit.

Parallel Test Decking

The next major audit approach is parallel test decking. A test deck is a set of simulated transactions designed to test for the existence and effectiveness of programmed controls and procedural operations in computerized systems.

Tests should be made up of both normal and irregular conditions, with expected test results already calculated. These tests should show how proper transactions are processed and how improper transactions are identified and rejected from further processing. Actual results from the tests should be compared to the expected results so that deficiencies in processing can be noted and appropriate improvements made.

Test decks are very good for evaluating batch processing systems and can be designed to thoroughly evaluate the computer programs making up the system. However, traditional test decking does not allow the auditor to test the performance of a computer system because the test decks are normally processed parallel, in a separate processing run requiring that computer resources and personnel be specifically assigned. With systems that process around-the-clock, it becomes even more difficult to schedule the test run. Furthermore, with on-line systems, test decks become progressively more difficult to design and process because the input format is sometimes difficult to simulate in a test mode and front-end programs may have to be modified for the special run.

Because parallel test decking does not address system performance, the auditor cannot be sure that the users of the computerized system are receiving useful data promptly. Likewise, bottlenecks in processing cannot always be seen because the volume of system traffic during the parallel test is normally lower, and ADP operations personnel take special care in processing the "auditor's run." Therefore, parallel test decking becomes another part of a computer system audit. Actual observation of computer system processing and

some monitoring of system traffic can be added to the audit scope, but analysis of total performance at one period of time—from initiation of the transaction to final system output—is still difficult to achieve with this method.

Integrated Test Facility

The latest approach to computer system audits is the integrated test facility. This technique allows the auditor to enter test transactions into the system together with regular, live transactions. The auditor then compares the outputs with his expected results (like parallel test decking), so he can verify processing accuracy. He can also evaluate the system's performance by monitoring his test transactions as they process through the system. Master files contain both live and test records and the auditor can retrieve his information for detailed review, using data retrieval and analysis techniques. Bottlenecks and loss of records can be noted by observing and analyzing the flow of information to the master or intermediate files.

With integrated test facilities, however, special care has to be taken to adjust critical outputs, such as accounting reports. In systems which make direct payments to banks or produce checks, "blockages" must be inserted to keep test payments from being made. These adjustments of critical outputs normally mandate that the integrated test facility be built into the system as it is being designed.

However, auditors are not as involved as they should be in system design; therefore, test facilities are not being integrated into systems. To try to develop a test facility after the system is opera-

tional and insert the appropriate controls and "blockages" means almost total redesign of the system. Therefore, the integrated test facility, although the most thorough method for evaluating internal controls and performance, is the least used, and may not always be practical.

The Simultaneous-Parallel Approach

What we have devised to solve these problems is a combination of the previous approaches—auditing around the computer, parallel test decking, and the integrated test facility. Our approach is especially applicable to on-line systems, and can be used with systems both in the design stage and those that have been operating for a period of time. We have labeled our methodology the simultaneous-parallel approach—simultaneous since test transactions are entered into the system at the same time as live transactions, and parallel because, once in the system, test transactions are processed separately until the final output phase, where they are merged with live data for on-line transmission back to the initiator. Our approach requires little program modification, relying mainly on the job control language of the operating system, and two new programs—splitting test from live transactions and merging them back together again. All of this sounds ominous, but in reality these are minor changes to the computerized system.

Let's first look at a very simplified management information system. Figure 1 will be used for discussion purposes.

As you can see in Figure 1, transactions are keyed from district offices

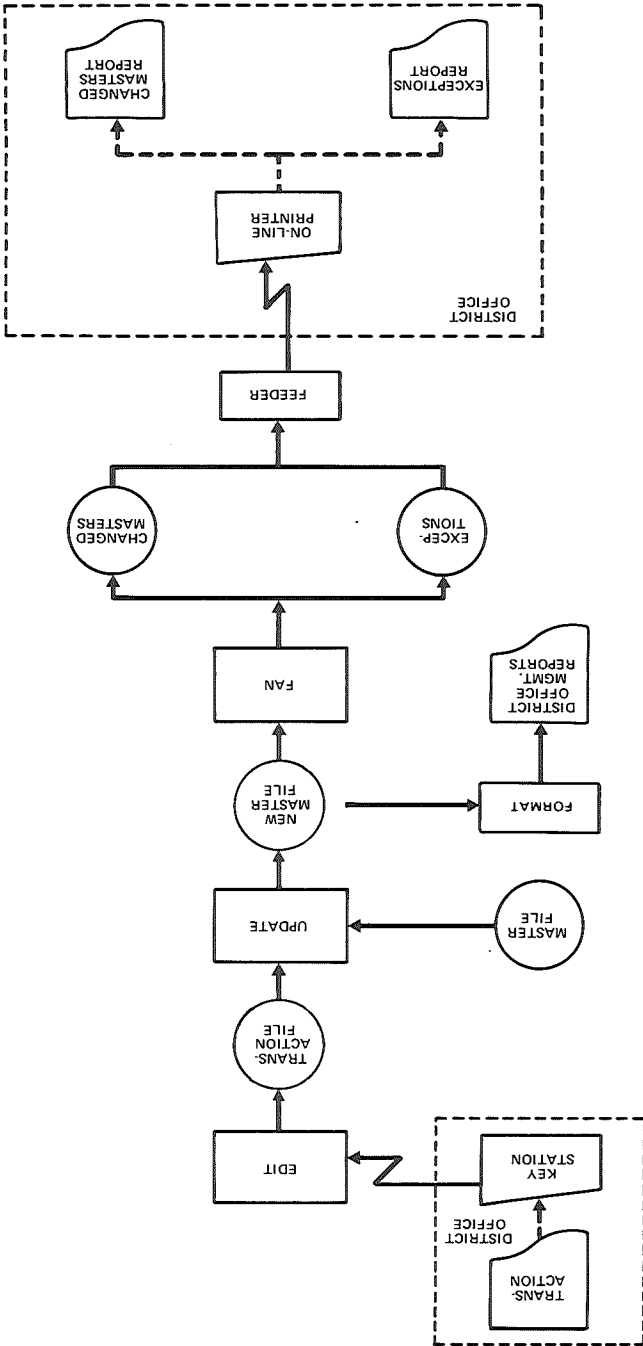


FIGURE 1

through an on-line EDIT program to a magnetic tape. This tape is subsequently batch processed through an UPDATE program which matches the transactions to the appropriate master record, making a new master file for the next system cycle. The new master file is then entered into the FAN program where erroneous transactions are written to an exception file, and each changed master record is formatted and written to a file for printing. These files are then read into the FEEDER program, an on-line program for transmitting information back to the originating district office. The new master file is also entered into the FORMAT program, where management information reports are produced for the district offices.

As we said earlier, auditing around this system would require reconciling input transactions to output reports. A parallel test deck would require not only a special processing cycle but also program modifications to the on-line EDIT and FEEDER programs, since a different form of data input and output would have to be used for test data. Furthermore, neither of these approaches would test the system's performance unless additional steps were taken to trace specific live transactions through the entire system. If an integrated test facility were used to test this system, audit records would be stored on all files and reflected in each of the district offices' management reports. As discussed, each of these approaches has its drawbacks.

Description of the Simultaneous-Parallel Approach

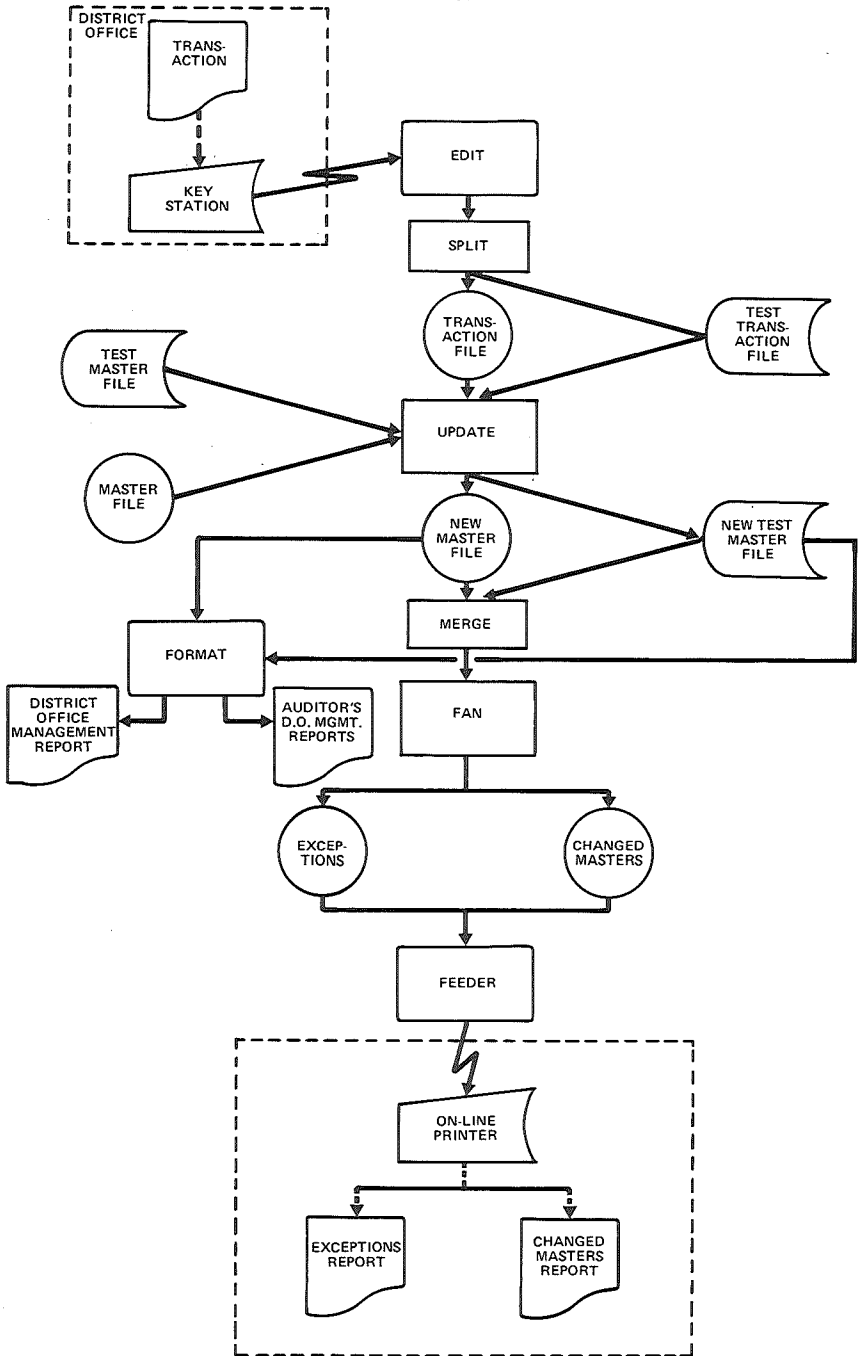
With the simultaneous-parallel approach, two new programs are needed—one to split test transactions from live

transactions at the beginning of the system, and one to merge them back with live transactions at the end of the system. These should be very simple programs which look for a certain combination of data fields, selected by the auditor, which identify transactions as test cases. Figure 2 shows where the SPLIT and MERGE programs would be inserted into our management information system.

Once test transactions are split, they need to be put somewhere! We recommend that they be put on a direct-access device so that they will become transparent to ADP operations personnel. In other words, ADP operations personnel will not be required to mount and dismount additional files containing only test records and thereby distort the system's performance. Since the volume of the test data is normally less than actual live traffic, the space required on the direct-access device should be minimal. Of course, if the required direct-access devices are unavailable, tapes will have to suffice.

Now that test transactions are stored on the direct-access device, there has to be a means for getting them through the system. This is done by the operating system's job control language (JCL). The JCL is the machine instructions used to define input and output files, the program to be executed, and the format of listings or other outputs which should be written. With the simultaneous-parallel approach, a 3-step method of JCL is used. The first step of the JCL is the same as that used in normal production, calling the tape files for the particular program being executed. Step 2 is simply a check program to see if the test portion, step 3, should be run.

FIGURE 2



The JCL for step 3 is identical to that used in step 1, except that the test facility's direct-access device is substituted to define it as input and output, rather than tape files.

As our management information system operates, live and test transactions will be entered simultaneously, through the on-line system, and separated onto the live and test data bases by the SPLIT program. The first JCL step is then used to process the live transactions through the UPDATE program as usual. Before the new master can go into the FAN program, the second step of the JCL will check to see if test data should be run, and, if it should, the third step of the JCL will call for the test data to be processed through the same program as the live production. Once both new masters have been created, they will both be called by the MERGE program, which will put them together for the FAN operation. Live and test transactions will thus be stored together on the exceptions file and on the changed masters file for simultaneous transmission through the on-line system.

The FORMAT program creates important management reports for the various district offices. These reports obviously should not include test transactions; therefore, we use the same 3-step JCL method to produce separate reports for the district offices and the auditor.

One additional requirement for the auditor using this approach is that he will have to make sure that test data is not treated differently from live data. Also, program modifications will have to be controlled to make sure that changes are not made which would affect only test data. An automated documentation package can be used to fulfill this re-

quirement, identifying and tracing lines of program code which affect critical items of test data.

Advantages of the Simultaneous-Parallel Approach

The basic advantage is that auditors can simulate the entire workings of the system without affecting critical outputs or system operations. Specifically:

- Test records are on a separate data base and thus cannot affect live production.
- Test records are on a separate data base and can be effectively controlled by the auditor.
- Auditors can evaluate system performance since live and test inputs and outputs are merged together and processed at essentially the same time.
- Auditors have assurance that test transactions are subjected to the same program as live production by verifying the JCL (step 3 to step 1).
- Step 2 of the JCL allows the test facility to be turned off when not in use.
- Step 2 of the JCL allows the test facility to be turned off if problems arise which would prevent critical processing.
- A mini-version of the entire system is available for validation of new programs or program changes without running the entire live system.
- A permanent test facility remains for testing at a future date.
- The test facility requires a minimal amount of new programming (SPLIT and MERGE programs) and can be added easily to an existing system.
- Recommendations for improve-

ments to internal controls and performance can be made at the program level, showing exact lines of the program code that need to be modified.

For these reasons, we believe that this approach benefits not only the auditor's evaluation of the computerized system but also the system analyst and programmer when changes are needed.

Disadvantages of the Simultaneous-Parallel Approach

Outside of the programming effort of the SPLIT and MERGE programs and the 3-step JCL, the only major drawback of this approach is the allocation of the direct-access device(s) for storing test records. It may not always be feasible to acquire these devices, and if the system being tested is small and not time de-

pendent, test records can be allocated to magnetic tapes. The investment in direct-access devices must be weighed against the additional burden this approach would have on actual processing operations.

Conclusions

In summary, we believe that the simultaneous-parallel approach for testing computer systems is a valuable new tool for evaluating both internal controls and system performance. It is pertinent today, and even more so in the future: with the increased use of on-line and real-time systems this approach will permit the auditor to continuously monitor the system's internal controls and performance.

GAO and ADP

In the 11 years since enactment of the Brooks Act GAO has issued a staggering 175 reports dealing with the ADP problems. This averages about one every three weeks.

GAO's theme throughout all of this has been greater Government-wide coordination and centralization.

"The Federal ADP Procurement
Maze"

Government Executive

April 1977

Laboratory Analysis: An Operational Audit Technique

How laboratory analysis serves the auditor in evaluating program performance.

As an environment changes, professions functioning in that environment must likewise change or face extinction. The failure to recognize and then to adapt to environmental change, it is recognized, can mitigate a profession's significance, impact adversely on its viability, and render it ineffective. Professions associated with the sciences, with politics and the law, with education, and with the arts have all had to be sensitive to such changes. As a profession, auditing has responded well to the changes that have occurred in its environment.

Auditing has expanded as time has required from the attest function it once exclusively carried out to the operational mode it currently occupies. As has been required, the standards and techniques the profession once relied upon

have been modified to accommodate its new dimensions. Laboratory analysis is one of the many techniques adopted for use by GAO auditors in their still-developing roles.

Auditing Metamorphosis

The history of auditing reflects the emergence of a profession initially aimed at assuring the integrity of fiscal transactions. Attesting to the veracity and accuracy of financial data was of paramount concern to the early auditor. With the growth of business and a corresponding increase in the size of government, the attest role expanded. Laws and statutes were enacted mandating the performance of specific type audits in the interests of both the taxpayer and the entrepreneur. Manage-

Mr. Zacchea, a manager in the New York regional office, has a B.B.A. degree in accounting from St. John's University and an M.B.A. degree in management from Long Island University. He is a member of the American Management Association, the Federal Association of Management Analysts, the Society for Advancement of Management and the Association of Government Accountants. He received the GAO Meritorious Service Award in 1967 and has had articles published in The GAO Review and The Federal Accountant. Currently he is responsible for coordinating regional office staff development activities.

ment, seeing the benefits that attest audits accrued to those outside the organization, initiated the development of an audit system from within. The "internal audit" like its counterpart focused on attesting to management about financial accountability and compliance with law, regulation, and policy. Unlike its predecessor, however, it was conceived as a continuing rather than an *ad hoc* process.

Over the last century, society has undergone quantum changes. Technological development, which can only be described as phenomenal, has taken and continues to take place. The taxpayer and shareholder universes have grown substantially, both in size and consciousness. And, the immediate social impact of even the most minor decisions have all combined to significantly influence management's actions. Management's needs and the needs of those to whom management is responsible have had to therefore be met with more than opinions on fiscal accountability and legal compliance. Operational auditing and the review of nonfinancial matters emerged as a means for meeting those needs.

Today's auditor has assumed totally new and wholly different responsibilities. Today's auditor is now very concerned with examining and reviewing the organization's non-financial policies, procedures, and operating functions.

Today's auditor now must render opinions on the organization's operating health and identify operating problems affecting its fiscal viability. Today's auditor now must determine the extent to which an organization is accomplishing its goals.

Finding an answer to the broadest of all possible questions, "Are organizational programs meeting the objectives set out for them and, if not, why?" has become the *raison d'être* of today's operational auditor.

Auditing Standards Modified and Techniques Changed

Traditional auditing standards and techniques, used in the attest function, were found to be less than fully adequate for the operational auditor. While they continued to serve and serve well indeed, they were, however, particularly suited to financial auditing.

Total reliance on a detailed knowledge of accounting principles and on the standards and techniques generated by accounting practitioners to assure compliance with these principles was once enough. More was needed, however, both in standards and techniques to cope with the auditor's entrance into operational areas.

GAO Wrote New Standards

In 1972 the U.S. General Accounting Office issued a set of auditing standards. These standards were designed for auditing governmental organizations, programs, activities, and functions. Its format was similar to "Statements on Auditing Procedure No. 33" issued by the Committee on Auditing Procedures of the American Institute of Certified Public Accountants.

An important distinguishing characteristic of the GAO standards was the assumption that the audit was an integral part of the accountability process. Specifically, the GAO standards required that the audit provide an un-

biased evaluation as to how well public officials carried out their responsibilities. The GAO standards urged, depending on the ultimate use of the audit results, that audit scope encompass a determination as to whether program objectives were being effectively achieved.

Today's public officials are responsible for a plethora of activities. The numbers and different types of governmental programs stagger one's imagination. They range quite literally from A to Z. With the influence of these standards on audits of this wide variety of governmental activities, the need to develop new audit techniques grew. Different ways to analyze, measure, and evaluate within this ever-broadening range of operational areas had to be devised. More creative measurement techniques had to be sought out and used.

Audit Techniques Were Developed

The auditor's movement from the attest role in the fiscal arena to operations measurement and evaluation was a visible one. It quite obviously required the development of new and different methods and techniques.

Both GAO and AICPA standards required the auditor to develop adequate professional proficiency in obtaining sufficient, competent, and relevant evidence as a basis for opinions, judgments, conclusions, and recommendations. The GAO standards, in demanding that proficiency, subtly insisted that the traditional body of auditing techniques be enlarged to accommodate the auditor's expanded responsibilities.

The Profession Responded

Auditors, both within and outside of

government, responded to the need for change. Audit institutions initiated programs to enlarge the perspectives of their members. Individual practitioners engaged in activities designed to expand their horizons. Concentrated exposure to disciplines auditors heretofore were relatively unconcerned about was recognized as requisite for success in operational auditing. The ability of the auditor to select and then to utilize appropriate measurement tools was acknowledged as the key to positive achievement in program evaluation.

The Laboratory and the Audit

Most auditors experienced no difficulty in confronting fairly familiar business disciplines. Procurement, marketing, personnel administration, inventory management, and other such areas were easily mastered. Knowledge acquired and skills developed during the days of fiscal and compliance audits were effectively utilized in the auditor's new role. The principles of more esoteric subject matter like statistics, computer technology, operations research, and systems analysis were quickly understood and pressed into use during operational audit efforts.

As the business school-trained auditor moved into operational and program areas further and further removed from fiscal activities, the need to use techniques of yet another genre emerged. The operational auditor began to recognize that those same decision making tools used by program participants now had to be used by the auditor if informed opinions on the relative success of programs could be rendered. For example, if activities like a kindergarten to eighth-grade education program, a

phase of prison management, or an element of a public assistance were to be looked at, it followed that pedagogical, penological, and sociological measurement standards had to be used.

The use of the physical sciences then became an obvious answer to the question as to how Federal programs involving issues such as shellfish sanitation, lead poison control, salmonella contamination, and coal mine safety could be measured. The thistle tube, microscope, and bunsen burner were counted among the new audit tools. Mechanical, chemical, and biological testing, with results expressed in parts per million, decimals, pounds per square inch, and British thermal units as well as in dollars and cents, began to provide the GAO auditor with support for conclusions and recommendations in operational and program areas.

The Laboratory Can Be Used Effectively

Is it really practicable for auditors to use the laboratory as an audit tool? Let's take a look at how it has been used by GAO auditors in the recent past.

Lead poisoning of children is regarded as a common, very devastating malady resulting from repeated exposure to lead-laden conditions. The Federal government supports far-reaching programs to control such conditions.

GAO auditors, to measure the extent to which lead-hazards were being controlled, needed to know whether paint containing high lead levels was available for sale, was being used on federally assisted building projects, or was ap-

plied to any federally financed housing.¹

After a briefing by local health department inspectors, and arranging to use local and Federal facilities and personnel, field work was initiated. GAO auditors visited Federal construction sites and filled laboratory jars with paint samples. They visited retail outlets and bought suspiciously labeled paint. They visited residential, federally financed housing, and were permitted to carefully remove paint chips from ceilings, walls, and woodwork. The samples were then delivered to Federal and local laboratories where auditor-directed, technician-executed tests for lead were carried out.

The results showed the auditors that recommended safe limits of lead had been exceeded. Paint being applied to federally associated properties contained lead in excess of 0.5 percent, and paint was being retailed which contained lead in excess of 0.7 percent.

Shellfish are harvested in their natural state and consumed, frequently uncooked, as a regular dietary supplement. The National Shellfish Sanitation Program has as its basic objective the prevention of illness by assuring that shellfish consumed in the United States are not carriers of viral hepatitis, typhoid, polio, gastroenteritis, and other, sometimes fatal, diseases. Whether the program was enjoying success could be measured by the purity of the water from which marketed shellfish is taken and the quality of the shellfish available to the consumer.

¹ A survey of lead poison control activities performed by the New York regional office covered these particular areas.

After conferring with Federal and State program officials, GAO auditors attempted program measurement by assessing the sanitary conditions of both the shellfish and the water. Arrangements were made with the Federal and State agencies to use laboratory facilities, test equipment, a boat, and technicians. Under the auditor's direction, both shellfish and water samples were taken from harvesting areas. In addition, shellfish samples were obtained by the auditors from retail food establishments and processing plants.

Shellfish samples collected from processing plants showed that fecal coliform and plate counts² exceeded safe limits. Tests also showed that some of the shellfish samples contained excessive amounts of cadmium, as well as chloro-dane, DDE³ and other pesticides. Tests of water samples taken from shellfish growing areas indicated that safe coliform limits were exceeded.⁴

Drinking water, safe from biological and chemical pollutants, has become of nationwide concern. From 1961 to 1970 there were 46,000 reported cases of illness and some 20 deaths, all attributable to contaminated drinking water sources.

GAO performed a review to determine whether Federal and State programs were adequate for insuring that acceptable quality drinking water supplies

were available. GAO looked at bottled water as one source of supply. Retail outlets in five States were visited by GAO and samples of bottled water were purchased. The samples were then taken to a Federal agency where tests for arsenic, sulfates, iron, copper, fluoride, chloride, manganese, and dissolved solids were performed. Analyses for bacteria counts were also made.

The results of the testing showed high bacteria counts (up to 1.9 million microorganisms per milliliter) and showed also that recommended chemical standards for substances, i.e., solids, chloride, manganese, arsenic, and fluoride were being exceeded. Dissolved solids exceeded standards in one test by as much as 3,256 milligrams per liter.⁵

About two million documented salmonellosis cases occur annually in the United States. This disease may be caused by any one of the approximately 1,300 types of salmonella bacteria often found in raw meat and poultry. It can cause severe illness and sometimes death. GAO examined the salmonella contamination problem to determine if the Department of Health, Education and Welfare and the Department of Agriculture could improve efforts to reduce its incidence.

The extent of actual salmonella contamination at the retail level was unknown. Therefore, GAO obtained samples of meat and poultry from auditor-selected retail stores in each of

² Fecal coliform is bacteria which indicates the presence of fecal pollution and other harmful bacteria. Plate count is the total bacteria present.

³ DDE is a degradation of dichloro-diphenyl-trichloro-ethane (DDT).

⁴ GAO report to the Congress, "Protecting the Consumer from Potentially Harmful Shellfish (Clams, Mussels, and Oysters)" (B-164031(2), Mar. 29, 1973).

⁵ GAO report to the Congress, "Improved Federal and State Programs Needed to Insure The Purity and Safety of Drinking Water In The United States (B-166506, Nov. 15, 1973).

10 metropolitan areas.⁶ GAO auditors directed the purchase of some two hundred samples by Federal inspectors, 100 each of raw meat and poultry. The samples were packaged by the inspectors to preserve their condition and shipped immediately to a Federal laboratory. At the laboratory the samples were tested for salmonella contamination.

The laboratory analysis detected salmonella in about 17 percent of all the samples and determined that more than 30 percent of one sample class was contaminated. One sample class tested completely negative, viz., without salmonella.⁷

Respirable coal mine dust may cause a type of pneumoconiosis known as "black lung" disease. Since 1970 coal mine operators have been required to operate dust sampling programs to determine the extent of respirable dust in the coal mines so that dangerous dust levels can be avoided.

GAO observed that a significant number of mine dust sample results showed respirable dust concentrations of 0.1 milligrams per cubic meter of air. While below the Federal standard of 2.0 milligrams, their unusual uniformity was indicative of questionable dust sampling.

GAO decided to take dust samples from selected mines to explore the probability of getting samples with 0.1 milligram dust concentrations. To test, GAO visited 14 mines and, using stand-

ard dust-measuring equipment,⁸ took dust samples at each of the mines. A total of 25 individual dust samples were collected under diverse conditions.

The samples were then sent by the auditors to a laboratory for weighing to determine the possibility of getting consistent results reflecting 0.1 milligram dust concentrations. Weighing revealed that coal dust levels ranged from 0.1 milligrams to more than 2.0 milligrams. Only two of the 25 samples showed 0.1. The latter two dust samples, however, were taken not from deep inside a mine but from an area contiguous with one of the 14 mines visited.

The use of the laboratory analysis can be an effective technique if not a very essential one. Without it GAO auditors may not have been able to render an opinion, based on sufficient, relevant, and competent evidence—something the GAO standards require—as to whether desired program results were being achieved. Whether programs were effective for controlling lead hazards, unsanitary drinking water, contaminated meat and poultry, dangerous mine conditions, and unsafe shellfish could not have been as confidently determined without the use of the laboratory as an aid.

Cautions To Be Observed

As with any technique, the use of the laboratory is not a panacea and can be fraught with hazards. The auditor who selects the technique to help make a determination, demonstrate a point, or support a conclusion or recommendation,

⁶ About 23 percent of the Nation's population resides in those areas.

⁷ GAO report to the Congress, "Salmonella In Raw Meat And Poultry: An Assessment Of The Problem" (B-164031(2) July 22, 1974).

⁸ A mechanical device manufactured specifically for the purpose of collecting airborne coal dust.

must do so with more than just usual care. There are a few special cautions the auditor must be certain to observe:

- Knowledge not belonging to the auditor is being utilized.
- Independence is being compromised.
- The technician may not be relied upon as the sole means of measurement.

Using Someone Else's Knowledge

During the fiscal audit and audits for accountability, the auditor works in a very familiar environment. Accounting and related subjects are the forte of the business school graduate auditor. Quite naturally, traditional auditing, particularly in related business areas, draws upon the knowledge the auditor garnered in school as well as through previous work experiences. In using laboratory techniques, albeit directed and controlled, the auditor must rely upon the knowledge and experience of someone who is not likely to be an auditor, more likely not trained to audit, and not necessarily functioning with the needs of the GAO auditor in mind. The auditor must be aware of this and be prepared to cope with any eventualities that may arise because of it.

Independence May Be Compromised

Unless the auditor is a biologist or chemist, or unless there is one on the staff and accessible, someone else will have to perform the auditor's laboratory tests. GAO standards, in discussing independence, observe that management interference with the selection of audit

procedures might impair independence. In the reviews discussed above, the GAO auditors selected the tests to be performed, developed and controlled the drawing of the samples, monitored the execution of the tests, and critically evaluated test results. They also relied upon non-GAO personnel to perform the tests.

While past experience has shown that such reliance has generally been justified, the auditor should continue to take precautions necessary to preserve independence. Reluctant agency personnel and questionable test results should prompt the auditor to explore other test facilities. (Some of the testing mentioned above was divided between local and Federal laboratories.)

The Technique Should Not Be The Sole Means of Measurement

Laboratory testing is simply a means available to the auditor in discharging the audit responsibility. It should be used as much as other means of analysis—economic, sociologic, mathematic—are used and always in conjunction with other audit techniques.

The results of the biological or chemical analysis must be complemented by the traditional reviews of records, of systems, and of internal controls which, in each of the instances discussed here, would be the cognizant agency's procedures for systematic and reliable testing. Likewise, people continue to be a source of essential information. Nothing should be ignored in favor of the laboratory analysis; the GAO auditor should use all available tools.

Workpaper Preparation

Some suggestions for standardizing audit workpapers to demonstrate proper support for conclusions reached and reported.

An important part of the time spent to perform an audit¹ is devoted to the preparation of workpapers. The need for this investment of time flows from the purpose of audit—reaching and reporting informed and supportable opinions about an issue. Evidence obtained during an audit but only accumulated mentally would be of little or no continuing value in demonstrating the basis for opinions reached.

Some believe that only the workpapers containing the evidence necessary to support the opinions reached and reported should be prepared. Unfortunately, this is seldom possible because all available evidence, both pro and con, should be accumulated, tested, and evaluated before an unbiased conclusion can be reached about an issue. Consequently, careful documentation of all the evidence considered becomes a “must” in reaching and reporting opinions about an issue.

¹ The term audit as used herein includes survey, review, examination, investigation, and similar endeavors.

The purpose of workpapers then becomes so basic and important to audit that they can be viewed as a product equally as important as the final audit report and requiring the same careful preparation.

The Freedom of Information Act has added emphasis to the proper preparation of workpapers. Although GAO is not subject to the act, the Comptroller General has declared that it is GAO’s policy “to make the fullest possible disclosure of information consistent with our responsibilities as an agency of the Congress.”

Recently in the Dallas region, one contractor demanded, and obtained, access to a complete 23-volume workpaper file. These workpapers, just like the final report, are now public records.

Workpapers now consist of the file of evidence obtained during the audit, the procedures followed in obtaining the evidence, and the conclusions reached concerning the evidence. Properly prepared, they will not detract from the final report should they become public records.

Mr. Doyal is a supervisory auditor with the Dallas regional office and is stationed in New Orleans. He has been with GAO since 1964 and has worked in Washington (Civil Division) as well as the field. He is a CPA (Texas and Louisiana).

The purpose of this paper is to provide guidance regarding workpaper preparation. It is recognized that the type of workpapers needed will vary with the audit circumstances and complexity. Even so, there are some basic requirements and certain general standards for workpapers that will assist in the preparation and critique of workpapers.

Evidence

No discussion of workpapers could proceed far without mentioning evidence. Evidence is the generic term for the specific physical, testimonial, documentary, or analytical information obtained during an audit. As pointed out earlier, one of the primary purposes of workpapers is to provide a file of the evidence considered during the audit.

Physical Evidence (I saw . . .)

Physical evidence is obtained by direct inspection or observation. The results of the inspection or observation may be recorded as a memorandum summarizing what was seen, photographs, or other pictorial reproductions.

Testimonial Evidence (He said . . .)

This type of evidence represents what others told us directly. It may result from letters responding to inquiries, as well as interviews. Testimonial evidence, in its most common form, is generally a memorandum based on notes taken during an interview; however, it can include signed statements or transcripts of recordings.

Documentary Evidence (The record showed . . .)

This is probably the most common

form of audit evidence (on certain audits testimonial evidence may be more common) encountered. Examples of documentary evidence include correspondence, invoices, accounting records, reports, files, manuals, and other such items. This type of evidence is generally obtained for the workpapers by making a copy of the document being examined.

Analytical Evidence (The comparison showed . . .)

Once physical, testimonial, and documentary evidence has been obtained, it is related through computation, comparison, logical reasoning, and other analytical techniques. The result of the application of such techniques is analytical evidence. It may take the form of conclusions, charts, graphs, or tables.

Basic Working Paper Requirements and Formats

Evidence obtained during an audit does not automatically become a workpaper. The evidence must be converted into a workpaper that is clear and understandable without supplementary oral explanation. For a piece of evidence to meet this basic requirement and thus become a workpaper, there must be a showing of:

- How it relates to the issue in question and other evidence obtained.
- Why, when, how, and where it was obtained.
- Whether and to what extent it was confirmed.
- What weight it has been assigned in reaching an opinion.

Careful design of workpaper formats can provide much of the needed infor-

mation. The following are guidelines for the most frequently encountered presentations of evidence as workpapers. Following these guidelines should result in workpapers that meet most of the basic requirements.

General Format Considerations

Workpapers should be uniform in size to facilitate filing, storage, and handling; they should be identified to a specific audit to distinguish them from papers prepared for other audits; and they should be neat and as uniform in format as practical to facilitate supervisory review. The following guidelines will assist in these endeavors:

1. Use only approved standard size work sheets or work sheets capable of being folded to this standard, using vertical folds only.
2. Write or stamp at the top center of each work sheet the name of the audit, the specific location, and other identifiers such as audit code number, date, or period.
3. Write a description of the evidence that is to be presented as a workpaper title or heading. This step is generally a good but often overlooked means of stating why the evidence was obtained. For example, a heading such as the following describes both what the evidence is and why it was obtained.

“Schedule comparing the unit and averaging price of widgets for the period June 10-30, 197X”

“Memorandum dated June 1, 197X, from the Division Director to all staff members that establishes new wage rates for widget makers and new selling prices of widgets”

4. Identify who made the workpaper, the date it was made, the extent of supervisory review, and when.

5. Assign the workpaper an identifying index number. The simpler the index number system, the better. For example, A-1, A-2, etc., is preferable to systems that use complex fractions.
6. Indicate the number of work sheets that make up the workpaper.

Obtaining and using a rubber stamp with the following or similar design can serve as a reminder of items 4, 5, and 6.

W/P Index No. _____

Prepared by _____ *Date* _____

Reviewed by _____ *Date* _____

Page _____ *of* _____ *pages*

Format for Documentary Evidence

Documentary evidence, as stated earlier, is probably the most common form encountered during an audit. The advent of modern high-speed copiers has reduced the need for making time-consuming handwritten excerpts of records. Now copies of the source documents are made for evidence purposes and to be included in the workpapers. Following are some guidelines for creating workpapers from documentary evidence:

1. All documentary evidence should be affixed to standard size work sheets.
2. General Format Considerations 1 through 5 should be complied with.
3. Should the document be mounted in a manner that requires turning the workpaper to read the document, mount the document so that it can be read by turning the working paper counterclockwise.

4. Explain all abbreviations, unclear terms, etc., that appear in the document.
5. Cross-index the document or items shown in the document to related workpapers.
6. On the work sheet that the document is affixed to and on the document itself, identify the source of the document.

1. Assign each column an appropriate heading.
2. Show the source of all data recorded.
3. Explain clearly any mathematical computations.
4. Identify the results that are important and restate them in a narrative.
5. Provide a legend to explain all tick marks and symbols used.
6. Show that all data and computations have been independently traced to the original source and verified.

Format for Testimonial Evidence

If testimonial evidence is documented on other than standard size work sheets, follow the guidelines for documentary evidence. For preparing testimonial evidence from notes taken during interviews or discussions, the format in figure 1 is suggested. Remember to comply with the General Format Considerations.

Format for Columnar Work Sheets

Columnar work sheets may be used to present physical or analytical evidence. In addition to the General Format Considerations, the following guidelines are suggested.

Conclusion

Because audit opinions must be supported and may be subject to independent evaluation, workpapers are an audit product deserving of attention. Careful design of workpapers can do much to assure that the evidence gathered in reaching an informed opinion is presented in a manner that requires no supplementary oral explanation.

FIGURE 1

MEMORANDUM OF INTERVIEW REGARDING _____

Date, Time, and Place: _____

Participants: List all persons present at discussion, their titles, and organization (include the auditors).

Purpose: A statement of the purpose of the interview. Each purpose or unknown cited in this section should be addressed in the same order in the body of the write-up.

Information Obtained: State under this heading what was learned during the interview.

Documents Provided: Identify the documents provided during the interview.

Followup Required: State what must be done to resolve questions raised during the interview or to confirm information provided.

Workpaper Preparation— Can It Be Improved?

A review of possible ways and means of simplifying and otherwise improving methods of preparing and filing audit workpapers.

YES! There is room for improvement.

Most auditors recognize the need for objectivity. In the General Accounting Office, considering the multi-agency, multi-program responsibilities, and the apolitical aspects of the work, it is virtually a way of life to question procedures, yet keep an open mind and be receptive to new ideas.

In Atlanta, this questioning attitude led to discussions about the way we prepare workpapers and what our needs are. Ideas and opinions for ways to reduce the time to prepare workpapers, and the volume, were solicited from managers, supervisors, and auditors. The ideas were tested on a job in Atlanta and the results presented to the Director, Field Operations Division.

The Director agreed that the ideas offered a potential to reduce workpaper volume and preparation time, and he also made suggestions. The ideas actually involved two issues: (1) the mechanics of accumulating, assembling, and recording data and (2) managing the assignment.

Additional testing was considered necessary before we recommended changing our procedures for preparing working papers. The ideas were tested in four additional regions on eight or nine jobs. The ideas or proposals and the results of the tests are discussed below.

Holding File

A "holding" file is a place to keep, until the end of a job, those subject-related documents that may not be needed. On most jobs we obtain subject-related documents that ultimately are not needed to support any job product, current or future, or why a job product did not result. Whether such documents may be needed often cannot be determined until job completion. Thus, they should not be incorporated into workpaper files until the end of the job. At that time, either include the documents as part of the workpapers, return them to the agency, or discard them, as appropriate.

Mr. Barnhill, an audit manager in the Atlanta region, joined GAO in 1957. He is a graduate of the University of South Carolina with a B.S. degree in accounting.

Including useless documents in workpaper files is an expensive proposition. In addition to the job time spent working with the documents, most of the files containing these documents are ultimately stored somewhere for a period of 10 years. General Services Administration warehouse storage space cost 72¢ a cubic foot in fiscal year 1976. A 6-percent increase is expected in fiscal year 1977. Storing workpapers in office file cabinets is two to three times more costly than storage in warehouse space. At September 30, 1976, GAO had over 27,000 cubic feet of reportable records, in addition to those stored in GSA records centers.

Test Results

The regions testing this proposal were generally in favor of it. Some felt the problem was one of job management that should be worked out at the start of the job. The Kansas City staff observed on one job that the size of the workpaper file may have been reduced by half. On other jobs, the staffs felt that "holding" procedures were already in use to varying degrees. Atlanta did not test this proposal, but comments were solicited from some supervisors. The responses were also favorable and, again, some supervisors stated that they were doing something similar.

While there may be individual attempts to eliminate unnecessary documents from workpapers, it seems obvious that only limited success has been achieved. It seems equally obvious that each job needs a systematic approach, including actually establishing a file, if necessary, to retain until job completion (but not immediately incorporate in workpapers) those subject-related documents that may not be needed.

Discontinue Mounting Documents

Each document included in the workpapers is usually fastened in some manner to another sheet of paper so that it will be the same size as all other workpapers. To insure the document will not tear from the file requires judgments on stress, strain, and durability that seem more appropriate to someone with engineering training. On the workpaper sheet we normally record the index of the workpaper, the auditor's name and date, the source of the document, the purpose of the document, the job title and code number, the agency, and job location.

Because of the proliferation of copying machines we remove individual papers from a working paper file for only a brief period—not far enough away or for a long enough time for the page to lose its identity with the file. Thus, the need for the extensive identification now being placed on individual pages is questionable. Many of these tasks become meaningless. Frequently they are done at the end of the assignment. At this point, the name of the auditor placing the particular document in the working paper file, or the date, has no real value.

Estimates vary, but about 5 percent of the staff time on each job is spent on the task of mounting documents and the related tasks. One region estimated that from 5 to 15 percent of job staff time may be used on such tasks. The proliferation of copying machines is a major contributor to the time now spent on this task. Auditors make copies of many agency documents that were formerly summarized by hand, or from which they made excerpts. Now we often copy the entire document.

Proposal

Instead of mounting documents, we propose that they be inserted in files as is, with the first page indexed and the remaining pages of the document numbered. If necessary, the auditor can record the subject of the document, the auditor's name, date, and data source.

Test results

The regions testing the proposal were nearly unanimous that it would result in savings of time and supplies. Some regions did not realize any space savings because of mixing the documents with legal length workpapers.

The most effective technique of inserting a document in the workpapers without mounting was simply to punch a hole in the upper left-hand corner, insert the document in the workpaper file as is, index the first page of the document, and number the remaining pages. Most documents already contained a subject, so this step was not usually necessary. Source notes, if necessary, were shown on the first page or the first available space in the document—e.g., the back of the first page.

Other methods tried, but rejected, of inserting documents in workpapers included three-ring binders (too cumbersome and voluminous) and stapling along the side. With these techniques, margins were eliminated for making notes, cross-referencing, and other uses. Some documents were difficult to read because information is printed on the reverse side and reads from the bottom of the page when it is turned. Thus, the technique currently used, the staple in the upper left-hand corner, was the most effective.

Single-Space Narratives

While the regional responses to the proposal were generally not unfavorable, neither were they favorable. Disadvantages cited were:

- Editorial inserts cannot be made in single-spaced narratives.
- It is more difficult for reviewers to read.
- The handwriting of some individuals is hard to read when single-spaced.

The advantages were that fewer pages are required for narratives. Thus, less paper is needed and fewer headings are required.

Analysis of Test Results

Analysis of the regional responses and observation of some test results show that much of the unfavorable response was due to the inferior, makeshift supplies that had to be used in the test. It should be noted that the narrative paper used at present is of good quality. If this proposal is adopted, the new sheets would most likely have the same good quality.

Regarding some comments about inserts within narratives, we find that usually such inserts are editorial. And, if very much editorial change is needed, most auditors rewrite the page. Further, review notes or comments do not appear appropriate for comment herein.

Some individuals have obvious handwriting problems. As one regional manager observed, these individuals could triple-space and their handwriting would still be illegible.

Write on Both Sides of Paper

No one questioned that this proposal

would save supplies and some space. Also, there might be some time savings from writing fewer headings. However, the regions were generally *not* in favor of this proposal. Disadvantages cited were:

- Reviewing papers was difficult because the back page is positioned more awkwardly.
- The paper smeared.
- The quality of the paper caused writing to “bleed through” when copies were made.

Atlanta found that the proposal would work but that narratives on the back of a page should be started from the bottom to facilitate writing and the subsequent review process. However, if this proposal is to succeed, the supplies must be properly designed and of a suitable quality, at least as good as the standard comment paper presently used. Also, the cost of printing lines on both sides of the paper should be considered. The only way to evaluate whether the review difficulties are real is to conduct further tests using properly designed supplies.

Reduce Workpapers to Letter Size

While the final results of testing this proposal by two regions were positive, the reactions by the other testing regions were generally negative. The primary reason for the negative reaction was the inferior, makeshift supplies. For example, one regional staff noted that the proposal “could work but only if proper supplies are furnished; i.e., paper with holes in it and proper size.” Similar reactions were expressed by staff members of other regions that participated in the test, although some reactions were entirely negative.

Advantages

The advantages of this proposal were:

- Consistency of workpaper length—assuming adoption of the proposal to discontinue mounting documents.
- Smaller and lighter files, and thus lower mailing costs.
- Less storage space.

Disadvantage

The major disadvantage was the requirement for more than one page for some schedules and narratives which would require more headings, more pages, and more time.

Reducing the length of workpapers to a standard letter size required only about 80 percent of the space required when standard 14-inch GAO workpapers are used. Also, when narratives are single-spaced, about the same amount of information is recorded on a letter-length page as is normally recorded on the standard size 14-inch page. All testing regions, however, appropriately recognized that the shorter pages for long schedules may require more effort. But, it is also appropriate to note that, when numerous columnar headings are required, we normally devise a mechanical method of doing the headings to avoid an unwarranted expenditure of time.

Conclusions

There was general agreement among the test regions that the proposals to discontinue mounting working papers and to establish “holding” files, or to use a similar approach, on each assignment would save time and reduce working paper volume.

There were mixed reactions to single spacing, preparing front and back narrative pages, and reducing all working papers to letter size. Much of this adverse reaction is directly attributable to the use of the inferior, makeshift supplies. Also, there is the natural reluctance to try something new.

It is apparent from this experiment that we may not be ready to completely revise the working paper guidance of the Comprehensive Audit Manual. However, it is equally apparent that there is room for, and a need for, streamlining the way we prepare our working papers. Different jobs have different require-

ments for documentation. For example, on surveys a larger percentage of documents is obtained for working papers than on detailed reviews. Some reviews require substantial numbers of schedules. Some consist almost entirely of interview memorandums.

It is important to keep in mind that, to support our products, it is workpaper content that is important, not how pretty we make the workpaper file. And, just because accountants have always done things a particular way does not mean this is the only way or the most efficient way.

Audit Reporting Standards

Our auditors are guided by and are expected to adhere to reporting standards that we have formulated in writing all reports. These standards call for preparing reports that contain important information and are useful, timely, accurate, properly supported, convincing, objective, clearly presented, concise, complete, and constructive in tone. These are high standards to achieve in the light of the large number of reports we send to the Congress, its committees, and Members (over 600 each year), and the complexity of the subject matter of many of them.

Elmer B. Staats

Comptroller General
of the United States
March 1977

How GAO's Audit Standards Evolved

A brief review of the evolution of auditing of government operations in GAO and what GAO's audit standards signify for CPAs and users of CPA services—adapted from remarks at the Seminar on GAO Standards for Audit, sponsored by the District of Columbia Institute of CPAs, Washington, D.C., April 25, 1977.

GAO audit standards as set forth in the 1972 booklet with the familiar yellow cover¹ did not spring to life overnight. They had been evolving over a long period of years, based on the concepts, philosophies, ideas, and practices of many people—in GAO and on the outside.

Let us look at what government auditing was like 30-35 years ago in the Federal Government.

Internal auditing—where it existed at all—was then in its infancy, and in many Federal agencies there was no such function.

Except for some site auditing in large contractor plants that started during World War II and in a small number of other such arrangements, GAO auditing was a highly centralized and limited affair. Federal departments and agencies had to send their fiscal documents to GAO for audit and settlement. The audit itself was largely confined to determining the accuracy and legality of individual financial transactions and the accountability of financial officers. A maze of centralized bookkeeping procedures had been built up inside GAO to

provide a framework for the audit and settlement process.

Government Corporation Control Legislation

The break away from this system began in earnest in 1945. In that year the Congress—after long study—enacted legislation to control the large number of Government corporations. By that time, there were about a hundred of them that had sprung into being over the years, mainly to perform functions that were judged necessary for the Government to perform with a greater degree of management flexibility than was available in regular agencies. And this freedom included relief from the millstone of centralized accounting and auditing controls imposed by GAO.

The Government Corporation Control Act directed the Comptroller General to audit the Government corporations in accordance with the principles and procedures applicable to commercial corporate transactions. This required a skill that simply did not exist in GAO at the time. Comptroller General Lindsay War-

ren went at the assignment in a most logical way. He organized a new division to carry out this heavy responsibility, and he consulted with the American Institute of Accountants for recommendations on who could head up this group.

T. Coleman Andrews and Howard Bordner—both experienced CPAs—were appointed as director and deputy director of the new division and they recruited dozens of others with public accounting experience. These auditors injected into GAO the traditional approach of the public accountant—audit at the site where the records are kept and the operations carried out; review and analysis of internal management controls as the basis for deciding what to audit in detail and how much; and application of sampling procedures to test the accounting and internal control systems rather than the historic technique of examining all transactions.

These hallmarks of the public accountant still pervade GAO's underlying audit philosophy and can be readily detected in the statement of auditing standards published in 1972. But they were only a beginning.

In applying these techniques in a governmental environment, the existence of a myriad of laws and the need to check for compliance with them has to be recognized as a most important aspect of auditing government operations. These laws are indicators of requirements and restrictions of the legislature which authorizes the programs and activities being carried out and provides the funds to finance them.

And the early corporation audits did not stop there. From the beginning, the new GAO auditors concerned themselves also—with varying degrees of intensity—with analyzing and evaluating

such management problems as organization, staffing, methods of operation, relationships with private industry, and the management of programs and activities. They simply did not confine themselves strictly to attesting to the adequacy or inadequacy of accounts, accounting procedures, and financial statements.

Extension of Comprehensive Auditing

Experience with these audit techniques encouraged the Comptroller General to extend the concept to the unincorporated agencies of the Federal Government. He adopted a program of comprehensive auditing in 1949 which embraced this approach. Shortly before this, he pushed for a most unique cooperative program of bringing about improvements in Government accounting and financial reporting. This program involved cooperation with the Bureau of the Budget and the Treasury—rather than perpetuating the jurisdictional squabbling with them on most everything concerned with accounting and fiscal procedures that had prevailed for years. This program—still going on and still doing good work—is now known as the Joint Financial Management Improvement Program.

A key concept of the Joint Program was that accounting was a basic responsibility of the management of the agencies who carried out Government operations and administered the funds that were given them to do so. This basic concept found its way into the Budget and Accounting Procedures Act of 1950 and laid the kind of groundwork that gradually enabled GAO—as the Government's independent auditor—to further

expand the scope of its auditing beyond concerns with the adequacy and effectiveness of accounting for financial transactions and operations and their legality to matters of efficiency and economy and eventually effectiveness of results of operations (or achievement of objectives).

The seeds of this expanding evolution came with some of the people who manned the original Corporation Audits Division in GAO. A few people already in GAO had similar ideas. The evolution was not an even affair, nor was it necessarily a fully accepted trend. More than one individual in GAO with a public accounting background did not subscribe at all to an auditor's going beyond accounts and financial statements.

But with good leadership, plus a realistic recognition of what the Congress—to whom GAO is accountable—wanted in the way of auditing, the expansion of the scope of GAO auditing continued, and increased experience was gained.

Auditing Program Results

Concern with output or results of programs or activities was not unknown before, but accelerated emphasis on evaluating this most important aspect of management performance came under the present Comptroller General—Elmer B. Staats. The Congress added impetus to this trend by specifying in laws passed in 1970 and 1974 that it wanted GAO to audit the results of ongoing Government programs and activities.

To make an almost interminable story short, we are still learning. Much of our current audit work can almost better be

described as research. We have to continue to experiment and devise techniques to fit what we are trying to analyze and evaluate. And very little precedent exists for applying these procedures to many of the programs and operations that make up a large part of the Federal budget today.

Looking Ahead

Looking ahead, and recognizing that we are meeting here at a time when Senator Metcalf's Subcommittee on Reports, Accounting and Management of the Committee on Governmental Affairs is conducting hearings on what its staff has chosen to call "the accounting establishment," what does the broadened scope of auditing such as practiced by GAO signify for CPAs—and for those who engage the services of CPAs?

- First, I think it signifies an eventual general broadening of the scope of the auditor's work outside of the Federal Government. The AICPA Committee on Relations with the General Accounting Office unequivocally reported in 1973 that it agreed "with the philosophy and objectives advocated by the GAO in its standards and believe that the GAO's broadened definition of auditing is a logical and worthwhile continuation of the evolution and growth of the auditing discipline."² Internal auditors in many Federal agencies and in large commercial organizations have extended their efforts in this direction, and the Institute of Internal Auditors is now working up a statement of internal auditing standards that embraces the widened scope of auditing.

- Second, the Management Advisory Services division of the AICPA sponsored a comprehensive study of the GAO standards, and its task force produced the recently published booklet of guidelines for CPAs involved in governmental audit engagements that go beyond accounting and financial statements.³ I regard this booklet as a very useful addition to the literature in which CPAs should be interested. It lays out interpretations, suggestions, and other information that CPAs need to worry about in taking on an engagement that requires examinations into management performance. For those in government who utilize CPA firms, it provides insights into what CPAs have to consider in taking on one of these engagements.
- Third, I think CPAs need to recognize that their traditional service of attesting or expressing opinions on financial statements, almost always in canned, stereotyped language, does not go far enough in satisfying users of audit services that an adequate audit has been made. This is particularly true in government operations. There is a strong interest and a need to know what auditors really think of the management's system of operations, what if anything is being done in the way of improvement, and what recommendations the auditors have.
- Along this line, I think the Commission on Auditors' Responsibilities, established by the American Institute of CPAs and chaired by Manuel Cohen,⁴ is on the right track in

suggesting that the CPA's report be expanded to get away from the usually unread symbolism of the present standardized opinion language. But the expansion apparently envisaged is to have a shelf of standardized alternative phrases or paragraphs to draw on to give the user more to read. I have some doubts about this procedure.

- My personal view is that organizations who are audited—whether private companies or government agencies—are distinguishable entities, each with its own peculiarities, mixes of management capability, and operating and financial problems and prospects. The auditor who delves into them with his skills of analysis, verification, and evaluation should report on them accordingly. He should tailor what and how he reports to what he finds in as clear and simple language as the subject matter permits.
- GAO's reporting standards as set forth in the published audit standards provide that audit reports containing financial statements should include appropriate supplementary explanatory information about the statements so that they can be readily understood. Violations of legal or other requirements should be disclosed and explained and all reports should set forth the auditor's recommendations as to actions needed to bring about improvements in the problem areas that he has encountered and evaluated. This is a high standard and a tough one to adhere to, but it makes for audit reports that are more likely to lead to constructive actions where needed.

- To sum it all up, this is what the auditor ought to be shooting for—improvement in whatever he gets into and thereby providing the user—and the buyer—of his services as much as possible for his money.

In government operations, involving as they do billions and billions of dollars of public money, there is much for auditors to get into. The opportunities for

auditors to provide valuable and much needed services to the public who puts up all this money are endless—when they extend the scope of their operations to examine the efficiency and economy with which public funds are managed and spent and what, if anything, is accomplished as a result of those expenditures. In a few words, this is what GAO's audit standards are all about.

REFERENCES

¹ See *Standards for Audit of Governmental Organizations, Programs, Activities & Functions*, by the Comptroller General of the United States (1972).

² See *Auditing Standards Established by the GAO—Their Meaning and Significance for CPAs*.

³ See *Guidelines for CPA Participation in Government Audit Engagements to Evaluate Economy, Efficiency, and Program Results* (Management Advisory Services Guidelines No. 6).

⁴ See *Report of Tentative Conclusions* (1977).

Auditing Financial Operations— A Systems Approach

This article discusses a systems approach to auditing financial management operations and focuses on the procedures involved in obtaining, processing, recording, and reporting financial information.

One of the primary purposes of auditing financial operations is to determine if the financial reports of an organization are reliable. In the past the auditor was able to focus attention on the financial reports, examine internal controls relating to line items on the reports, test a number of transactions, and gain confidence as to the reliability of the reports. However, since the processing of tremendous volumes of transactions has become commonplace in financial operations, the auditor has been forced to place greater reliance on the systems that generate financial information. Specifically, the auditor has had to direct attention to the procedures involved in obtaining, processing, and recording financial data from the point of initiation of a transaction until final disposition in a report.

Recognizing the need to emphasize processing systems and the necessity for innovative audit techniques, the Wash-

ington regional office has implemented a systems-based approach to review the major activities of an organization, such as purchasing, selling, or production, which have a direct effect on the financial reports.

The Systems Approach

Systems are made up of sets of components that work together for the overall objective of the whole. The systems approach is simply a way of thinking about total systems and their components. Activities with financial significance have as an objective: the purchase of an asset or service, the sale of an asset or service, the production of an asset, the payment of employees, the issuance of a grant of subsidy, or the processing of a claim or default. For convenience, let's call the systems used to carry out these activities the buying system, selling system, production system, etc.

Mr. Michelson is a supervisory auditor with the Washington regional office. He has a B.S. degree from the University of Maryland and an M.B.A. degree from George Washington University, and is a CPA (Maryland). He has been with GAO since 1972 and is a member of the Association of Government Accountants.

Within each system financial data must flow through a set of related functions and be recorded in similar accounts. For example, within the buying system (e.g., purchase of inventory, fixed assets, services, supplies, investments, home mortgages, etc.) data generally flows through such functions as (1) establishing authority to purchase, (2) ordering, (3) receiving, (4) paying, and (5) recording. Accounts affected as a result of buying activity would normally include the specific asset account, accounts payable or other payables, and cash.

In this approach, the auditor evaluates the procedures in effect in each system and each function within the system. This evaluation is done to determine if the procedures provide adequate controls so that the system can be relied upon to produce reliable financial information, hence reliable financial reports. Because of the complexity of these systems, the auditor's effort is separated into two parts: the study of the system and the evaluation of the system.

Study of the System

The study of the system is divided into three segments: (1) obtaining an understanding, (2) recording the understanding, and (3) confirming the understanding. During this study the auditor will also make a judgment as to whether the system itself is auditable.

Obtaining and Recording an Understanding

A detailed understanding of the system is required. Sources of information to obtain an understanding include: in-

terviews, location tours, review of accounting and procedure manuals and memorandums, and review of other documents, such as flow charts, laws, and regulations.

Recording the understanding is accomplished through narrative writings, schedules, flow charts, or any combination of the three. The method used at the Washington regional office is the flow chart. The purpose of recording the understanding is that it: (1) serves as a communication vehicle among audit personnel, (2) aids in analyzing practices, (3) provides evidence for weaknesses to be disclosed in reports, and (4) provides a basis for reviewing system changes.

Regardless of which method is used to record the understanding, it must: (1) describe the major functions within the system, (2) identify significant controls, (3) describe the initiation, processing, and ultimate disposition of important forms and documents, and (4) identify and describe the preparation and maintenance of journals, ledgers, and reports.

Confirming the Understanding

Confirming the understanding is accomplished by tracing a limited number of transactions through the system from origin to ultimate disposition in the accounts. Tracing transactions from beginning to end allows the auditor to verify that the flow of transactions and the operation of controls within each function in the system are consistent with the understanding as recorded. For example, in the buying system for inventory, the auditor will trace transactions through the authorizing, ordering, receiving, paying and recording functions.

He or she will review such documents as purchase requests, purchase orders, receiving reports and payment vouchers, and review purchase journal or general journal entries. Information contained in these documents and journals will provide evidence to the auditor that the process and the controls were followed as recorded and that journal entries are consistent with the recorded understanding.

During the study, the auditor may be able to obtain, record, and confirm the understanding simultaneously, depending upon the system under review and the experience of the auditor. Using the buying system as an example, the auditor can obtain the understanding of the authorizing and ordering functions, select a transaction recently completed, and verify that the transaction is processed in accordance with the understanding. While verifying that the transaction is processed according to the understanding, the auditor can record the process.

Auditability of the System

As the auditor proceeds through the study of the system, a judgment can be made as to whether the system is audit-able or not. The auditor will obtain a good idea on whether adequate procedures are actually followed and effective controls exist to allow the system to produce reliable information. If, however, the auditor has noted that the system controls cannot be relied on or an insufficient audit trail exists, then the ability of the system to produce reliable financial information would be in serious doubt. Hence, the financial reports may be unreliable. It would be meaningless to fully complete the study and

evaluation of the system. The auditor would develop this reportable area and, if practicable, perform other audit procedures to verify the reliability of the financial reports.

Evaluation of the System

The evaluation of the system involves: (1) ascertaining whether controls in existence are effective and (2) determining whether controls are comprehensive enough to allow the system to produce reliable information.

Effectiveness of Controls

To determine whether those controls as documented and confirmed in the understanding are effective, tests must be performed so that the auditor will be assured that: (1) controls found to be in existence at the time of the study have, in fact, been in existence throughout the period under review and (2) controls have been correctly performed in their entirety. Transactions in sufficient quantity should be selected and tested by the auditor.

In order to test whether controls have been in existence throughout the period under review, the sample selection of transactions must be representative of the entire period. For instance, in the buying system for inventory a number of purchase transactions occurring in each of the months within the period must be selected.

To determine whether controls were performed in their entirety, as documented and confirmed in the understanding, the auditor must examine the supporting documentation for the selected sample of transactions. This examination is done by inspecting

authorizations, reviewing desk audits, recomputing calculations, or reviewing output. Again using the buying system for inventory as an example, the auditor will inspect the purchase order for approval, review the payment voucher to determine if the inventory had been received by a receiving report, and recompute footings and extensions on the invoice.

Comprehensiveness of Controls

Deciding whether controls are comprehensive enough to meet intended objectives is perhaps the most difficult task and certainly the most subjective. The first task is to determine the objectives of the controls within the system.

Using the buying system as an example, specific objectives can be set out as follows: (1) only authorized assets should be ordered (purchased), (2) there should be a timely and accurate recording of the asset receipts, (3) assets should be adequately safeguarded from receipt to delivery to the ultimate user or custodian, (4) correct payment should be made, and (5) reliable accounting records should be maintained of purchases.

In order to achieve these specific objectives, various controls should exist. For example, to help achieve the objective that there should be a timely and accurate recording of asset receipts, the following controls should be present:

- The individual authorized to receive assets should be required to note quantity and quality of assets received in a timely manner.
- Assets received in poor quality should be segregated for subsequent return to supplier.
- The individual authorized to receive assets should be required to

forward receiving reports to the accounting section daily.

The method of documenting this phase of the evaluation of controls can be accomplished by either completing a narrative or a checklist—the latter referred to as a questionnaire. The use of a questionnaire is the most practical if properly devised. The questionnaire is divided into sections which address a particular objective. Under each section there are the controls generally thought to be necessary to accomplish the objective. Each control should be followed with a “yes” (in existence and found to be effective) or “no” (not in existence or in existence but ineffective) indication. The questionnaire acts as an “ideal” or “standard” with which the actual system in practice can be judged.

Results of the System Evaluation

Determining the effectiveness and comprehensiveness of controls within each system will permit the auditor to ascertain if reliable information is generated to produce usable reports. The stronger the controls in the systems, the greater the reliance the auditor can place on the system. The auditor may feel confident that transaction data has been processed accurately, timely, and properly. Conversely, if controls are weak, additional testing is necessary if the auditor wishes to form an opinion on the reliability of financial reports.

Conclusion

The Washington regional office has developed materials for the Field Operations Division which explain in detail the concepts behind the systems ap-

proach to auditing financial operations.¹ The material includes techniques on documenting the study and evaluating a system. This reference material has been presented in a number of seminars, both in the Washington regional office and for other regional offices, during which case studies based on actual audits were completed by seminar participants.

It is felt that this approach facilitates understanding and documenting com-

plex agency financial management systems, aids in reducing the degree of testing previously done, improves the basis for identifying systems and control weaknesses, and allows for better planning of future audit efforts. It has also aided in creating uniformity in approaching and documenting audit work on financial operations. Over time it is anticipated that this systems approach will reduce the total time and effort needed to review financial operations and at the same time increase our confidence in the reliability of financial reports.

¹ Mr. Michelson was assisted in developing the materials by Frank Manganiello and Dave Witte, also of the Washington regional office.

Annotated Planning and Accomplishment Schedule

In the late 1800s, Henry Gantt developed the "daily balance chart," which showed output on one axis and units of time on the other. This article suggests a current application of this idea.

The importance of training the new auditor in GAO has been stressed in many publications. These publications delineate the areas in which the new auditor should gain experience. Recognizing the difficulty that both trainees and supervisors face in "remembering" exactly what experience has been gained over a period of time, I would like to suggest a method which will furnish a record of experience, along with other benefits.

The Idea

The idea is a planning and accomplishment schedule with spaces and lines for entering the planned effort (P) and the actual work accomplished (A) with annotations. (See fig. 1.)

A primary benefit of the schedule is that it could provide an opportunity to

apply the management-by-objective principle of the supervisor and the trainee cooperating to establish a 2-week schedule. Initially, the schedule should probably be completed by the supervisor. However, as the trainee gains experience, he should be able to complete the schedule himself with the supervisor's approval.

Another benefit is that the schedule formalizes the three management phases: planning, doing, and reviewing. The work is planned and the time allocated in advance. Progress is recorded with annotations. The planned and actual entries then can be reviewed, with the annotations used to evaluate training accomplishments.

Further, the trainee will develop the ability to estimate the time required to accomplish the various audit steps. This

Mr. Dayton is a supervisory financial systems analyst with the Financial and General Management Studies Division. He received his B.S. degree in accounting from the University of Florida in 1969 and joined the General Accounting Office after graduation. He is a Maryland CPA and a member of the AICPA, the Association of Government Accountants, and the American Management Association.

FIGURE 1 ANNOTATED PLANNING & ACCOMPLISHMENT SCHEDULE

JOB CODE _____

P/P _____
AUD/TRN. _____
SUPRV _____

DATE																			
ACTIVITY		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	P																		
	A																		
	P																		
	A																		
	P																		
	A																		
	P																		
	A																		

ANNOTATIONS:

ability will help the trainee become a supervisor.

If each member of the audit staff has a schedule, a master schedule can be prepared for the job, coordinating the efforts of the staff. The job can thus be done faster and with a minimum of duplicated effort.

Finally, the schedules will provide a record of specific individual accomplishments. A supervisor can use this record to see that a trainee undergoes as many of the specific experiences listed in the on-the-job training requirements as the assignment will permit and that those items requiring more experience are repeated. If the schedule is used to the maximum, the supervisor can evaluate the trainee's accomplishments bi-weekly, with items done well and areas needing improvements annotated on the schedule.

Constructing The Schedule

The schedule presented in the beginning of this article was initially drawn on the reverse side of a sheet of comment paper. A supervisor can use his ingenuity to devise an appropriate outline. Although the example used here contains four activity lines, space is provided for drawing more lines above the annotation area.

How To Use The Schedule

"Job code," "pay period," "auditor trainee," and "supervisor" should be self-evident, but the entries in the body of the schedule require consideration and coordination. The supervisor and the trainee should discuss the activity planned. If an audit plan or work program has been prepared, it may provide

the source for the planned entries. If the trainee is assigned when the job is in an earlier stage, the planned effort may be acquiring background information or helping to write the audit program or work plan. Suggested trainee work assignments and the method of entry on the schedule can be found in the June 17, 1974, OPM memo listing on-the-job training experiences appropriate during the initial training period.

An Example

Let's assume that the trainee is assigned to the audit staff at the beginning of a survey. Since each member of the staff will receive an assignment slip, the trainee can use the slip to complete the entries for "job code," "pay period," and "supervisor."

The first day of a job is usually an orientation period during which the staff becomes familiar with the Assignment Authorization requirements and decides on an approach to the survey. For the next 2 days the trainee's assignment is to read the audit manual sections on surveys, audit planning, work programs, and working papers. The schedule entries for these activities are shown in figure 2.

If the trainee is a fast reader and finishes reading in one day, the schedule would be revised. The supervisor could schedule an opening conference for Thursday and assign the trainee to take notes from which to prepare an interview workpaper. Wednesday the trainee will read job-related material and help establish an administrative file for the job. The schedule would now look like figure 3.

This example includes enough information to suggest the method for use of the *Planning & Accomplishment Sched-*

**FIGURE 2
ANNOTATED PLANNING & ACCOMPLISHMENT
SCHEDULE**

JOB CODE 93XXX

P/P 1
AUD/TRN. DOE
SUPRV DAYTON

DATE	ACTIVITY	MON		TUES		WED		THURS		FRI		MON		TUES		WED		THURS		FRI	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	ORIENTATION	P	① →																		
		A																			
	READING CAM	P		② →																	
		A																			
		P																			
		A																			
		P																			
		A																			

ANNOTATIONS:

- ① Job Orientation
- ② Reading CAM Chapters 4-6, 18, & 19

FIGURE 3
ANNOTATED PLANNING & ACCOMPLISHMENT
SCHEDULE

JOB CODE 93XXX

P/P 1
AUD/TRN. DOE
SUPRV DAYTON

DATE	MON		TUES		WED		THURS		FRI		MON		TUES		WED		THURS		FRI	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
ORIENTATION	P	①	→																	
	A	①	→																	
READ CAM	P			②	→	⑤	→													
	A			②	→	⑤	→													
OPENING CONF.	P							③	→											
	A																			
WRITE-UP	P								④	→										
	A																			

ANNOTATIONS:

- ① Job orientation
- ② Read CAM Chapters 4-6, 18&19 [Finished in one day]
- ③ Opening Conference—note taking
- ④ Write-up opening conference in w/p using notes, using CAM and w/p examples of other interview write-ups, and staff assistance

RESCHEDULED

- 5 Read job related material and make administrative file

ule. As the audit progresses, a 2-week schedule could be planned in advance.

When the trainee leaves the job, the completed schedules could serve as an excellent basis for a critique of his progress, his strengths, and weaknesses. The schedules would also provide a reference for fulfilling his on-the-job training requirements.

Other Uses

Although the original use of the *Annotated Planning & Accomplishment Schedule* was with trainees, the same schedule has been used with more experienced staff in an actual audit environment. Work estimated to require 2 weeks was scheduled on the basis of the audit plan. The audit plan was divided between myself and another staff member and the sequence of work steps was scheduled. By finishing the steps ahead

of time, we were able to complete the work by the middle of the second week. I feel that was directly attributable to the use of the schedule.

The schedule could also be used to increase productivity. By preplanning work assignments, we can reduce the number of interruptions and delays which can occur when a staff member completes an assigned task and requires assignment of the next task. Further, if we receive early notice that we have underestimated the time a task requires, we can assign additional staff or request an extension of the time frame. This is particularly important when the audit staff is widely dispersed.

Many auditors have probably developed methods to accomplish the benefits I have attributed to the schedule. To them I offer an alternative and to others an idea to experiment with.

GAO's Bank Supervision Task Force

On March 22, 1977, Assistant Comptroller General *Ellsworth Morse* presented Certificates of Merit to members of the special GAO task force organized in 1976 to review the effectiveness of bank supervision activities of the Office of the Comptroller of the Currency, the Federal Reserve System, and the FDIC. Certificates of Merit were also presented to other staff members in GAO who provided legal and technical assistance and Certificates of Appreciation were given to others who assisted on secretarial, statistical, and editorial matters. *Donald C. Pullen*, assistant task force director, assisted in the presentation.

The comprehensive report on this review was submitted by the Comptroller General to the Congress on January 31, 1977. Entitled "Study of Federal Supervision of State and National Banks" (OCG-77-1), the report received immediate attention in the Congress. Two of the committees that had requested the study early in 1976 held a joint hearing on February 1; these were the Subcommittee on Financial Institutions Supervision, Regulation and Insurance (chaired by Fernand J. St. Germain) of the House Committee on Banking, Finance and Urban Affairs and the Commerce, Consumer, and Monetary Affairs Subcommittee (chaired by Benjamin S. Rosenthal) of the House Committee on Government Operations. Comptroller General Staats and the task force leaders testified at this hearing.

The report also received attention at hearings held on March 2 by Congress-

man Rosenthal's subcommittee on a bill to give the Comptroller General audit authority over the three banking agencies and on March 10 by the Senate Committee on Banking, Housing and Urban Affairs (chaired by Senator William Proxmire) on the health of the banking system.

A fourth hearing involving the report and GAO testimony was held on March 24 by the House Committee on Banking, Currency and Housing at which the international aspects of banking operations and supervision were discussed.

The GAO report came in for immediate favorable comment from many Members of Congress. Mr. St. Germain observed that "The Subcommittee was most impressed with the recently concluded performance survey conducted by GAO."

Mr. Rosenthal commented:

The GAO report . . . is an unprecedented and long overdue examination of the bank regulatory operations of the Federal Reserve Board, the Comptroller of the Currency and the FDIC. It provides fresh insights and analyses crucial to congressional consideration of ways to make bank regulation more efficient and effective. . . the thoroughness and professionalism of this study argue strongly for continued GAO scrutiny of banking agency performance . . . I am very impressed by the results of the GAO's efforts. The GAO has clearly developed an expertise in the area of bank regulation that must be fully utilized in the months and years to come.



Bank Supervision Task Force members and supporting staff receive certificates of Merit or Appreciation, March 22, 1977, for participation in GAO's first comprehensive review of the effectiveness of bank supervision by the Comptroller of the Currency, the Federal Reserve System, and the Federal Deposit Insurance Corporation. From left, standing: James Grace, Patricia Moore, Thomas Mroczko, Donald Hunt, Michael Koury, Robert Evers, Elizabeth Reid, Steven Virbick, John Schultz, Alan Seigfried, Despo Kambanides, James Bell, Aida Angeles, Alberta Tropsf, Thomas Mills, Catherine Gurney, Michael Binder, Frank Manganiello, Harry Blanchette, James McClyde, Thomas Zorn, Jerrold Burgoyne, Floyd Sutherland, Michael Kurgan, James Barnes, James Flanagan, Robert Tomcho and Dennis Duquette. Seated: James Wright, Linda Dolson, George Warholic, Robert Hart, Fred Layton, Director of the Task Force, Don Pullen, Assistant Director of the Task Force, Elmer B. Staats, Comptroller General, Robert F. Keller, Deputy Comptroller General, Ellsworth H. Morse, Assistant Comptroller General, and Stephen Saks. Kneeling: Tom Blair, Jon Silverman, Clifford Yee, Robert Hartz, Janis Combs, Virginia Matthews, and Dave Marwick. Not present when picture was taken: Cynthia Schwartz, Frank Gentile and Michael Blair.

The banking agencies themselves were generally complimentary about the report and GAO's work. Stephen S. Gardner, Vice Chairman of the Federal Reserve Board, for example, stated on February 2 at the St. Germain-Rosenthal subcommittee hearings that:

We were quite concerned when the GAO study was developed—or the idea was proposed and the study begun—as to whether an agency such as the GAO that did not have experience could make a definitive and useful study of the bank examination process which is staffed by people who have spent a lifetime in this profession.

I must say I am impressed. I'm impressed that the GAO was able to do this. They had to commit substantial resources. It took them quite awhile. They were only able to do a portion. But I would say that I am quite impressed with the recommendations. I might disagree with some of the conclusions, but all in all I think it's an impressive effort in a short time by people who had not had the benefit of years of training or experience in bank examination.

At the awards presentation ceremony on March 22, Assistant Comptroller General Morse stated:

The members of this task force, and others who helped can be proud of the work done on this job. They have brought credit on themselves as participants, on the professions they represent, and on the GAO as an institution.

I think it is also important to point out that the job done provides another demonstration of the effectiveness of GAO audit, review and

evaluation techniques that have evolved over the years and are still evolving. And—I should add—it also demonstrates again how effective the task force or project manager form of organizing and managing an audit assignment can be.

As to what's ahead—there have been three congressional hearings so far related to the report and another scheduled this week. Some changes may well come from them.

One committee is working on the recommendations to the Congress that were in the report and legislative action is very possible this year on them. This in itself will add further recognition to the usefulness of the work of the task force.

I think that the operations of the bank regulatory agencies have improved over the past year—due in no small part to the fact that our task force was at work. I think these improvements will continue.

Whether we go back in and do more work in these agencies is still an open question—largely for the Congress itself to work out. I think we will—but I don't know when or under what conditions.

In the meantime, members of the task force are scattered all over GAO—on other productive work. If we do resume audit work in the banking agencies, you can expect that we will call upon at least some of you to use the experience gained last year to do whatever we have to do.

Today, in the presence of Comptroller General Staats and Deputy Comptroller General Keller, we would like to provide each of you with a remembrance and a symbol of the

fine work done as part of the banking task force.

The Certificates of Merit for members of the task force bore the citation:

for dedicated and competent participation in the special task force that made GAO's first comprehensive review of the effectiveness of bank supervision by the Office of the Comptroller of the Currency; the Federal Reserve System; and the Federal Deposit Insurance Corporation.

Comptroller General Staats addressed the group as follows:

As I walked in the room earlier, somebody thanked me for giving the opportunity to get this task force together. It seems that this is the first time you all have been together and I think that's a compliment because that means you were out on the job rather than sitting around in meetings.

I do want to say that the people who participate in all of our work in an advisory, assistance, and support relationship deserve just as much credit for a good product as the people who are directly on the job. We don't always give them the kind of recognition that is due to them and I'm glad that they have been included in this ceremony.

This was a very difficult and almost unique assignment which was given to the GAO. Some of our skeptics and critics I think were possibly secretly hoping that we would fall on our face and these same people are now giving us compliments although they may be reserved or even grudging compliments for a job extremely well done.

I have a great many friends in the banking community outside the government and I've had nothing but words of praise and commendation for this very unusual and significant effort that we undertook. Now that the production department has produced, it's up to your sales department, which is the 7th floor here in the GAO Building, to see that something happens and we get some legislation and action to implement the recommendations in our report.

We do need at all times to think about different ways to accomplish our work. It's easier to fall back into traditional molds and this was a case where I think we faced an unusual problem and rose to the occasion.

I would like to pay compliments to Ellsworth Morse, Fred Layton and Don Pullen for the leadership and conceptual work that went into laying out this project at the beginning and for keeping it reasonably on schedule.

We have had three hearings so far and another one coming up. I'm confident that there will be some actions that will flow from them and indeed some actions have already flowed from the results of our work.

All we wanted to do is say thank you and get you together to tell you how much we all personally appreciate the effort which went into this on the part of all of you concerned.

Deputy Comptroller General Robert F. Keller, who testified before Senator Proxmire on March 10 on the report, noted that he did not consider himself an expert on the subject but

. . . Mr. Staats was away and I had a great deal of support in preparing our testimony. As it turned out after

Arthur Burns and Senator Proxmire got through, we didn't have much time and our part in the hearing really didn't amount to very much.

I, too, want to add my thanks for all the work that was done on this job. As those before me have said, it was an unusual experience for GAO. I was quite proud to say when testifying before Senator Proxmire that we thought we had done a very difficult job in a very short period of time. He didn't seem to argue with that. I just want to add my thanks.

In concluding the ceremony, the task force director, *Fred D. Layton*, who also functioned as manager of GAO's Boston regional office during most of the time the banking supervision review was in process, commented:

This is the first time I've ever seen all of you together and now you know why. Mr. Staats is counting heads. If he had seen this many people, he would probably have asked for the

report last September instead of December.

I also want to add my thanks to all of you. I know it was a hard job and it was really gratifying to me to work with a group as highly motivated as you were. We started off with a very tight time schedule and the only time that I felt that I had any fight with the staff at all was in October when I said that we had to slip for three weeks. That was the only time I felt the people were really not going with the leadership too well but we overcame that.

I would also like to say that in addition to the people who got certificates here today there were a number of other people all over the organization who had parts in this job—a lot of girls all over the building who helped with typing who weren't really assigned to the task force. There was a lot of weekend work and some people stayed over on inauguration night and day. It's great to see everybody come together on a project like this.

Legislative Ancestor For GAO Auditing

In 1776, the Continental Congress took steps to introduce a workable procedure for auditing and settling the financial accounts of those entrusted with spending moneys raised to finance the Revolution. At that time, the Congress was the only central authority. There was no separate executive organization.

On February 17, 1776, the Congress appointed a standing committee of five members for superintending the treasury and assigned it these duties:

To examine the accounts of the treasurers, and, from time to time, to report to Congress the state of the treasury;

To consider of ways and means for supplying gold and silver for the support of the army in Canada;

To employ and instruct proper persons for liquidating the public accounts, with the different pay masters and commissaries in the continental service, and the conventions, committees of safety and others who have been or shall be entrusted with the public money; and, from time to time, to report the state of such accounts to Congress:

To superintend the emissions of bills of Credit:

To obtain from the different Assemblies and Conventions of the United Colonies, accounts of the number of ~~people of all sorts~~ inhabitants in each colony, according to the resolution of Congress on that subject.

This action was not considered specific enough and on April 1, 1776, the

Congress adopted a more comprehensive resolution to clarify how it was expected that this function was to be handled "nothing being of greater consequence, than that the publick accounts should be regularly stated and kept, and justly liquidated and settled. . ." It was resolved

That a treasury office of accounts shall be instituted and established, and that such office shall be kept in the city or place, where Congress shall, from time to time, be assembled and hold their sessions:

That the said office of accounts shall be under the direction and superintendence of the standing committee for the treasury.

That an auditor general, and a competent number of assistants or clerks, shall be appointed by Congress, and employed, for stating, arranging, and keeping the public accounts:

That all accounts and claims against the United Colonies, for services or supplies, where the rates or prices have not been ascertained by Congress, shall be presented to the Committee of Claims, liquidated by them, and reported to and allowed by Congress, previous to their being passed and entered at the treasury of fice; that all other accounts and claims, consisting of articles, the price or value of which shall have previously been fixed by contract, or otherwise ascertained by Congress, shall be liquidated and settled at the treasury of fice, and reported for the allowance of Congress, by the committee for super-

intending the treasury, and then passed and entered at the treasury office.

That all contracts, securities, and obligations, for the use and benefit of the United Colonies, shall be lodged and kept in the treasury office of accounts; and that all persons to whom public monies have been or shall be advanced or paid, shall be charged with the same in the books of the said office, for which purpose every warrant on the treasury, which shall issue after the said office shall be opened, shall, previous to its being paid, be entered at the treasury office, and the entry certified on the warrant, by one of the committee of the treasury, the auditor general, or one of his assistants or clerks; provided, however, that all orders or warrants issued by committees appointed and authorized by Congress to draw on the treasurers for particular purposes, shall be paid and charged to the account of the said committees respectively, until they shall settle and have their accounts passed by Congress, when the debits against them shall be discharged in the treasury office, by such credits as Congress shall agree to and allow:

That all assemblies, conventions, councils, and committees of safety, commissaries, pay masters, and others, entrusted with public monies, shall, within a reasonable time, after being called upon for that purpose by the committee of the treasury, produce their accounts and vouchers at the treasury office, in order to their

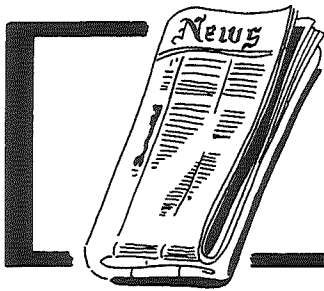
being settled and adjusted in the manner before directed:

That the committee for superintending the treasury shall be authorized to apply to the commanding officers and others, in the continental service, for such materials and information, as the committee may judge to be useful, for stating, explaining, or checking the public accounts, in order to their being fairly and justly settled:

That the auditor general and his assistants or clerks, before entering upon their offices, shall, respectively, take an oath, to be administered by one or more of the committee of the treasury office (a certificate whereof shall be filed in the treasury office) well and faithfully to execute the trust reposed in them, as auditor, assistant, or clerk, (as the case may be,) of the office of accounts, established by Congress, according to the best of their skill and judgment, and to disclose no matter, the knowledge of which shall be acquired in consequence of such their office, which they shall be directed to keep secret:

That the committee for superintending the treasury shall be authorized to hire suitable places, and procure books of accounts and other necessities at the public expence, for the establishing and doing the business of the said office.

Source: *Journals of the Continental Congress, 1774-1789*, Vol. IV, 1776 (Washington, Government Printing Office, 1906), pp. 156, 244-6.



News & Notes

Looking Back 25 Years

The present form of GAO's field office organization came into existence early in 1952. At that time, Comptroller General Lindsay Warren announced the creation of 23 regional offices as a part of the then-new Division of Audits which had been formed from four audit divisions—the Audit Division, the Corporation Audits Division, the Postal Audit Division, and the Reconciliation and Clearance Division.

The monthly newsletter of the Boston regional office, *The Broadcaster*, took note of this 25th anniversary in its May 1, 1977, issue with a review of how it was then in comparison with today. Of particular interest was the description of the kind of audit work being done in the field offices in 1952. Some noteworthy excerpts:

You all know about the almost unlimited scope of our work today. Each issue of the BROadcaster shows that we are doing fiscal and compliance, economy and efficiency and program reviews at Federal, State and local governments as well as at government contractors. Many are quite complex and involve highly technical areas. What were we doing in 1952? We were primarily auditing payrolls of Federal agencies and

auditing cost plus fixed fee contracts. These contract audits were usually performed at the district offices of the Armed Services. It is interesting to note that proof of such audits was in the stamping of the tissue copy of the contractor's voucher with the word 'Audited' followed by the signature of the auditor. Many auditors developed a strong right arm—thanks to all that stamping. We were also starting to make comprehensive audits at Federal agencies. These were primarily fiscal and compliance with a timid and cautious look at the operations of an agency.

One of BRO's earliest comprehensive audits was at the Economic Stabilization Agency where we reviewed their activities in price controls, rent controls and wage and salary controls. This was an interesting undertaking but unfortunately the agency began phasing out while the audit was underway—resulting almost in the coterminous of the audit and the agency.

Succeeding comprehensive audits at such agencies as the Fish and Wildlife Service of the Department of the Interior and Coast Guard of the Department of the Treasury were much more productive and we could see the fruits of our labor.

A Canadian's Insights Into GAO Auditing

Ted Roman of the Office of Policy had occasion to meet recently with members of the staff of the Office of the Auditor General of Canada to discuss GAO audit policies and practices. A representative of the Auditor General, in expressing his appreciation for the discussions, summarized some of the points made that impressed him.

1. *Be candid with your auditing colleagues in planning and executing work in the departments and agencies. All members of the audit team must have the same understanding of what they are doing, and why.*
2. *An adversary, critical stance has to be followed to some degree, but can be counterproductive if not handled in the right way. In recent years, GAO has emphasized 'opportunities for improvement' rather than 'instances of deficiency.'*
3. *One has to be careful about compliments. It takes a lot longer to satisfy oneself that an operation is well managed than to find and document selected opportunities for improvement in it.*
4. *Auditors are few and public servants numerous. One cannot cover everything to the same depth, so that selectivity in the auditing planning process is essential. Some problems will have to be ignored for the present.*
5. *The adjectives that have been applied to the word 'audit' have tended to create more confusion than enlightenment—operational, performance, management, systems, financial, personnel, etc.—and might as well be dropped in*

favour of the original word. It would then be defined operationally by what the auditors in question did on the occasion of their work.

6. *Financial auditing is thus one facet of audit work. So is the examination of management controls, or even of substantive matters of economy and efficiency where these could be improved. One does not have to have a set priority for any one kind of emphasis, which can vary from circumstance to circumstance.*
7. *Contrary to what some agency people might claim, one does not have to be an expert to be an auditor. As one of your former Comptrollers General told Congress on being queried on this point: 'You don't have to be a chicken to know a rotten egg.'*
8. *GAO has a tradition of detailed documentation of the planned and actual auditing process. This is useful for both project management and for posterity, when other people may be following up. Changes in an audit plan should be backed up with a 'justification memo to file.'*
9. *Your use of an independent 'referencer' . . . is an interesting idea, since it permits a first-level, independent check on the quality of the audit and the sufficiency of its supporting evidence. Evidence is the key to a convincing audit recommendation.*
10. *It's interesting to know that GAO has a major project going on its own staff development, and that you consider the training effort*

probably the most critical element in a successful auditing program.

New York City's Fiscal Problems

On April 4, 1977, the Comptroller General released three reports on New York City's fiscal problems: "Assessment of New York City's Performance and Prospects Under Its 3-Year Emergency Financial Plan," "The Long-Term Fiscal Outlook for New York City," and "New York City's Efforts to Improve Its Accounting System." These reports were prepared by three different GAO divisions in Washington and the New York regional office.

GAO Reports As Research Aids

Professor Charles R. Knerr of the Department of Political Science at The University of Texas at Arlington recently wrote to the Comptroller General about the utility of GAO reports in academic research. He said:

One important contribution of GAO reports should be added to your list: academic research. My colleagues and I extensively use the GAO series for our own research and for student projects. The GAO series is in heavy demand here at UTA, and I suspect elsewhere. In fact, a problem has arisen regarding theft. After being exposed to the GAO series, students find the reports to be of such utility that the reports disappear from the shelves.

New York State Commission on Expenditure Review

This Commission was established in 1969 as a permanent legislative agency.

Its primary objective is to determine whether State departments and agencies efficiently and effectively implement their programs in line with legislative intent and authorization.

The Commission has 12 members, all but 2 of whom are from the State legislature. It has a professional staff of 23.

Its printed reports on program audits are sent to every member of the Senate and Assembly. Fifty-two such reports were produced through 1976 on a wide variety of State programs (copies are received by GAO in Washington).

A reporting policy of interest is the omission of recommendations in the Commission's reports. This policy is explained in the Commission's 1976 report to the legislature as follows:

The staff has been instructed to present only facts and objective information. It is implicit that the Legislature is equipped to make appropriate decisions when essential data are at hand. Since audit presentations are factual, there is no partisan view to be supported either by the Commission or the staff.

Case for GAO Access to Agency Records

A succinct summary of the more important factors underlying the law, the intent of the Congress, and GAO's policy of insisting on generally unrestricted access to pertinent records of agencies and contractors in making audits was set forth in testimony by the Comptroller General before the Subcommittee on Budgeting, Management, and Expenditures of the Senate Government Operations Committee on August 1, 1973. The factors recited were as follows:



SIGNING OF REPORTS ON NEW YORK CITY'S FISCAL PROBLEMS

Shown when the reports were signed are (from left): Seated, Victor L. Lowe, General Government Division director; Deputy Comptroller General Robert F. Keller; Comptroller General Elmer B. Staats; Donald L. Scantlebury, Financial and General Management Studies Division director; and Harry S. Havens, Program Analysis Division director. Standing, Joseph D. Comtois, Craig A. Simmons, Margaret Jess, Harry Weintrob, Arthur Corazzini, John H. Keith, Jr., and Dennis J. Dugan, of the Program Analysis Division; Richard W. Maycock, Financial and General Management Studies Division; Bill W. Thurman, General Government Division; Gerald K. DeRyder and James P. Oliver of the Financial and General Management Studies Division; Ed Hefferon, New York Regional Office; and Larry H. Endy, General Government Division.

1. *An adequate, independent, and objective examination contemplates obtaining a comprehensive understanding of all important factors underlying the decisions and actions of the agency or contractor management relating to the subject of GAO examinations.*
2. *Enlightened management direction and execution of a program must necessarily consider the opinions, conclusions, and recommendations of persons directly engaged in programs that are an essential and integral part of operations. Similarly, knowledge of this type is just as important and essential to us in making an independent review and evaluation as it is to management in making basic decisions.*
3. *Agency internal audits and other evaluative studies are absolutely necessary. They are important tools by which management can keep informed of how large and complex activities are being carried out. Knowledge of the effectiveness with which internal review activities are carried out and the effectiveness with which corrective action where needed is taken is absolutely necessary to GAO in the performance of its responsibilities.*
4. *Availability of internal audit and other evaluative documents to GAO enables us to concentrate a greater part of our efforts in determining whether action has been promptly and properly taken by agency officials to correct identified weaknesses, and helps elim-*

inate duplication and overlapping in audit efforts.

Internal Control Note

The Comptroller General's principles and standards for accounting required to be observed by Federal agencies in designing and operating their accounting systems are well known in financial management circles in most agencies. However, they are not exactly "household" words on Capitol Hill.

Thus, it is a pleasant surprise to see them specifically referred to in connection with legislative activity in the Senate. The *Congressional Record* for April 29, 1977, reports on a series of amendments to the Tax Reduction and Simplification Act relating to the child support program, proposed by Senator Sam Nunn of Georgia. In discussing the amendment on bonding of State and local employees, the Senator stated:

The amendment would also provide for the separation of functions of collection of money from accounting by requiring that individuals responsible for handling the money not be the same individuals who are responsible for the accounting of such money. The principles, standards, and related requirements prescribed by the U.S. Comptroller General concerning control over collection of funds require that persons responsible for handling cash receipts should not participate in accounting or operating functions which would permit them to conceal in the accounting records the misuses of cash receipts. Again, however, these procedures are not always followed.

Legislative Developments



By JUDITH HATTER
Chief, Legislative Digest Section

Cost Overrun Control

On April 20, Senator William Proxmire of Wisconsin introduced legislation to automatically cut off Federal funding for any major civilian or military acquisition that has a cost overrun of 50 percent or more. The bill, S. 1313, requires the enactment of special legislation to continue the expenditure or obligation of funds after the funding has been interrupted.

Under the provisions of the measure, the Comptroller General is to determine biannually the cost growth statistics on all major military and civilian acquisitions. Whenever he determines that the actual cost or estimated projected cost of an acquisition has resulted or will result in a cost growth of 50 percent or more compared to an established baseline cost, he is to notify the Congress and the head of the department or agency concerned. After the date of notification, no additional funds may be obligated or expended unless the authorizing legislation is enacted by the Congress.

GAO Access to FBI Records

Congressman Richardson Preyer of North Carolina introduced an amendment to the Budget and Accounting Act

of 1921, “* * * to make clear by statute that GAO has access to FBI records.”¹ The bill, H.R. 7349, would make it clear that the authority given GAO to obtain books and records extends to management as well as financial audits.

Claims and Judgments

Public Law 95-26, May 4, 1977, 91 Stat. 96, Supplemental Appropriations Act, 1977, contains an amendment to section 1302 of the Supplemental Appropriation Act, 1957, 31 U.S.C. 724a, pertaining to the authority of the Comptroller General to pay adjudicated and financially certified claims against the Federal Government. The effect of the amendment is to establish a permanent, indefinite appropriation for payment of approved claims and judgments.

Automatic Data Processing Fund Obligation

S. 1490, to authorize the Administrator of General Services to enter into multiyear leases through use of the automatic data processing fund without obligating the total anticipated payments to be made under such leases, was

¹ *Congressional Record*, Vol. 123 (May 19, 1977), p. E3146.

introduced on May 11 by Senator Lawton Chiles of Florida for himself and Senators Percy and Heinz.

Senator Chiles pointed out in his introductory remarks that the Senate has passed identical legislation in each of the last two Congresses, but the House of Representatives did not act.

The legislation was recommended by GAO in a report to the Congress entitled, "Multi-Year Leasing and Government-Wide Purchasing of Automatic Data Processing Equipment Should Result in Significant Savings" (B-115369, Apr. 30, 1971) and is also supported by recommendations of the Commission on Government Procurement and by the General Services Administration.

Federal Program Information Act

On May 17, S. 904, the Federal Program Information Act, to provide for the efficient and regular distribution of current information on Federal domestic assistance programs, was passed by the Senate with committee amendments.

Section 203 of the measure requires certain reports to be made to the Congress by the Comptroller General on actions taken by the Director of the Office of Management and Budget to implement the act and on the degree to which the actions have been successful.

The House companion bill, H.R. 6257, was reported by the House Government Operations Committee on May 16 and placed on the calendar.

Government Comptrollers of Guam and the Virgin Islands

H.R. 6550, to authorize certain appropriations for the territories of the United States, amends section 9-A of the Organic Act of Guam to abolish the office of the government comptroller of Guam, effective October 1, 1977. The Comptroller General of the United States is to assume such functions as he deems necessary with respect to the interest of the Government of the United States.

In like manner, the office of the government comptroller of the Virgin Islands is abolished by an amendment to section 17 of the Revised Organic Act of the Virgin Islands.

The bill was debated and passed the House of Representatives under suspension of the rules on May 2.

Appearances Before Congressional Committees

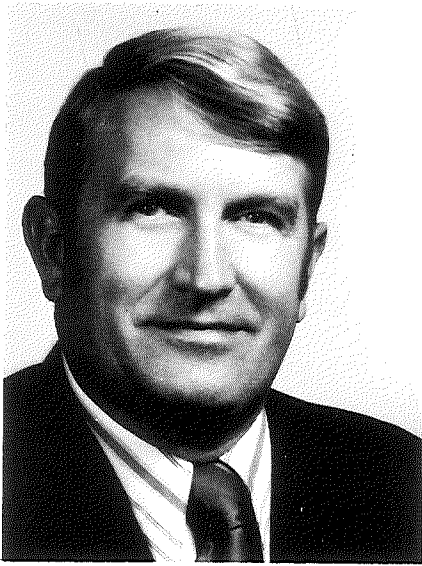
During the months of March, April, and May, 38 appearances were made by GAO officials before the various committees and subcommittees of Congress to offer views on a variety of subjects, including Defense Production Act Amendments of 1977, financial disclosure system for top-level officers and employees of the three branches of the Federal Government, regulation of lobbying, energy reorganization, the Sunset Act of 1977, and operations of the Federal Energy Administration's Office of Regulatory Programs.

Forrest R. Browne

Forrest R. Browne, regional manager of the Dallas regional office, retired from Government service on April 22, 1977.

Mr. Browne joined GAO in the Kansas City regional office in 1953, after several years in public accounting. He was designated regional manager in Kansas City in 1954, and in 1966 was appointed deputy director of the Field Operations Division in Washington. In May 1971, he was designated associate director of the Defense Division in charge of the Manpower Group. With the reorganization in 1972 of the GAO divisions and offices, he was designated deputy director of the new Federal Personnel and Compensation Division, and in March 1973 he was designated director. In August 1975 he became regional manager of the Dallas office.

Mr. Browne is a certified public accountant (Oklahoma and New Mexico), and a member of the American Institute of CPAs and the Association of Government Accountants. He holds a B.S. degree from New York University and in 1962 completed the Executive Development Program at Stanford University Graduate School of Business.



Wilbur D. Campbell

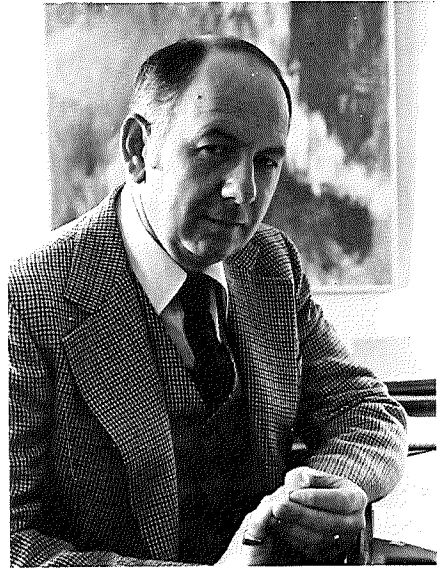
Wilbur D. Campbell has been designated associate director, senior level, in the Community and Economic Development Division, with responsibility for housing, community development, and environmental programs.

Mr. Campbell is a graduate of the College of William and Mary with a degree in accounting. He is a CPA in the State of Virginia and a member of the American Institute of Certified Public Accountants. He attended the Program for Management Development at the Harvard Business School in 1973 and the Brookings Institution Public Policy Conference for Senior Government Executives in December 1976.

He received GAO's Distinguished Service Award in 1975.

Since joining GAO in 1959, Mr. Campbell has had a wide range of assignments, including NASA, the Department of Transportation, the Department of the Interior, the Corps of Engineers, TVA, HUD, and the Environmental Protection Agency.

William D. Martin, Jr.



William D. Martin, Jr., was designated manager of the Denver regional office, effective July 1, 1977.

Mr. Martin served in the U.S. Army from 1953 to 1955. He graduated from Wake Forest College in 1959 where he majored in accounting. He received an M.S. degree in financial management from The George Washington University in 1971. He attended the Advanced Management Program at Harvard Business School in 1971.

Mr. Martin joined GAO in 1959 and has had varied experience in the Civil Division and the International Division. He served as director of the Organization and Management Planning Staff, Office of Administrative Planning and Services, from 1971 to 1973; deputy director for operations in the Manpower and Welfare Division until 1974; and director of the Office of Staff Development until 1976. From January 1977 until his new appointment, he served as director of the Office of Personnel Development and Services.

He is a CPA (Virginia) and a member of the American Institute of CPAs and the National Association of Accountants. He received the GAO Career Development Award in 1968.

Other Staff Changes

New Director

International Division— Latin American Branch

Wayne I. Tucker

New Assistant Directors

Financial and General Management Studies Division

Heber D. Bouland
Robert A. Pewanick

Office of Personnel Development and Services

Donnie L. Dick

Senior Attorneys

Alan S. Goldberg
Jeremy E. Hutton

Retirements

Assistant Director Claims Division

Richard H. Clark

Senior Attorney

Office of the General Counsel

James K. Scarbrough

Professional Activities



Office of the Comptroller General

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

Massachusetts Institute of Technology, Alfred P. Sloan School of Management, Alfred P. Sloan Fellows, on "The General Accounting Office," Washington, D.C., March 28.

Meeting of Governing Board, International Organization of Supreme Audit Institutions, on "A Review of Actions Being Taken in the United States to Control Questionable Corporate Payments," Torremolinos, Spain, April 4.

Conference on the Federal Regulation of Environmental Carcinogens, Center for Continuing Education, on "Present Federal Programs Addressed to Environmental Carcinogens," Washington, D.C., April 12.

Association of Government Accountants' Seminar on Cost Accounting Standards on "The Cost Accounting Standards Board, An Overview of Six Years' Activity," Washington, D.C., April 18.

Brookings Institution's Advanced Study Program and University of Chicago's Committee on Public Policy Studies on "Role of the General Accounting Office as an Arm

of the Congress," Washington, D.C., April 26.

Wichita State University Accounting/Auditing Seminar on "Developments in Accounting, Auditing and Fiscal Management in the Federal Government," Wichita, Kans., May 16.

Commodity Club of Washington on "Commodity Marketing Practices in an Era of International Turmoil," Washington, D.C., May 25.

Conference on Productivity and Quality of Working Life in the Public Sector on "Quality of Working Life—Bringing the Human Factor into Productivity Improvement," Washington, D.C., May 25.

Following are recently published articles of the Comptroller General:

"Auditing in Government—How it Serves Management Today and What the Future Holds" (May 27, 1976, speech before the Federal Executive Board and San Francisco chapter of the Association of Government Accountants), *Civil Service Journal*, October-December 1976.

"Personnel Management: The Starting Place" (remarks made at the June 15, 1976, annual conference of the Eastern Region of the International Personnel Management Association),

Public Personnel Management (IPMA), November-December 1976.

“Career Planning and Development: Which Way Is Up?” (adapted from an address at the American Society for Public Administration, National Area chapter, Young Professionals Forum’s First Annual Bring-Your-Own-Boss Night on June 3), *Public Administration Review*, January-February 1977.

E. H. Morse, Jr., Assistant Comptroller General, addressed the following groups:

The Brookings Institution’s conference for business executives on Federal Government operations, on “Functions of the General Accounting Office,” Washington, D.C., April 18.

Seminar on GAO Standards for Audit, sponsored by the District of Columbia Institute of Certified Public Accountants, on “How GAO’s Audit Standards, Policies and Practices Evolved,” Washington, D.C., April 25.

23rd annual Washington Seminar of the Maxwell School of Syracuse University on the role of GAO in the Federal Government, May 26.

Mr. Morse participated in the 2nd International Seminar on “Public Enterprise and Public Interest: Independence and Accountability,” sponsored by the Institute of Public Administration of Canada, Quebec, Canada, June 8-10.

As Chairman of the Board of External Auditors of the Organization of American States, Mr. Morse attended the Seventh Regular Session of the General Assembly of the Organization in Grenada, June 14-20, to present the Board’s

first annual report on the audit of the Organization. The report covered the 1976-77 biennium.

Jeffrey L. Jacobs, management analyst, had an article entitled “Satisfaction With Your Job: A LIFE-Time Concern,” published in the Spring 1977 issue of the *Advanced Management Journal*. An earlier version of the article appeared in the Summer 1976 issue of *The GAO Review*.

Office of the General Counsel

Paul G. Dembling, general counsel:

Addressed the Government Contract Claims Course sponsored by Federal Publications, Inc., and The George Washington University on “Debarment, Suspension and Blacklisting,” March 10.

Moderated a panel before the Briefing Conference on Government Contracts on “Current Developments and Trends in Government Contracts,” March 14-15, in Philadelphia.

Spoke before the National Graduate University on “GAO’s Review of Complaints Concerning Contracts Under Federal Grants,” March 17.

Moderated a program on “Remote Sensing—Legal and Policy Considerations” sponsored by the Association of the Bar of the City of New York, March 28, in New York City.

Spoke on “GAO’s Review of Complaints Concerning Contracts Under Federal Grants” before the American Bar Association National Institute on Public Contracts and Grants, April 21 and May 11, in Washington, D.C., and Los Angeles.

Participated in the International Conference on Global Interdependence, April 29, Princeton, N.J.

Spoke on "Protests and Complaints—The GAO in Procurement" before the Third Annual Procurement Seminar sponsored by The American University May 17.

Participated in the Spring Meeting of the National Academy for Public Administration, May 19–20.

Paul Shnitzer, associate general counsel, addressed the Denver Chapter of the National Contract Management Association on "New Developments in Bid Protests," March 23.

Vincent A. LaBella, deputy assistant general counsel, spoke before the Army Training and Doctrine Command, Office of Staff Judge Advocate, on "Recent Developments in Bid Protests," May 24, Ft. Monroe, Va.

Ronald Berger, senior attorney, addressed the Briefing Conference on Government Contracts on "New Developments in Bid Protests," March 14–16, in Philadelphia.

Community and Economic Development Division

Henry Eschwege, director, addressed the Brookings Institute Conference for business executives on Federal Government operations on May 16.

Wilbur D. Campbell, associate director-senior level:

Addressed the MAS Environmental Accounting Task Force of the American Institute of Certified Public Accountants on the role of accountants in environmental protection matters

on April 25 at the University of North Carolina, Chapel Hill, N.C.

Spoke before the MAS Environmental Accounting Task Force of the AICPA on Environmental Protection and Energy Conservation Matters in Philadelphia, Pa., on April 25.

Spoke before the New York State Society of Professional Engineers on EPA Construction Grants Program, Monticello, N.Y., on June 7.

Brian Crowley, assistant director, was elected Vice President for Communications of the National Association of Accountant's Northern Virginia chapter on April 19.

Sebastian Correia, Jr., assistant director, and *John P. Murphy*, supervisory auditor, discussed the role of GAO in reviewing HUD's community development block grant program with students of an Urban Affairs class of American University in Washington, D.C. on March 30.

Frank V. Subalusky, assistant director, was elected President of the Washington chapter of the National Association of Accountants for the 1977–78 chapter year.

Gary Boss, supervisory trade specialist, spoke on "Models and the Congress" at the 1977 Pittsburgh Conference on Modeling and Simulation, on April 28–29, held in Pittsburgh, Pa.

Steven Sternlieb, supervisory industrial specialist, participated in a symposium on "Losses and Waste in the Food Chain" at Michigan State University, East Lansing, Mich., on May 16.

Energy and Minerals Division

Monte Canfield, Jr., director, addressed the following groups:

The Brookings Institution, Federal Executive Seminar on energy and materials, Williamsburg, Va., January 19 and February 17 and 18.

The Library of Congress Workshop on U.S. Energy Policy on international aspects of U.S. energy policy, Washington, D.C., February 24.

1977 ASPA Conference, Matrix Session on resource scarcity, production and use, Atlanta, Ga., March 31.

Seven Springs Center on governance of energy, Mount Kisco, N.Y., April 28 and 29.

The Brookings Institution, Energy Forum on national energy issues and the President's energy program, Washington, D.C., May 11.

American Association for the Advancement of Science, Carnegie Institute and the Mitre Corporation Conference on national energy policy, Washington, D.C., May 17.

Pennsylvania State University workshop on oil and gas reserve information, Reston, Va., June 1 and 2.

Mr. Canfield also participated in the Georgetown University Federal Staff Seminar, Washington, D.C., May 25, and in the Club of Rome Conference, American University, on alternative views of the future, Washington, D.C., June 3.

J. Dexter Peach, deputy director, addressed the following groups:

The California Energy Resources, Conservation, and Development Commission on the issues of nuclear fuel reprocessing and disposal of high-level nuclear waste, Sacramento, Calif., January 31.

The MAS Environmental Accounting Task Force Meeting sponsored by the American Institute of Certified Public Accountants on the role of accountants in environmental protection and energy conservation matters, Chapel Hill, N.C., April 25.

The Fourth Annual North American Petroleum Accounting Conference on "The Increasing Role of the General Accounting Office in Providing Information and Analysis on Energy Questions to the Congress," Dallas, Tex., May 19.

John W. Sprague, associate director:

Attended the Brookings Institution Executive Leadership Forum on Critical Public Policy Issues, "Energy Forum, Issues, Costs and Tradeoffs, Policies and Funds," May 10-13.

Participated with *James Duffus III*, assistant director, in the American Law Institute's seminar on "Energy and the Law: Problems and Challenges of the Late 1970s," San Francisco, Calif., May 5-7.

Arthur T. Anderson, assistant director, participated in and presented a paper at the Third Annual UMR-MEC Conference on Energy held at the University of Missouri-Rolla, October 12-14.

Federal Personnel and Compensation Division

C. I. Gould, deputy director, addressed the Washington, D.C., chapter of the International Personnel Management Association on April 26. His subject was "Implications of the Proposed Conflict of Interest and Financial Disclosure Legislation for the Federal Per-

sonnel Community.”

Rosslyn S. Kleeman, audit manager, and *Patricia D. Slocum*, management analyst, were panel members at the 1977 National Conference, American Society for Public Administration, in Atlanta, Ga. Ms. Kleeman was on a panel whose subject was “Future of Career Development in the Federal Government,” April 2. “Veterans Preference and Equal Employment Opportunity” was the subject of the panel on which Ms. Slocum served on March 31.

Financial and General Management Studies Division

Donald L. Scantlebury, director:

Was the luncheon speaker at a seminar on “How to Implement Zero Base Budgeting” put on by the Baltimore chapter of the Association of Government Accountants in Columbia, Md., March 10. He spoke on “Electronic Funds Transfer: Friend or Foe?”

Spoke on the “Role and Responsibility of GAO” at a meeting of the Virginia Skyline chapter of the National Association of Accountants, Charlotte, Va., March 10.

Was a panelist on “The Role of Accountants in Solving the Fiscal Dilemma of Our Cities” at the 1977 Mid-Atlantic Regional Meeting of the American Accounting Association, March 19, Washington, D.C.

Participated in a workshop on the “Audit and Evaluation of Computer Security” conducted by the Institute for Computer Sciences and Technology of the National Bureau of Standards in Miami Beach, Fla., March 22

to 24. *Ken Pollock*, assistant director, was also a member of the panel.

Spoke on “Electronic Funds Transfer: Friend or Foe?” at the AGA Kansas City chapter, in Kansas City, Mo., on April 12; the Seattle chapter in Tacoma, Wash., on April 13; and the Portland chapter in Portland, Oreg., on April 15.

Spoke to the Municipal Finance Officers Association on “Financial Reporting to the Public” in Atlanta, Ga., April 19.

Spoke on GAO audit standards before the Washington, D.C. Institute of CPAs in Washington, D.C., April 25.

Spoke on “Electronic Funds Transfer: Friend or Foe?” at the AGA Montgomery-Prince Georges chapter meeting on May 11; a Washington chapter meeting in Washington, D.C. on May 12; and a Chicago chapter meeting in Chicago, Ill., on May 19.

Harold L. Stugart, deputy director:

Participated as a panelist at the regional meeting of the American Association of Business Law Associates on March 10 at the University of Maryland, College Park, Md. He spoke on “The Legal Liability of the Accountant—Will Public Regulation Make a Difference?”

Made a presentation entitled “GAO’s Efforts to Improve Computer Auditing” to the Spring Convention of the Association of School Business Officials on May 17, 1977, at Ocean City, Md. *Joseph L. Boyd*, assistant director; *John Lainhart*, supervisory management auditor; and *Barry Snyder*, management auditor of FGMSD’s Technical Assistance

Group/Data Processing, also participated in the presentation.

Walter L. Anderson, associate director:

Spoke on "Electronic Funds Transfer—Friend or Foe?" before the Oklahoma City, Oklahoma chapter of the Association of Government Accountants on March 17, and at the Twin Cities chapter on April 28 in Saint Paul, Minn.

Spoke on Federal Government experience in quantifying the intangible benefits of information systems and participated in a panel discussion entitled "Quantifying the Intangible Benefits of Management Information Systems" at a Joint National Meeting of the Institute of Management Sciences and the Operations Research Society of America in San Francisco, Calif., on May 10.

Spoke on "Policy Perspectives in Federal Automatic Data Processing" at the quarterly meeting of the Albuquerque-Santa Fe chapter of the Federal Automatic Data Processing Council at Kirkland Air Force Base, N. Mex., on May 12.

Ken Pollock, assistant director, addressed a session of the AICPA's 13th Conference on Computers and Information Systems on "What the Federal Government Is Doing About Auditing Computers" in Chicago, Ill., on May 17.

James R. Watts, assistant director, participated as moderator of a panel entitled "Future of EFTS—Opportunities, Problems, and Policy Issues" at the Association of Government Accountants' and the Joint Financial Management Improvement Program's Seminar

on Electronic Fund Transfer Systems in Washington, D.C., on March 28.

Earl M. Wysong, Jr., assistant director:

Addressed the Washington chapter of the American Society of Military Comptrollers on March 16 on the subject, "GAO's Views of Military Automatic Data Processing Systems," at Ft. Myer, Va.

Served as general chairman for the annual international conference of the Association for Systems Management which was held in Washington, D.C., on April 24–27. He was assisted by *Paul Benoit* and *Martin Caulk*, who were honored with certificates of appreciation for their respective efforts as wards coordinator and host division chairman.

George L. Egan, Jr., assistant director:

Conducted a workshop on the use of GAO's "Audit Guidelines for Audits of Financial Operations of Federally Assisted Programs" for the Atlanta chapter of AGA, April 10, Atlanta, Ga. He was assisted by *Robert F. Raspen*, supervisory auditor.

Spoke on new developments in the audit of Federal grants and contracts and the improved use of internal and external audit resources before the American Association of Spanish Speaking Certified Public Accountants, April 21, Harlingen, Tex.

Robert Ryan, assistant director:

Addressed a group of top Government officials on May 2 in Ottawa, Canada, on the organization and functions of the General Accounting Office, how GAO plans and carries out its audits

and evaluations, the relationship of GAO to internal audit groups in executive departments and agencies, the audit standards, and other related subjects.

Participated as a speaker in an executive seminar entitled, "Operational Audit—What Executives Need to Know," presented to selected executives of Canadian Government departments in Ottawa, Canada, on February 22. At that seminar he discussed operational auditing, its impact, and how GAO handles its audits and reviews.

W. A. Broadus, assistant director:

Conducted a session on GAO audit standards at the office of the Legislative Auditor in Helena, Mont., on May 13.

Conducted a session on management information systems in the public sector for members of the Mid-Career Program of the Maxwell School of Citizenship and Public Affairs, Syracuse University, in Washington, D.C., in mid-March.

Brian L. Usilaner, assistant director:

Spoke on "Productivity as a Management Tool" at the National Conference of the American Society for Public Administration, March 29, Atlanta, Ga.

Spoke on "GAO's Role in Productivity" at the Committee for Economic Development Conference, April 5, Racine, Wis.

Spoke on the "Need for Productivity Improvement in Government" at the Philadelphia regional chapter of the American Society for Public Administration, April 17, Philadelphia, Pa.

Frank Gentile, assistant director, and *Louis J. Fink*, statistician, conducted a 3-day statistical sampling workshop for 30 of North Carolina's state auditors in Raleigh, N.C., March 21–24.

Ernest H. Davenport, assistant director, participated in a symposium on career opportunities and problems sponsored by the Federal City College, Washington, D.C., March 29.

Joseph H. Myers, management analyst, spoke on "Improving Productivity In The Public Sectors" at a joint Department of Commerce and American Institute of Industrial Engineers Conference, March 11, Raleigh, N.C.

Ronald C. Oleyar, supervisory auditor, received the 1977 Special Achievement Award at the Fourth Annual Awards Program of the Northern Virginia chapter, Association of Government Accountants, May 17, Springfield, Va.

Edwin J. Soniat, supervisory systems accountant:

Gave the keynote speech on "Federal Productivity" to the New Jersey chapter, American Society of Public Administration, March 16, Trenton, N.J.

Gave a luncheon speech on "Federal Productivity" to the Bellwood Management Officers Association, March 18, Richmond, Va.

Carl Palmer, supervisory auditor:

Chaired a panel discussion at the Joint National Meeting of the Institute of Management Science and Operations Research Society of America on "Planning and Economic Evaluation of Information Systems," San Francisco, May 10.

Coauthored an article appearing in the Association for Computing Machinery's *DATA BASE* journal on "Guidelines for Cost Accounting Practices for Data Processing," Winter 1977 Supplement.

Randy Schultz, supervisory auditor, spoke on "A Study of Computer Crimes," on March 17 at a conference in Dalton, Ga., sponsored by local chapters of the Data Processing Management Association and the National Association of Accountants.

Ronald Kozura, supervisory financial systems analyst (ADP); *Martin Caulk*, supervisory auditor; and *Paul Benoit*, senior financial systems analyst, were honored by the Chesapeake Division of the Association for Systems Management. Mr. Kozura received the Division Service Award and Mr. Benoit received the Patuxent Chapter Systems Man of the Year Award. Caulk was recognized for outstanding services as Chesapeake Division Council Chairman.

Ivan Trotsky, systems accountant, was awarded a Certificate of Merit on April 18 by the Small Business Administration at Washington, D.C., in recognition of management counseling services he had provided to the business community.

Ronald Points and *Jacquelyn Mullins*, supervisory systems accountants, presented a paper titled "Future Trends in Financial Reporting for the Federal Government" at the Southeastern regional meeting of the American Accounting Association in Nashville, Tenn., on April 28-30.

Joint Financial Management Improvement Program

Donald C. Kull, executive director:

Moderated a panel on "Information Needs for New Directions in Resource Allocation" at the 1977 Spring Symposium of the American Association for Budget and Program Analysis held on March 17 in Washington, D.C.

Presided at a Seminar on Electronic Fund Transfer Systems sponsored by the Association of Government Accountants and the Joint Financial Management Improvement Program on March 28 in Washington, D.C.

Participated in a panel entitled, "Fiscal Golden Mean: Reducing Expenditures Without Compromising Programs" at the annual conference of the Maryland chapter of the American Society for Public Administration on May 13 in Columbia, Md.

General Government Division

Bill Anderson, deputy director; *Frank Medico*, assistant director; and supervisory auditors *Bob Derkits*, *Larry Endy*, and *Bill Oczkowski* gave a presentation on the functions of GAO and its work in intergovernmental policy and fiscal relations to a class of mid-career program executives from the University of Virginia in Washington, D.C., on March 23.

Art Goldbeck, assistant director, participated in a panel discussion of the new auditing requirements in the Revenue Sharing Act before a group of chief auditors from various State governments on April 25.

John M. Ols, Jr., assistant director; *Thomas J. Jurkiewicz*, supervisory auditor; and *Ken Dobbs*, Los Angeles regional office, presented the results of GAO's review of law enforcement activities at national recreation areas and forests at the U.S. Army Corps of Engineers, Provost Marshal Conference in Corpus Christi, Tex., on April 3.

Richard Groskin, supervisory auditor:

Spoke on "Evaluation Planning in Criminal Justice Administration" before the Second Annual Southwestern Conference on Public Justice, in Arlington, Tex., March 17. Groskin also discussed the role of evaluation in criminal justice administration at a Management and Administration Seminar at the Institute of Urban Studies, University of Texas at Arlington, March 18.

Spoke on "Some Organizational Considerations in Evaluation of Change and Innovation in Criminal Justice," before the Annual Conference of the American Society for Public Administration, in Atlanta, Ga., March 30.

Robert Korinchak, supervisory auditor, discussed GAO's report on "Learning Disabilities: The Link to Delinquency Should Be Determined, But Schools Should Do More" before the 14th International Conference of the Association for Children with Learning Disabilities, in Washington, March 10-12.

Bill W. Thurman, assistant director, Intergovernmental Relations:

Discussed GAO's intergovernmental relations work before a meeting of the Southern Wisconsin chapter of the Association of Government Accountants, March 23.

Lectured at the annual intergovernmental relations seminar held by the Civil Service Commission's Executive Seminar Center, Berkeley, Calif., April 1.

Spoke on fiscal and economic problems of central cities at the National Economy and Public Policy Seminar, Executive Seminar Center, Oak Ridge, Tenn., April 17.

Spoke to participants in the Civil Service Commission's institute on the legislative function, about GAO's role in supporting the Congress, Washington, D.C., April 20.

Discussed GAO's studies of New York City with a public policy seminar group, University of Chicago, May 9.

Robert Derkits, audit manager, participated in a panel discussion of the A-95 process at the 11th Annual Conference of Regional Councils, San Antonio, Tex., May 4.

Human Resources Division

Gregory J. Ahart, director:

Participated in two Brookings Institution conferences for business executives on Federal Government operations, U.S. General Accounting Office, on March 7 and May 2. Subject: "Functions of the General Accounting Office."

Addressed the 124th Annual Meeting of the American Pharmaceutical Association, Americana Hotel, New York City, on May 16. Subject: "The Economics of Accounting for Pharmaceutical Dispensing Costs."

Ronald F. Lauve, associate director, and *James F. Walsh*, assistant director, spoke at the Executive Seminar on "Na-

tional Manpower Policy, New Developments in Manpower Programs, and the Future of the Comprehensive Employment and Training Act," held in Fairfield, Ill., on March 23-24. The seminar was sponsored by the Illinois Eastern College of Continuing Education. The topic discussed was "GAO Reviews of Employment and Training Programs."

Alan S. Zipp, supervisory auditor, spoke on "Nursing Home Fire Safety" before the American Association of Homes for the Aging Legislative Workshop, in Washington on March 23.

International Division

J. Kenneth Fasick, director, was chairman of a panel discussion on "Assessing Worldwide Institutions: The Role of the U.S. General Accounting Office" at the annual convention of the International Studies Association in St. Louis, Mo., on March 16. Panel participants included *Eugene C. Wohlhorn*, assistant director, who spoke on "United States Participation in the United Nations"; *W. Mack Edmondson*, assistant director, who discussed "U.S. Food Exports: Supplying the World's Food Needs"; and *J. Allen Hovey*, International Relations Specialist, who participated in a panel discussion on "The Role of the United States Government in Interchanges: What Should It Be?"

Frank C. Conahan, associate director, spoke on "Assessment of U.S. and International Controls over the Peaceful Uses of Nuclear Energy" at the Atomic Industrial Forum's Conference on International Commerce and Safeguards for Civil Nuclear Power in New York City on March 15.

James A. Duff, associate director, and

Eugene C. Wohlhorn and *Thomas R. Brogan*, assistant directors, participated in a discussion on five recent GAO reports on U.S. participation in the United Nations specialized agencies before the United Nations Association of the United States on May 18.

Logistics and Communications Division

Werner Grosshans, associate director, and *Carmen Smarrelli*, assistant director, made a presentation before the Industrial College of the Armed Forces on "The Management of Industrial Preparedness" on April 13. Mr. Smarrelli also participated as a panelist at the Natural Hazards Research Workshop sponsored by the Natural Hazards Research and Application Center of the Institute of Behavioral Science, University of Colorado in Boulder, on May 15, 16, and 17.

Mr. Smarrelli and *Raymond Dunham*, supervisory auditor, participated in a panel discussion at the Aerospace Industries Association, Facilities and Property Task Group meeting on May 25 at the Key Bridge Marriott Hotel.

Allen W. Sumner, assistant director, and *Paul Dinsmore*, audit manager, lectured at the U.S. Army Transportation School at Fort Eustis, Va., on April 15. They also addressed the Transportation Management classes at the Naval School of Transportation Management in Oakland, Calif., on May 12.

Darrell Eminhizer, supervisory management auditor, spoke before the Army Packaging Board in Stroudsburg, Pa., on May 25.

John J. Cramsey, supervisory management auditor, addressed the National

Institute of Packaging, Handling, and Logistics Engineers on April 20 on the role of GAO in the area of distribution management and presented slides of a recently completed assignment on the use of sea containers for shipments of DOD cargo to overseas areas.

Procurement and Systems Acquisition Division

Morton A. Myers, deputy director, participated in the 1976-1977 Department of Commerce Science and Technology Fellowship Program on April 18. His topic was "GAO's Input to the Legislative Process."

Frank P. Chemery, associate director, spoke on "A GAO Look at the DOD Acquisition Process" during the general session of the Tactical Missiles Conference in Gaithersburg, Md., on April 27-28. The conference was sponsored by the American Defense Preparedness Association and the American Institute of Aeronautics and Astronautics.

Andrew B. McConnell, associate director, spoke on "The Role of GAO in Defense Procurement" before two classes studying defense procurement at the Industrial College of the Armed Forces, Washington, D.C., on April 12.

Robert B. Hall, assistant director:

Moderated a National Contract Management Association panel on the new proposed Federal Acquisition Act of 1977 (S. 1264) in Washington, D.C., on April 20.

Spoke on GAO's work in congressional reporting of progress in acting on the recommendations of the Commission on Government Procurement at the American University's 3d an-

nual Procurement Seminar in Washington, D.C., on May 16.

Raymond A. Hautala, assistant director, discussed career opportunities in the Federal Government at Pennsylvania State University's "MBA Career Exploration Night" held on the Penn State campus on March 7.

Dr. Dieter H. Schweps, assistant director, has been invited to serve on the discussion panel "Congressional Role in R&D Budgeting" at the 2d annual American Association for the Advancement of Science Colloquium on Research and Development in the Federal Budget to be held in Arlington, Va., on June 15-16.

Clifford N. Melby, audit manager, and *Dennis R. White*, auditor, spoke on "Procurement Practices of State and Local Governments" at the 3d annual Procurement Seminar at American University, Washington, D.C., on May 20.

Dr. Robert P. Koontz, science policy analyst, presented a paper on "Information for Policymakers: Progress in the Legislative Branch" before the Panel on Scientific and Technical Information for Public Policy Decisionmaking, at the National Conference on Public Administration, Atlanta, Ga., on April 1.

Nancy R. Lamkin, auditor, has been appointed to serve on the accounting standards committee of the Maryland Association of Certified Public Accountants for fiscal year 1977-78.

Program Analysis Division

Harry S. Havens, director:

Participated in the American Association for Budget and Program Analysis symposium at the George Washington

University. The symposium theme—"New Directions in Resource Allocation: The Role of Zero-Base Budgeting and Program Evaluation." Mr. Havens was the luncheon speaker, Washington, D.C., March 17.

Participated as a panelist on "The Role of the Agencies of Congress," at the National Institute of Public Affairs seminar, Washington, D.C., April 6 and 7.

Dennis J. Dugan, associate director:

Participated in a panel discussion on a WNET-TV program, "The Outlook for the City," in New York, April 11.

Spoke on "What Do Economists Do In Washington?" before students of the Liberal Arts School of Stonehill College, North Easton, Mass., April 26.

Presented the keynote speech to the Conference on Government and the Economy for Senior State Executives, in Rensselaerville, N.Y., May 1.

Spoke on "Energy Conservation: Are the Secondary Economic Impacts of Primary Importance?" at the Conference on Conservation of Energy in the Distribution Cycle, Marriott Twin Bridges Convention Center, Washington, D.C., May 17.

Keith E. Marvin, associate director:

Spoke on "Issues in Managing Applied Social Research" at the conference of the Council for Applied Social Research, Washington, D.C., March 3.

Spoke on "Program Evaluation Utilization in the Context of a Congressional Budget Process" at the Symposium of the American Association for Budget and Program Analysis

in Washington, D.C., March 17.

Spoke in a Colloquium Series of the Graduate School of Business, University of Pittsburgh, on the "Status and Potential of Evaluation for Policy and Public Accountability" in Pittsburgh, May 24.

Wallace M. Cohen, assistant director, spoke on the linkages between program evaluation and financial management at the U.S. Attorney General's Senior Executive Seminar on Program Planning and Financial Management, Quantico, Va., March 24.

Robert A. Jaxel, senior analyst, participated in the Pennsylvania State Law Library Workshop, speaking on "Information Sources in the Federal Government" in Harrisburg, Pa., April 28 and 29.

Robert Kershaw, management analyst, spoke on "Program Evaluation in Practice" at the Association of Government Accountants Mid-Missouri chapter's Conference on Zero-Base Budgeting and Program Evaluation, Jefferson City, Mo., May 5.

Natwar Gandhi, PAD Faculty Fellow, presented a paper on "The Emergence of the Post-Industrial Society and the Future of the Accounting Function" at a symposium on Accounting and Corporate Social Responsibility at the Graduate School of Business, University of Kansas, May 12 and 13.

Field Operations Division

Chicago

Gil Stromvall, regional manager, hosted a meeting of the Chicago alumni of the Federal Executive Institute. *Pro-*

fessor *Ronald Sutpak* discussed "New Initiatives and Challenges for the Institute," April 22.

Bill Schad, assistant manager, participated in a panel discussion on "Forum Committees" at a joint meeting of the National Intergovernmental Audit Forum representatives in Denver, Colo., March 1.

Mel Koenigs, supervisory auditor, spoke to the Chicago chapter of the National Contract Management Association on "Impact of Procurement Changes on the Government Contractor," May 18.

David Utzinger, supervisory auditor, spoke before a Seminar of Northwestern University Graduate Students on "GAO Program Evaluation Reviews," May 24.

Stewart Seman, supervisory auditor, participated in a panel discussion on "New Uses of the Computer in Auditing and Accounting" at the Chicago chapter of the Association of Government Accountants, April 21.

Ken Boehne, supervisory auditor, was elected secretary for the Chicago chapter of the Association of Government Accountants for 1977-78. Mr. Seman, *Velma Butler*, and *Cecile Trop*, auditors, were elected to the chapter's board of directors.

Gerald Kelly, supervisory auditor, spoke on "Systems Used by Universities to Account for Indirect Costs on Federal Research Grants" before the Inter-mountain University Researchers Association, University of Denver, May 6.

Paul Lau, auditor, is serving as an instructor in the 1977 fundamental training course in "Accounting and Financial Management for Minority Business

Men," sponsored jointly by the Association of Government Accountants, the Office of Minority Business Enterprise, and the Illinois Institute of Technology.

Jene McConico, staff assistant, and *Mary Pesce*, secretary, represented GAO at Chicago's Jones Commercial High School Employer Appreciation Breakfast, May 12.

Dallas

Paul C. deLassus, assistant manager, discussed audits of operations and program results at the November 11, 1976, meeting of the Beta Delta chapter of Beta Alpha Psi, Texas Tech University, Lubbock, Tex.

Ernest J. Candilora, Jr., supervisory auditor, spoke before the accounting and government students of Nicholls State University at Thibodaux, La., on the "Role of the General Accounting Office," April 1.

R. Francis Langlinais, supervisory auditor, made a presentation before the New Orleans chapter of the Association of Government Accountants on "Auditing in an ADP Environment," January 27.

Denver

Irwin D'Addario, regional manager:

Spoke to the Denver association of Professional and Administrative Women on the role of the Denver regional office, March 15.

Conducted a workshop on operational auditing as part of the Denver chapter, Association of Government Accountants Symposium, May 6. The theme of the symposium was "Financial Management Development."

Arley Whitsell, assistant manager, and *Herman Velasquez*, supervisory auditor, spoke at the Graduate Honors Seminar at the University of Denver on social auditing, March 3.

Lowell Hegg, supervisory auditor, spoke to a governmental accounting class at Colorado State University on GAO program results reviews of social programs, April 29. On the same day he also participated in a panel discussion at the University on careers for accounting graduates.

Randy Bauer, auditor, with *Marvin Case* of the Seattle regional office, conducted a workshop on "Structure of a Management Issue" at the May 6 AGA Symposium.

Anthony Gonzales, auditor, took part in a seminar on career opportunities for men and women at Western New Mexico University, Silver City, N. Mex., April 1. The seminar was sponsored by the Society for Advancement of Management.

Los Angeles

Frederick Gallegos, management auditor, and *Joseph A. Sokalski*, auditor, participated in a panel discussion at California State Polytechnic University, Pomona, in connection with Career Day, March 2. Mr. Gallegos discussed careers and data processing and Mr. Sokalski discussed careers in accounting.

Mr. Gallegos is also teaching COBOL Programming at the California State Polytechnic University for the winter 1977 quarter.

New York

Nicholas M. Zacchea, supervisory auditor, addressed a meeting of the Rut-

gers University Accounting Club on "The U.S. General Accounting Office: It's More Than Accounting," February 7.

Charles K. Stein, auditor, participated in a Federal career day at C.W. Post College, Greenvale, N.Y., March 9. There was a turnout of more than 1,000 students.

Seattle

Marvin Case, supervisory management auditor, and *Robert Higgins*, supervisory auditor, discussed "Team-building for Higher Productivity" at the Association of Government Accountants' workshop in Portland, Oreg., March 11.

Mr. Case, along with *Stephen Jue*, management auditor, held a joint discussion before the graduate class of the School of Public Administration at the University of Washington on "Auditing Today and Issue Development," May 27.

The March 3, 1977, issue of *Guidepost*, an American Personnel and Guidance Association publication, printed an article by *Keith C. Martenson*, supervisory management auditor, entitled "Getting Skilled—Useful Information."

Sterling Leibenguth, management auditor, spoke to the Seattle chapter of the Association of Government Accountants on "The Use of Questionnaires in Auditing," March 8.

Michael Sparks, management auditor, together with *Rex Clothier* of the Oregon State Division of Audits, made a presentation at the March meeting of the Pacific Northwest Intergovernmental Audit Forum held in Portland, Oreg.

Their discussion dealt with a recent cooperative audit of the procurement system of the State of Oregon.

Henry Tomlinson, management auditor, made a 30-minute presentation on March 18 at the Seattle Federal Executive Board Receptionist Training Workshop. His subject was "Information and Referral."

Washington

Dave Sorando, regional manager, participated in an ASPA Young Professionals Forum panel discussion on "Perspectives on Federal Program Evaluation," February 15. Donald Dodge, Director, Office of Evaluation, Community Planning and Development, HUD, and Irwin Dubinsky, consultant, as well as Assistant Professor of Public Administration, Graduate School of Public Administration, George Washington University, joined Mr. Sorando. The panel discussion was held in the Department of Housing and Urban Development, Washington, D.C.

Jim Alubowicz, supervisory auditor,

spoke to a group of 60 Navy managers on "GAO's Views of Shipbuilders' Claims and Navy Claims Avoidance Techniques" at the Navy Logistics Management School, in Washington, D.C., February 2 and May 4. Both formal presentations were followed by lively question-and-answer periods.

Fred Bigden, supervisory auditor, and *Kathy Allen*, auditor, were guest speakers at a meeting of the University of Richmond's Accounting Society, Richmond, Va., February 14. The topic of their talk was career opportunities within GAO.

Mr. Bigden, along with *George Breen*, supervisory auditor, participated in a panel discussion on career opportunities in Government, industry, nonprofit organizations and public accounting, February 17. Other panel members represented Fairchild Industries, Inc., Blue Cross/Blue Shield, and Touche Ross & Co. The panel discussion was sponsored by the American University's Accounting Club and was held on the Washington, D.C. campus.

NAA Expands in the Washington, D.C. Area

For the first time in the history of the National Association of Accountants, one chapter (Washington) spun off two new chapters (Montgomery/Prince Georges and Northern Virginia). Instead of one NAA chapter in the Washington, D.C., area, there are now three.

The presidents of two chapters are GAO staff members and all three boards of directors are well represented by GAOers. The following GAO staff members were elected to serve as directors for the 1977-78 chapter year.

Washington Chapter (Elected March 16, 1977)

Frank Subalusky, CED	President
Frank Zappacosta, ID	Vice President (Education)
Rhonda K. Holthaus, CED	Director—Meetings
John A. Butcher, LCD	Director—Member Attendance

*Montgomery/Prince Georges Chapter
(Elected April 19, 1977)*

Linda L. Harmon, GGD	Vice President (Administration)
L. Patrick Samsell, PSAD	Treasurer
Victor Rezendes, CED	Director— Meetings
Randall Conley, GGD	Director— Educational Projects

*Northern Virginia Chapter
(Elected April 21, 1977)*

Steven J. Varholy, HRD	President
C. William Moore, PSAD	Vice President (Membership)
Brian P. Crowley, CED	Vice President (Communications)
Gregory J. Ahart, HRD	Director-At-Large
Theodore Gearhart, GGD	Director— Technical Programs & Professional Development
Peter V. Aliferis, GGD	Director— Communications
Michael E. Motley, HRD	Director— Member Attendance

Successful GAO Candidates— November 1976 CPA Examination

<i>Name</i>	<i>Region</i>	<i>State</i>
Ellen Bovarnick	Boston	Massachusetts
Richard R. Calhoun	Chicago	Wisconsin
Kathleen C. Lucas	Cincinnati	Ohio
Catherine A. McKee	Dallas	Texas
Raymond Occhipinti	Dallas	Louisiana
Douglas S. Meyer	Kansas City	Missouri
Robert E. Doig	Los Angeles	California
Joseph G. Mladinich	New York	Connecticut
Vincent R. Morello, Jr.	New York	New York
Robert T. Doyle	San Francisco	California
Elinor S. Rediker	Seattle	Oregon
Patrick R. Dugan	Falls Church	Virginia
Thomas J. Muldoon	Falls Church	Virginia
Deborah H. Myers	Falls Church	Virginia
Mark B. Rosenfield	Falls Church	Maryland

<i>Name</i>	<i>Division</i>	<i>State</i>
Larry Lyle	Community and Economic Development	Maryland
Austin J. Dayton	Financial and General Management Studies	Maryland

New Attorneys Recently Admitted To The Bar

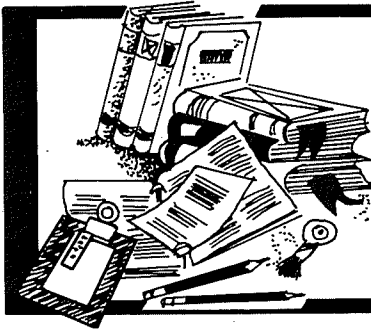
Member of Bar of

Botsford, Jessica A. New York
Depew, Kenneth Florida
Eaton, Marilyn Virginia
Feldman, Richard Pennsylvania
Grammer, Elisa Virginia
Hordell, Michael Massachusetts
D.C.
Lawrence, JePhunneh Indiana
D.C.
Pettit, Eileen. Ohio
Rockwood, Laura. California
Serling, Susan H.. New York
Sorett, Stephen Maryland
Wotherspoon, William. Virginia



The following new professional staff members reported for work during the period of February 16, 1977 through May 15, 1977.

Claims Division	Bobier, Lawrence M. Graham, Patricia D. Hause, Sheldon K. James, Arthur Johnson, Linda A. Price, Theresa	University of South Florida University of Chicago Institute of Technology St. Johns University American University George Washington University
Energy and Minerals Division	Heintz, Steven J.	University of Pittsburg
Logistics and Communications Division	Denman, Julia Heiser, Joel M.	University of Georgia University of Virginia
Office of Administrative Services	Heyman, Sara J.	George Washington University
Office of Personnel Development and Services	Boyd, Carolyn Valentine, Delores B.	Howard University Strayer College
Program Analysis Division	Donner, Arthur C. Dey, Martha J. Fastrup, Jerry C. Jantscher, Gerald R. Rachlis, Mitchell B. Rosensteel, Robert T. Sessions, Michael D.	Mellon University University of Texas Cornell University Columbia University George Washington University St. Mary's College Southeastern University
Regional Office Dallas	Garvey, Patrick	University of Austin Texas



Readings of Interest

The reviews of books, articles, and other documents in this section represent the views and opinions of the individual reviewers, and their publication should not be construed as an endorsement by GAO of either the reviewer's comments or the books, articles, and other documents reviewed.

Auditing in the Public Sector

By Felix Pomeranz, Alfred J. Cancellieri, Joseph B. Stevens & James L. Savage; Warren, Gorham & Lamont, Boston, 1976; 319 pp.

A guide, an aid, a reference book, a text book—*Auditing in the Public Sector* is all of these. With the growing acceptance that the scope of auditing—particularly audits of government agencies or government funds—has expanded to include the efficiency and economy of operations and effectiveness of programs, it is appropriate and timely that a complete and detailed book should be published to assist auditors in their initial approach in such audits or to help improve the performance of others more experienced in this area.

The book was written primarily for auditors at Federal, State, and local governmental levels, but was also intended to be used by public accountants in audits of government entities as well as government program managers for

enhancing their own operations. I submit further that *Auditing in the Public Sector* would be exceptional as a supplemental text book for college auditing courses.

The book presents in clear language how to conduct the expanded-scope audit specified by GAO in the *Standards for Audit of Governmental Organizations, Programs, Activities & Functions*. While the three scope elements—financial and compliance, economy and efficiency, and program results—are mentioned, the book deals with the latter two because the authors felt that existing publications have adequately addressed financial and compliance audits.

Most of the book is directed to audits of economy and efficiency, but the authors explain that this does not indicate an importance being given to one over the other. "The disproportion is a result of the fact that examining efficiency and economy is more dependent upon observation of minute operating details." It states that economy and effi-

ciency audits can be "highly specific, detailed, and structured examinations."

Auditing in the Public Sector shows how to audit the economy and efficiency and program results of government programs. It presents an approach for economy and efficiency audits that may be used in most any audit situation. This approach involves a technique called "operational controls review." One step in this approach compares the entity's practices with "preferred practices" which have been found successful over the years. These preferred practices proved a basis for evaluating management actions. Preferred practice questions are provided in questionnaires covering eight key areas: internal audit, budget management, personnel, cash management, procurement, public works, maintenance, and grant management. The questionnaires, presented in eight separate chapters, are to serve as guides or "memory joggers" in the measurement of an entity's conformity to preferred practices.

A significant portion of the book is devoted to the "preferred practices" questionnaires and their introductory discussions. In fact, the 8 chapters encompass almost 200 pages. According to the authors, these questionnaires should eliminate the need for much of the preliminary survey work for each new audit. The questionnaires are meant to be modifiable to fit unique situations.

For the occasions when management is found not to be following a preferred practice, the book discusses the technique for assessing the dollar significance of the deficiency. The authors point out that corrective action may not be initiated until the full financial im-

pact of the delinquency is brought into focus.

In the discussion of program results audits, reference is made to the close relationship such audits have with the technique called "management by objectives" (MBO). For both MBO and program results audits, the established objectives should be specific and measurable. To assist in performing a program results audit, the book presents an easily read flowchart depicting a decision process that the auditor may use. The authors point out that examples of successful program results audits are rare.

Auditing in the Public Sector is basic and nontechnical. With familiarity and perception, the authors address questions and problems common in management, making it a useful and reliable aid for auditors and managers alike. As intended, this book should help to accelerate the use of expanded-scope audits in government.

This book is highly recommended for government auditors entering the field of economy and efficiency or program results audits, but should also prove to be a useful guide and aid to the auditors experienced in this field.

Weldon E. Stanley
Supervisory Auditor
Financial and General
Management Studies Division

EDITOR'S NOTE: One of the authors of this book, *Joseph B. Stevens*, is an assistant director of the GAO Field Operations Division. During 1974-75, when this book was written, he was associated with the public accounting firm of Coopers & Lybrand as a participant in the Presidential Executive Exchange Program. The other authors are all with the firm of Coopers & Lybrand.

Evaluating Governmental Performance: Changes and Challenges for GAO

Washington: U.S. Government Printing Office, 1975, pp. vii, 279.

Over a twenty-two month period during 1973-1975, a series of lectures was held for the professional staff of the U.S. General Accounting Office (GAO) on the theme "Changes and Challenges for GAO." This volume contains those sixteen lectures, the accompanying discussions that followed each lecture, a biographical sketch of each lecturer, and the introductory comments for each lecture given by the Comptroller General of the U.S. In some respect each lecture contributes knowledge to the following two questions which underlie the basic theme of the series: "(1) What changes are taking place that will affect the future direction of GAO efforts?; and (2) What challenges does GAO face as an agency in the legislative branch of the Government?" (p. iii). To obtain answers to those two questions, leaders from a variety of fields (e.g., government, education, journalism, economics, public accounting, law) were invited to present their views on subjects in which they had a special expertise and in which the GAO has an interest or involvement. The result is a wealth of information on a number of current subjects relevant to the mission and operation of the GAO. Because of the GAO's expanding horizons, the lectures include such subjects as health care, detente, and the world food crisis, which should make them of interest to a broad readership audience.

The sixteen lectures are arranged in this volume according to nine subject

areas: (I) Operation of the Congress; (II) Management of Government Programs; (III) Separation of Powers; (IV) Government-Industry Relations; (V) International Issues; (VI) Research and Development; (VII) Improving the Nation's Health; (VIII) Challenges for the Accounting Profession; and (IX) Government and the Economy.

The initial section includes only the lecture given by Congressman Richard Bolling of Missouri, who for years has been a leader for congressional reform. Appropriately, the title of his lecture is "Can the Congress Reform Itself?" The next section included five lectures. The paper on "The Career Service and Responsible Government" by Alan K. Campbell focuses on the educational system's response to preparing future leaders in the public sector and on the relationship between career and politically appointed government officials. Campbell's paper contains insights that would be very pertinent to any discussion dealing with the education of professional accountants. For example, at one point he raises these questions: "Have we become so concerned with providing technical competence that we've forgotten the inevitable ethical component of every human act? Has the explosion of courses in quantitative analyses and computer applications replaced necessary attention to constitutionalism, political theory, and philosophy?" (p. 19).

Three other papers in that same section by Peter F. Drucker, James L. Hayes, and Rensis Likert discuss respectively managerial effectiveness, evaluation of people, and overall management systems or styles. From this reviewer's perspective, those three papers would form an excellent review of the difficult

art of management for any person about to embark on a leadership role. (Indeed, they could form the nucleus of an annual "refresher" course for those currently in leadership positions.) The final paper in this section is on the urban crisis and is by the Honorable Walter E. Washington, Mayor-Commissioner of the District of Columbia.

The third section, "Separation of Powers," includes only one lecture—"Drawing Lines"—by Erwin N. Griswold who discusses generally the art of making distinctions and cites case examples from the law in which lines have been drawn. In discussing lines drawn in law and government, Griswold states that "not only are many of these lines hard to draw, but we have to recognize and accept the fact that many of them can probably never be drawn with finality or ultimate precision" (p. 110). This reviewer believes that accounting policymaking is, in essence, concerned with drawing lines, and it would be well for accounting students to be introduced to the work of the Financial Accounting Standards Board and its predecessors with that perspective in mind. Accordingly, the Griswold paper would provide a useful perspective for discussing accounting policymaking, and hence it should be added to the reading lists for graduate accounting theory courses.

Included in five sections (IV, V, VI, VII, IX) are eight lectures dealing with such far-reaching and diverse subjects as the changing roles of government and industry, the world food crisis, detente,

research and development, social experimentation, health care, productivity, and economic problems. Each of those lectures provides an up-to-date overview of the latest issues and concerns on the subject by a leading expert. A reading of those eight papers reveals the enormous task before the GAO as it audits the many government programs. The one remaining section (VIII) consists of a paper by Ralph E. Kent, "Changes and Challenges for the Accounting Profession." That paper discusses the profession's standard setting process, with a description of the FASB's organization, due process, and technical agenda, and concludes with a review of auditing developments.

On balance, the papers in this volume provide a convenient means of gaining new insights into a number of contemporary societal problems. A reading of any one of the papers would add to one's knowledge and provide new perspectives on some of the crucial questions of the day. Certainly, the leadership of the GAO is to be commended for sponsoring the lectures and for having the foresight to preserve them and the discussions that followed in book form.

William G. Shenkir
Visiting Professor of Accounting
New York University

EDITOR'S NOTE: This review was originally published in *The Accounting Review*, January 1977, and is reprinted with permission.

Annual Awards for Articles Published in The GAO Review

Cash awards are available each year for the best articles written by GAO staff members and published originally in *The GAO Review*. Each award is known as the Award for the Best Article Published in *The GAO Review* and is presented during the GAO awards program held annually in October in Washington.

One award of \$500 is available to contributing staff members 35 years of age or under at the date of publication. Another award of \$500 is available to staff members over 35 years of age at that date.

Staff members through grade GS-15 at the time of publication are eligible for these awards.

The awards are based on recommendations of a panel of judges designated by the Comptroller General. The judges will evaluate articles from the standpoint of the excellence of their overall contribution to the knowledge and professional development of the GAO staff, with particular concern for:

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