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# THE GAO REVIEW



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# THE GAO REVIEW

FALL 1970

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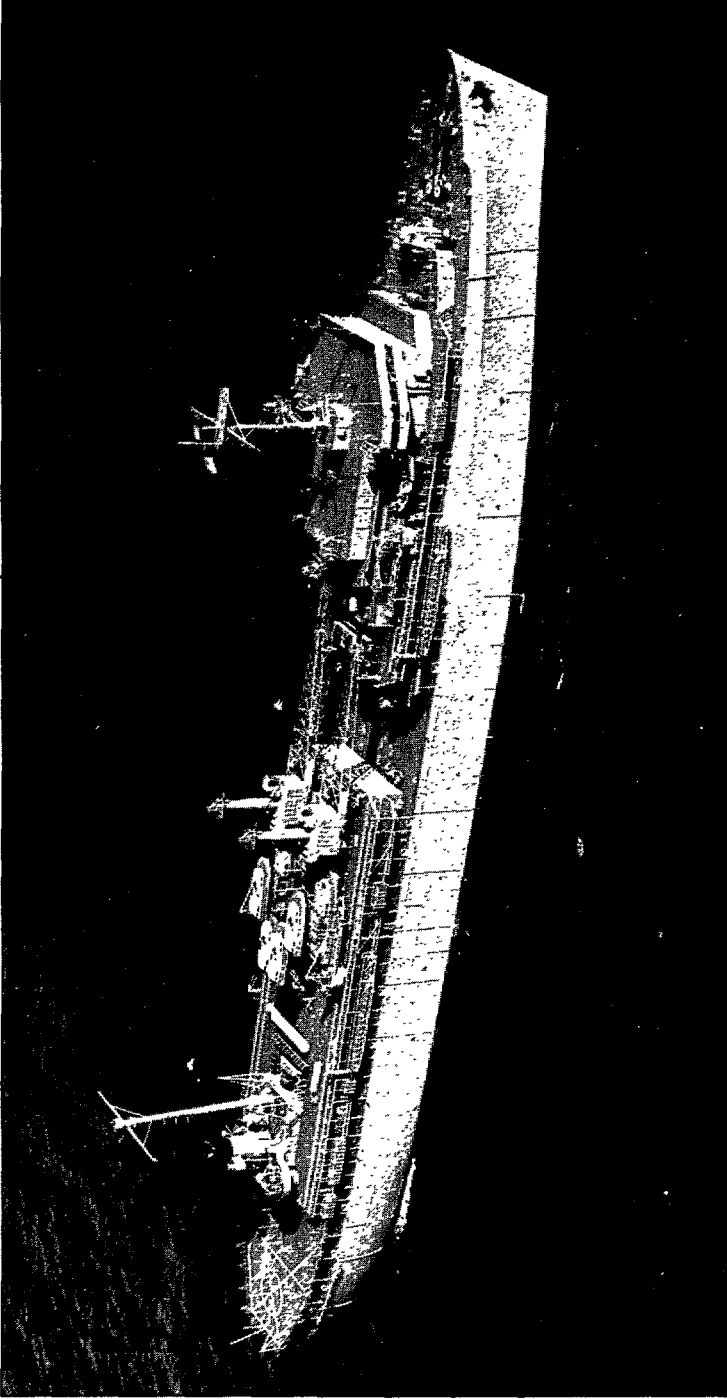


Photo Courtesy of U.S. Navy

The U.S.S. CANOPUS, AS-34, is the second of a new class of tender serving the fleet ballistic missile submarines. With a crew of 55 officers and 1,020 enlisted men, the CANOPUS is designed to support nine submarines and can service three simultaneously. The 644-foot-long ship has a full-load displacement of 22,250 tons. The CANOPUS was converted to serve POSEIDON-carrying submarines.

721416

# Cost Information and the Federal Manager

By Harold R. Fine

**This article demonstrates how Federal managers can effectively use cost data and cost analysis techniques to identify realistic alternatives and "common sense" factors that often evade the decisionmaker. The article is based on information the author obtained at the Puget Sound Naval Shipyard, Bremerton, Wash., working with Irwin M. D'Addario, assistant manager of the Seattle Regional Office.**

## PART I

Some film biographies suggest that the industrial giants of old were endowed with unusual inspiration. From offices that looked out over the plant, they made irrevocable decisions, seemingly in accord with advice from on high. Maybe such owner-managers were only movie myths; even if they did exist, they are gone—replaced in modern organizations by professional managers. Similarly, pertinent knowledge and ways of making it available have replaced the moment of blind intuitive genius pictured in Hollywood's version of management decisionmaking.

In fact, the modern manager needs a reservoir of objective information to help him make sound decisions that agree with organizational purpose, insure advantageous use of resources, and complement the plans of other

managers. One of the best reservoirs is the accounting records.

When several important programs are competing for limited resources, the manager must choose among them, and some choices may be painful to certain groups in the organization. For managers in that spot, cost information is of special value.

Obviously, cost information or the analysis of it will not dictate the one right solution to all resource allocation problems, but Production Department managers at Puget Sound Naval Shipyard, Bremerton, Wash., use cost information to make decisions that help them save money.

### *Decisionmaking at Puget Sound Naval Shipyard*

Managers of the Puget Sound Naval Shipyard who recognize cost data as a "common sense" factor of decision-

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making use it frequently in allocating limited resources between the construction of new ships and the overhaul, repair, or conversion of active fleet ships. Besides jeopardizing national security, an incorrect or untimely decision can waste millions. For the shipyard's decisionmakers, who also consider subjective information, cost data is the principal type of objective information used.

The mission of the shipyard is to furnish the shipbuilding facilities and personnel needed to support fleet operations. The Chief of Naval Operations has assigned the highest priority to repair and overhaul work on ships that support the POLARIS Missile Program. Operational commanders have assigned the next highest priority to overhaul and conversion work on active ships.

The shipyard's Production Department is responsible for allocating shipbuilding facilities and personnel among overhaul, conversion, and new construction projects; occasionally, its managers are forced to reallocate these resources from new construction projects to higher priority repair and conversion work. One such reallocation, described below, shows how the shipyard's managers used cost information and cost analysis techniques to eliminate undesirable alternatives and arrive at a decision that saved about \$1,625,000.

### *Why a Decision Was Needed*

In January 1968, the Shipyard Commander advised the Planning Department that the U.S.S. CANOPUS, a POLARIS submarine tender, was to be

equipped for an improved version of the POLARIS missile beginning May 1, 1969. The Repair and Shipbuilding Division of the Production Department determined that drydock 4 was the only one that could be made available by May 1, 1969.

Drydock 4 was occupied by the U.S.S. DETROIT, a new Fast Combat Support Ship, which was scheduled for launch on February 15, 1969. Progress reports dated December 1967 showed that new construction work on the DETROIT had slipped behind schedule. The December 1967 Shop Over (Under) Loads Report for Production Department shops showed, however, that the scheduled launch date could be met because Production Department shops would release several crews to work on the DETROIT late in 1968 and early in 1969.

In March and April 1968, two aircraft carriers from Southeast Asia were unexpectedly assigned to the shipyard for minor overhaul. Early in May 1968, the Production Department managers analyzed the April 30, 1968, Workload Forecast and found that the two aircraft carriers, together with other high-priority projects, would limit, until early in 1969, the amount of shipbuilding equipment and personnel available for work on the DETROIT. The managers concluded that work on the DETROIT must remain on schedule so that drydock 4 would be available for the CANOPUS by May 1, 1969.

### *Define the Problem*

Managers in the Repair and Shipbuilding Division of the Production Department reduced the problem to

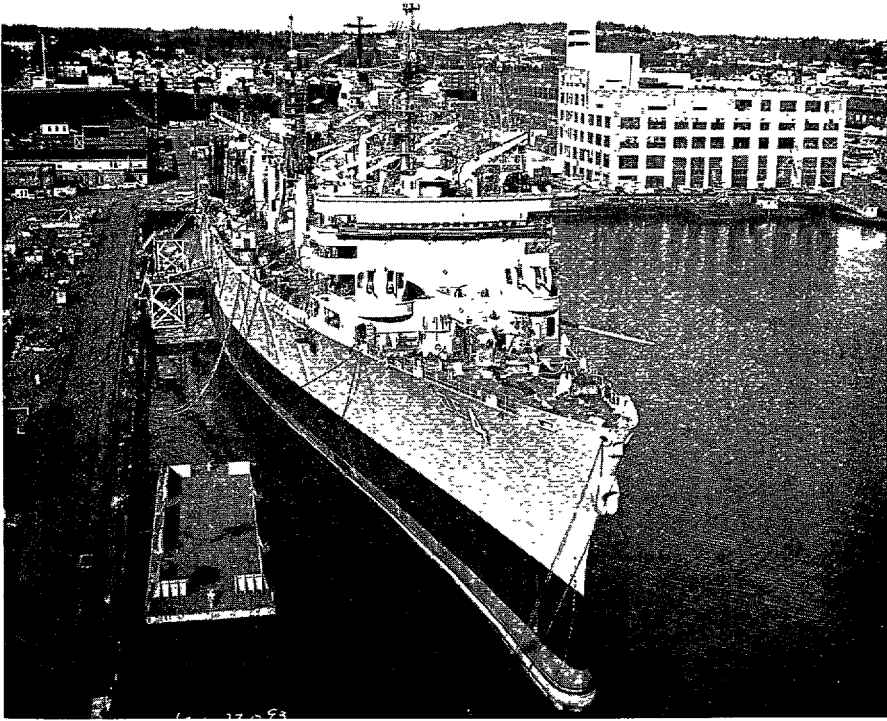


Photo Courtesy of U.S. Navy

The U.S.S. DETROIT, AOE-4, is a new type of Fast Combat Support Ship and is equipped to transfer supplies to warships at sea. The DETROIT is a combined ammunition ship, cargo ship, refrigerator ship, and fleet oiler and carries a crew of 33 officers and 567 enlisted men. The 798-foot-long ship has a full-load displacement of 53,600 tons.

the question "What is the most economical way to get the DETROIT out of drydock 4 in time to prepare the drydock for the CANOPUS?"

The constraints on possible solution were: (1) other higher priority work in the shipyard could not fall behind schedule, (2) the DETROIT must be launched 30 days before work could start on the CANOPUS to allow time to prepare the drydock, (3) a shortage of skilled labor in the Bremerton area precluded hiring additional personnel, and (4) the date work was to start on the

CANOPUS could not be adjusted by the Shipyard Commander.

#### *Identify Alternative Solutions*

In May 1968, alternatives to the problem seemed to be:

1. Maintain the DETROIT's February 15, 1969, launch date and use overtime labor to bring construction work to a satisfactory state of completion at launching.
2. Reschedule the DETROIT's launch date to coincide with the April 1, 1969, drydock prepara-

tion date for the CANOPUS and use overtime labor to bring construction work to a satisfactory state of completion at launching.

3. Reschedule the DETROIT's launch date to coincide with the drydock preparation date for the CANOPUS and launch the ship prematurely to avoid overtime costs.

The Production Department managers recognized that rescheduling the launch date would not necessarily insure lower overtime cost, because all the manpower available in the shops at regular pay rates could be required on higher priority work late in 1968 and early in 1969. The recent increase in manpower requirements for higher priority overhaul work indicated that overtime would be needed and that, if it were, it would make no difference in cost if the DETROIT's launch date remained as scheduled.

At this point a manager might favor the first of the three solutions, his reason being that, if the same amount of overtime would be required in any event, it would be best to meet the anticipated launch date so that the ship could be completed on schedule. But what were the risks of making this decision? The wrong decision could cause either the payment of overtime salaries for work that might be done in subsequent periods at regular pay rates or the delay of the CANOPUS which, in turn, would jeopardize the squadron of POLARIS submarines she serviced. In view of the risks, the production officer asked his staff to study the costs associated with each of the three alternative solutions.

### ***Use Cost Data To Help Solve the Problem***

During the cost analysis process, the Shipyard Commander advised the Planning Department that the Commander of the Naval Ship Systems Command had revised the start-work date for the CANOPUS from May 1 to June 1, 1969. The start-work date was changed because it was necessary to keep the CANOPUS on-station to support POLARIS missile submarines for an additional month. Accordingly, comparative cost data were gathered for the initial launch date of the DETROIT of February 15, 1969, and for the alternative launch dates of April 1 and April 30, 1969.

If the shipyard's managers had not developed adequate cost data as a routine, sound business practice, they would have been unable to answer the following questions.

1. How much more work must be done on the DETROIT to launch the ship in a satisfactory state of completion?
2. How much work had been completed on the DETROIT as of April 30, 1968?
3. Which of the Production Department shops would have to work overtime to complete a satisfactory amount of prelaunch work?
4. How much overtime, if any, would be required by each shop for each of the potential launch dates?
5. What were the aggregate overtime costs for each potential launch date?
6. What additional costs would be incurred if no overtime was



worked and if the ship was launched prematurely on April 1 or April 30, 1969?

With cost data, it was relatively simple for the assistant repair and ship-building superintendent to obtain the necessary information. For example, the actual number of man-days spent by Production Department shop personnel to complete prelaunch work on the U.S.S. SEATTLE—a ship of the same size and design as the DETROIT—was obtained from the Man-Day Expenditure Record Report. The Production Department used these figures as a standard for measuring satisfactory completion of prelaunch work on the DETROIT.

The status of work on the DETROIT was determined from the April 30, 1968, Man-Day Expenditure Record.

The number of man-days required by each shop to complete prelaunch work on the DETROIT was obtained by subtracting from the standard the man-days spent at April 30, 1968.

The amount of overtime required, by shop, to meet the man-day expenditure standard for the DETROIT was determined by comparing overload man-days (excess of scheduled work over man-days available at regular pay rates) with man-days required to complete prelaunch work. Regular and overtime cost data reported in the Financial and Operating Statements for the quarter ended March 1968 were used to establish the pay rates applicable to man-day requirements for the DETROIT. The estimated man-days of overtime and related costs for each of the proposed launch dates were:<sup>1</sup>

Feb. 15, 1969		Apr. 1, 1969		Apr. 30, 1969	
Man-days of overtime	Cost	Man-days of overtime	Cost	Man-days of overtime	Cost
50,000	\$1,857,000	19,000	\$488,000	11,000	\$176,000

**State Alternatives Precisely**

Since two of the three alternatives involved rescheduling the launch date (Apr. 1 or Apr. 30, 1969), the managers developed a more precise statement of each.

1. Maintain the established launch date of February 15, 1969, and use overtime labor to complete standard prelaunch work.
- 2a. Reschedule the launch date to April 1, 1969, and use overtime labor to complete standard prelaunch work.
- 2b. Reschedule the launch date to April 30, 1969, and use overtime labor to complete standard prelaunch work.

- 3a. Reschedule the launch date to April 1, 1969, and launch the ship prematurely to avoid overtime costs.
- 3b. Reschedule the launch date to April 30, 1969, and launch the ship prematurely to avoid overtime costs.

**Eliminate Inappropriate Alternatives**

The foregoing analysis of overtime costs gave the Production Department managers a basis for rejecting some of the alternatives. For example, the managers rejected the first alternative, which appeared to be the best solution

<sup>1</sup> See PART II for details on the analytical process.

initially, because prelaunch construction work on the DETROIT could be completed with less overtime by rescheduling the launch date. Overtime costs could be avoided because additional manpower would become available at regular pay rates later in February, March, and April 1969. The managers estimated the overtime savings from rescheduling the launch to April 1 or April 30, 1969, at \$1,369,000 and \$1,681,000, respectively.

The alternative to use overtime and complete standard prelaunch work by April 1, 1969 (alternative 2a), was also rejected in favor of using overtime to complete prelaunch work by April 30, 1969 (alternative 2b), because the overtime costs would be \$176,000, or \$312,000 less. In studying opportunities to launch prematurely, the assistant repair and shipbuilding superintendent found that the ship might leak if it were put in the water on April 1, 1969 (alternative 3a), because the hull would not be complete enough to permit air testing. This alternative could also be eliminated because more prelaunch work could be completed at regular pay if the launch date were rescheduled to April 30, 1969.

Thus, by using cost information in decisionmaking, the Production Department managers limited the alternative solutions to rescheduling the launch date to April 30, 1969, and either completing prelaunch work by using overtime labor (alternative 2b) or launching the ship prematurely (alternative 3b).

### ***Question the Obvious***

The managers felt that, before they could decide which solution was best,

they would have to approximate the costs of launching prematurely at April 30, 1969. Premature launching involved drydocking the DETROIT three times instead of twice, removing and replacing scaffolds, and sandblasting and recoating several fuel and water tanks when the ship was placed back in the drydock. These costs were estimated at \$62,000.

Did the managers have the solution to the problem—launch prematurely at April 30, 1969? “No,” was their conclusion. One manager pointed out that it might be more economical for some shops to work overtime and complete critical prelaunch work and for others to absorb the costs of premature launching. Therefore the alternative to launch prematurely might not be the best solution from the standpoint of cost.

The results of an analysis, shown in the table on the opposite page, established that the overtime cost incurred by each shop would be greater than the related cost of premature launching.

### ***Select the Best Solution***

The Production Department managers concluded that, if only the measurable costs of premature launching were considered, the best decision would be alternative 3b: reschedule the launch date to April 30, 1969, and launch the ship prematurely.

Analysis and evaluation of other factors, however, indicated that this decision could not be based on cost alone if launch and completion of the DETROIT and other ships were to remain on schedule. A study of the critical work sequence for the DETROIT and other ships showed that some over-

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Shops requiring overtime to complete prelaunch work	Overtime costs to complete pre-launch work at Apr. 30, 1969	Cost to pre-maturely launch at Apr. 30, 1969 (note a)
<b>Critical shop work:</b>		
Outside machinists . . . . .	\$68,000	\$38,000
Paint . . . . .	19,000	13,000
Temporary service . . . . .	55,000	11,000
Total critical . . . . .	142,000	62,000
<b>Noncritical shop work:</b>		
Toolmakers . . . . .	10,000	
Forge . . . . .	4,000	
Pattern . . . . .	16,000	
Electronics . . . . .	4,000	
Total noncritical . . . . .	34,000	
Total costs . . . . .	176,000	62,000

<sup>a</sup> Additional costs of premature launching that would be incurred by all shops which could be identified directly with a shop performing critical prelaunch work.

time would be necessary because of (1) the limited space for men to work aboard ship and (2) the shortage of men in critical trades. The managers also wanted to maintain flexibility for emergency and late-developing work during the 12 months under consideration, and the use of some overtime labor would provide it.

Accordingly, the managers formulated a new alternative—reschedule the launch date to April 30, 1969, and use overtime to complete *essential* pre-launch work. This alternative solved the problem, because it reduced overtime costs from \$176,000 (alternative 2b) to \$142,000 by eliminating \$34,000 in overtime costs related to non-critical prelaunch work.

If the managers had decided to act on intuition and use overtime to meet the original launch date of Febru-

ary 15, 1969, they would have risked spending \$1,715,000 unnecessarily. The tabulation of overtime costs and savings for each alternative solution is shown on p. 10.

Through effective use of cost information and cost analysis techniques, the shipyard's Production Department managers arrived at a rational solution to the DETROIT resource allocation problem. The use of cost data helped the managers minimize the cost of making drydock 4 available for the CANOPUS and maintain their ability to support active fleet ships within authorized time frames.

The procedures followed in finding a solution to this problem demonstrate that cost data and cost analysis techniques are useful tools and that effective use of these tools can stimulate identification of realistic alternatives

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Alternative solutions	Cost	Cost savings based upon the least desirable alternative
1. Launch ship on Feb. 15, 1969, and use overtime labor to complete standard prelaunch work . . . . .	\$1,857,000 . . . . .	
2a. Reschedule launch date to Apr. 1, 1969, and use overtime labor to complete standard prelaunch work . . . . .	488,000	\$1,369,000
2b. Reschedule launch date to Apr. 30, 1969, and use overtime labor to complete standard prelaunch work . . . . .	176,000	1,681,000
3a. Reschedule launch date to Apr. 1, 1969, and launch the ship prematurely to avoid overtime costs . . . . .	( <sup>1</sup> )	( <sup>1</sup> )
3b. Reschedule launch date to Apr. 30, 1969, and launch the ship prematurely to avoid overtime costs . . . . .	62,000	1,795,000
4. Reschedule the launch date to Apr. 30, 1969, and use overtime labor to complete <i>essential</i> prelaunch work . . . . .	142,000	1,715,000

<sup>1</sup> Invalid alternative.

and “common sense” factors that might otherwise evade the decisionmaker.

**Epilogue**

After making the original decision to reschedule the launch date of the DETROIT to April 30, 1969, Production Department managers examined the need for 30 days to prepare drydock 4 and determined that it could be prepared in 10 days without overtime. Accordingly, the launch date for the DETROIT was changed to May 15, 1969, so that more work could be completed before the ship was launched.

The managers further determined that shop personnel could work on the CANOPUS for about a month while it was tied to a pier; after that, the ship would have to be drydocked. Because the extra month would permit shipyard workers to complete most of the standard prelaunch work, the managers decided to defer the launch date of the DETROIT to June 14, 1969. Later they

found that this date conflicted with another commitment, and the launching was reset to June 21, 1969.

The DETROIT was launched on June 21, 1969. Between April 30, 1968, and June 21, 1969, 6,900 man-days of overtime were charged to the DETROIT. The overtime cost about \$230,000. The variance between actual and estimated overtime costs was caused by (1) shops shown as overloaded working more overtime than expected and perhaps completing more than the standard amount of prelaunch work and (2) shops shown as underloaded working overtime. For purposes of analysis, overtime charges by overloaded shops are priced out at the half-time rate of pay, whereas underloaded shops are priced out at the full time-and-one-half rate of pay (see p. 12).

The CANOPUS entered drydock 4 on July 1, 1969; undocked on October 5, 1969; and left the shipyard on February 5, 1970, 2 days after the originally scheduled departure date.

## PART II

***Description of Cost-Based Reports and How They Were Analyzed in Solving the U.S.S. DETROIT Problem***

As discussed on page 7, man-days actually spent on the SEATTLE to launching were selected as the standard for measuring a satisfactory state of completion on the DETROIT at launching. The man-days spent on the SEATTLE before she was launched (Mar. 1, 1968) were summarized from the Detail Man-Day Expenditure Records of each shop (see Exhibit I).

To get the number of man-days spent on the DETROIT at April 30, 1968, the assistant repair and shipbuilding superintendent scheduled the man-days spent by each shop from the Production Department Workload Forecast Report dated April 30, 1968. (For an example of the applicable section of this report for Shop 938, Outside Marine Machinists, see Exhibit II.)

To determine which shops would require overtime to complete prelaunch work on the DETROIT at each of the three possible launch dates (Feb. 15, Apr. 1, or Apr. 30, 1969), the assistant repair and shipbuilding superintendent referred to the Production Department Shop Over (Under) Loads Report which summarized Planning Department estimates of manpower requirements. These estimates were based on labor costs experienced in completing other ships. This report (see Exhibit III) shows, for each month over a 24-month period, the number of man-months that each shop is expected to be in an overload position (excessive

work) or an underload position (potential idle time).

The cumulative effect of projected overloads and underloads for each shop was scheduled for each of the proposed launch dates (see Exhibit IV). Man-month figures were multiplied by 21 working days a month to arrive at man-days.

Man-days of overtime required by each shop at each of the potential launch dates were determined as follows:

1. The man-days spent on the DETROIT by each shop at April 30, 1968 (see Exhibit II), were subtracted from the man-days spent in completing prelaunch work on the SEATTLE, the sister ship used as the standard (see Exhibit I). This computation established the man-days needed to complete prelaunch work on the DETROIT.
2. The total number of man-days budgeted for the DETROIT from May 1, 1968, to January 30, March 31, and April 30, 1969, respectively, were recorded from the Man-Day Expenditure Record (see Exhibit II).
3. When the man-days budgeted (as determined in step 2) exceeded the standard (step 1), the difference was deducted from the shop overload for the DETROIT. When budgeted man-days were less than the standard, the difference was added to the shop overload.
4. As constraints, man-days of overtime had to be equal to or less than the man-days required to complete prelaunch work (com-

COST INFORMATION AND THE FEDERAL MANAGER

puted in step 1) and overtime required as of March 30 and April 30, 1969, could not exceed overtime required as of February 1, 1969.

An example of how these computations were made and how the constraints were applied for Shop 938, Outside Marine Machinists, for the April 30, 1969, launch date is shown below.

1. Man-days of shop overload at Apr. 30, 1968 (907 man-months x 21 man-days a month) . . . . .	19,047
2. Standard man-days required to complete prelaunch work based on those required for the SEATTLE . . . . .	7,010
3. Man-days spent on the DETROIT as of Apr. 30, 1968 . . . . .	-176
<hr/>	
4. Additional man-days required to complete prelaunch work on the DETROIT . . . . .	6,834
5. Man-days budgeted for the DETROIT from May 1, 1968, to Apr. 30, 1969 . . . . .	-16,989
<hr/>	
6. Excess of man-days budgeted over the remainder of standard man-days required to complete prelaunch work . . . . .	-10,155
<hr/>	
7. Maximum man-days of overtime required in Shop 938 at Apr. 30, 1969. . . . .	8,892
<hr/> <hr/>	

*Constraints*

1. Overtime required cannot exceed man-days required to complete prelaunch work according to step 4 above . . . . .	6,834
<hr/>	
2. Overtime required as of Apr. 30, 1969, cannot exceed overtime required as of Feb. 1, 1969, which was determined in the same manner as in steps 1 through 7 above. . . . .	4,335
<hr/> <hr/>	

Thus the amount of overtime required for Shop 938 at April 30, 1969, was 4,335 man-days.

The man-days of overtime required by each shop were priced by computing and applying the actual overtime cost per man-day from data reported in the shipyard's Financial and Operating Statements dated March 1968 (see Exhibit V). The full time-and-one-half rate per man-day was applied to all shops that were expected to be in an underload position (idle time expected in the shops) at April 30, 1969, since overtime work would not be required if the launch dates were rescheduled to

April 30, 1969. Only the half-time rate was used for shops in an overload position at April 30, 1969, since overtime would be required, in any event, to complete work at this date. The results of these computations showed the aggregate overtime costs that would be incurred at each of the three proposed dates.

The Production Department estimated the additional man-days of shop labor that would be required by each shop if the ship was launched prematurely. The estimate was based on engineering standards. Shops that would use overtime to do critical prelaunch

work were assigned part of the additional man-days of labor on the basis of engineering judgment. Man-days of labor were converted to dollars by applying regular pay rates for each shop.

shipyard personnel and made some of the cost computations using shipyard records.

The author acknowledges the cooperation of *Rear Adm. W. F. Petrovic* and Navy personnel at the shipyard who made possible this demonstration of how cost information can be used effectively in decisionmaking. Special acknowledgements go to the shipyard's Production Department managers—*Capt. E. R. Meyer, USN*; *Capt. C. E. Slonim, USN*; *Lt. Comdr. R. Matzner, USN*—who furnished the detailed information used in this article; and to *Dr. William Hoth*, GAO's writing skills consultant, for his advice and help in editing.

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AUTHOR'S NOTE AND ACKNOWLEDGEMENTS:

To improve the clarity, logic, and completeness of the presentation, the author supplemented, modified, adjusted, or rearranged certain descriptive information provided by

**Man-Day Expenditure Record**  
**Man-Days Spent by Shop on the U.S.S. SEATTLE (AOE-3) at Launching on**  
**Mar. 1, 1968**

Code	Shipfitters 911*	Welding 926*	Sheet metal 917	Boiler 941	Pipefitters 956	Toolmakers 336	Forge 923	Inside machinists 931
10260.....	109,504	121,874	11,503	7,664	41,574	912	2,259	19,025
11260.....	2	1	2	1	10			1
14260.....								2
<b>Total.....</b>	<b>109,506</b>	<b>121,875</b>	<b>11,505</b>	<b>7,665</b>	<b>41,584</b>	<b>912</b>	<b>2,259</b>	<b>19,028</b>

Code	Outside marine machinists 938*	Pattern 994	Electricians 951	Electronics 967	Wood- working 964	Paint 971*	Sandblast 972	Temporary services 999*
10260.....	6,988	1,187	5,661	170	12,511	9,119	23,760	6,518
11260.....		4					1	
14260.....	22		60	96				
<b>Total.....</b>	<b>7,010</b>	<b>1,191</b>	<b>5,721</b>	<b>266</b>	<b>12,511</b>	<b>9,119</b>	<b>23,761</b>	<b>6,518</b>

\*Critical to undocking.

Source: Mar. 1, 1968, Detail Man-Day Expenditure Record.



Puget Sound Naval Shipyard, Production Department Workload Forecast, Shop 938—Outside Marine Machinists

Hull No.	Ship name	Type of availability	Start	Comp.	Man-day estimate	SYM	Man-days expended	Predicted men per day									
								May 1968	June 1968	July 1968	Aug. 1968	Sept. 1968	Oct. 1968	Nov. 1968	Dec. 1968	Jan. 1969	
AD-38	PUGET SOUND.....	New Constr.....	010465	080268	20,000	PD	18,385	33	26	16							
AOE-3	SEATTLE.....	New Constr.....	060165	073169	25,790	PD	10,138	57	58	59	59	60	60	61	61	62	
AOE-4	DETROIT.....	New Constr.....	080166	123169	26,780	PD	176	53	54	54	59	68	70	72	74	75	
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15

Hull No.	Ship name	Type of availability	Start	Comp.	Man-day estimate	SYM	Man-days expended	Feb. 1969	Mar. 1969	Apr. 1969	May 1969	June 1969	July 1969	Aug. 1969	Sept. 1969	Oct. 1969			
AD-38	PUGET SOUND.....	New Constr.....	010465	080268															
AOE-3	SEATTLE.....	New Constr.....	060165	073169				61	58	34	25	20	10						
AOE-4	DETROIT.....	New Constr.....	080166	123169				76	77	77	78	79	79	80	71	37			
Cumulative man-months to Apr. 30, 1969, for U.S.S. DETROIT.....																809			
Estimated working days per month.....																		21	
Predicted man-days to Apr. 30, 1969.....																		16,989	

AUTHOR'S NOTES:

Man-day estimate is a Planning Department estimate based on engineered and estimated standards which are used to measure work requirements of individual jobs for each ship.  
 Man-days expended is accumulated from actual time recorded on employee time cards.  
 Predicted men per day is based on an allocation, month-by-month, of total man-days estimated by the Planning Department to complete the job. [Multiply by 21 (average workdays per month from May 1, 1968-Apr. 30, 1969) to convert to predicted man-days per month.]

EXHIBIT III

Shop Over (Under) Loads Report—Production Department, All Ships—All Shops

COST INFORMATION AND THE FEDERAL MANAGER

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Date	Ship-fitters 911*	Welding 926*	Sheet metal 917	Boiler 941	Pipe-fitters 956	Tool-makers 396	Forge 923	Inside machinists 931	Outside marine machinists 938*	Pattern 994	Elec-tricians 951	Elec-tronics 967	Wood-working 964	Paint 971*	Sand-blast 972	Temporary services 999*
1968																
May.....	65	83	178	(40)	(46)	7	18	(87)	(49)	3	(27)	8	4	53	111	111
June.....	186	43	91	21	(47)	6	13	(8)	2	6	34	9	-----	21	15	23
July.....	90	70	32	(28)	(11)	5	6	(35)	(36)	2	27	(23)	(11)	13	(48)	7
August.....	182	166	21	(10)	30	6	10	22	117	3	67	(29)	31	68	102	42
September.....	168	136	23	25	108	5	13	57	165	3	223	72	52	63	84	55
October.....	18	3	(38)	(11)	(9)	2	3	(33)	53	-----	129	45	9	24	(35)	19
November.....	(35)	(45)	(55)	(36)	(30)	9	(1)	(7)	31	(1)	61	21	(5)	10	(82)	2
December.....	(71)	(91)	(72)	(38)	(18)	7	(2)	17	48	(2)	42	(4)	(11)	6	(111)	(10)
1969																
January.....	(46)	(69)	(74)	(18)	99	4	-----	50	129	(1)	108	62	(11)	11	(86)	2
February.....	(44)	(82)	(70)	(21)	189	4	(3)	68	184	(1)	112	85	(22)	22	(76)	5
March.....	(119)	(156)	(107)	(27)	186	2	(5)	11	143	(1)	(15)	69	(50)	3	(111)	11
April.....	(126)	(211)	(122)	(23)	99	1	(8)	(40)	120	(4)	(78)	88	(52)	(9)	(131)	(10)
May.....	(103)	(212)	(97)	-----	117	2	(8)	(67)	171	(4)	(36)	156	(41)	4	(89)	(3)
June.....	(71)	(190)	(56)	30	89	9	(10)	(48)	184	(4)	18	125	(36)	12	(68)	(10)
July.....	(55)	(155)	(40)	54	106	9	(7)	(10)	196	(4)	90	132	(35)	18	(48)	(8)
August.....	(85)	(175)	(50)	64	39	11	(7)	8	160	(4)	106	72	(58)	10	(57)	(16)
September.....	(160)	(239)	(98)	61	(59)	6	(7)	4	60	(4)	72	13	(85)	(4)	(89)	(29)
October.....	(261)	(345)	(173)	50	(217)	(4)	(11)	(51)	(56)	(6)	(39)	(37)	(111)	(33)	(145)	(46)
November.....	(354)	(440)	(233)	22	(311)	(3)	(15)	(122)	(141)	(7)	(153)	(62)	(133)	(65)	(191)	(61)
December.....	(421)	(521)	(282)	(9)	(433)	(8)	(17)	(209)	(220)	(7)	(266)	(82)	(152)	(126)	(262)	(76)
1970																
January.....	(458)	(566)	(318)	(32)	(537)	(11)	(17)	(245)	(291)	(7)	(344)	(44)	(160)	(164)	(306)	(84)
February.....	(522)	(629)	(354)	(54)	(655)	(10)	(19)	(250)	(400)	(8)	(444)	(113)	(178)	(195)	(377)	(108)
March.....	(532)	(643)	(358)	(57)	(679)	(10)	(20)	(299)	(418)	(8)	(458)	(126)	(180)	(199)	(392)	(113)
April.....	(506)	(620)	(349)	(52)	(655)	(9)	(18)	(284)	(388)	(7)	(431)	(91)	(171)	(191)	(375)	(103)

\*Critical to undocking.

Source: Apr. 30, 1968, Computer Workload Forecast.

AUTHOR'S NOTE: Figures shown on this schedule are based on engineering estimates of man-months required to meet production schedules for all ships assigned to the shipyard as of Apr. 30, 1968. Estimated man-months to complete work that may be assigned in subsequent months are not included.

## EXHIBIT IV

## Production Department Work Paper Analysis of Cumulative Shop Over (Under) Loads, All Ships—All Ships

Date	Ship-fitters 911*	Welding 926*	Sheet metal 917	Boiler 941	Pipe- fitters 956	Tool- makers 396	Forge 923	Inside machin- ists 931	Outside ma- rine ma- chinists 938*	Pattern 994	Elec- tricians 951	Elec- tronics 967	Wood- working 964	Paint 971*	Sand- blast 972	Temporary services 999*
1968																
May.....	65	83	178	(40)	(46)	7	18	(87)	(49)	3	(27)	8	4	53	111	111
June.....	251	126	269	(19)	(93)	13	31	(95)	(47)	9	7	17	74	126	134	
July.....	341	196	301	(47)	(104)	18	37	(130)	(83)	11	34	(6)	(7)	87	78	141
August.....	523	362	322	(57)	74	24	47	(103)	34	14	101	(35)	24	155	180	183
September.....	691	498	345	(32)	34	29	60	(51)	199	17	324	37	76	218	264	238
October.....	709	501	307	(43)	25	31	63	(84)	252	17	453	82	85	242	229	257
November.....	674	456	252	(79)	(5)	40	62	(91)	283	16	514	103	80	252	147	259
December.....	603	365	180	(117)	(23)	47	60	(74)	331	14	556	99	69	258	36	249
1969																
January.....	<b>557</b>	<b>296</b>	<b>106</b>	<b>(135)</b>	<b>(76)</b>	<b>51</b>	<b>60</b>	<b>(24)</b>	<b>460</b>	<b>13</b>	<b>664</b>	<b>161</b>	<b>58</b>	<b>269</b>	<b>(50)</b>	<b>251</b>
February.....	513	214	31	(156)	265	55	57	44	644	12	776	246	36	291	(126)	256
March.....	<b>394</b>	<b>58</b>	<b>(71)</b>	<b>(183)</b>	<b>(451)</b>	<b>57</b>	<b>52</b>	<b>55</b>	<b>787</b>	<b>11</b>	<b>761</b>	<b>315</b>	<b>(14)</b>	<b>294</b>	<b>(237)</b>	<b>267</b>
April.....	<b>268</b>	<b>(153)</b>	<b>(193)</b>	<b>(206)</b>	<b>550</b>	<b>58</b>	<b>44</b>	<b>15</b>	<b>907</b>	<b>7</b>	<b>683</b>	<b>403</b>	<b>(66)</b>	<b>285</b>	<b>(368)</b>	<b>257</b>
May.....	165	(365)	(280)	(206)	667	60	36	(52)	1,078	3	647	559	(107)	289	457	254
June.....	94	(555)	(346)	(176)	756	69	26	(100)	1,262	(1)	665	684	(143)	301	525	244
July.....	39	(710)	(386)	(122)	862	78	19	(110)	1,458	(5)	755	816	(178)	319	573	236
August.....	(46)	(885)	(436)	(58)	901	89	12	(102)	1,618	(9)	861	888	(236)	329	630	220
September.....	(206)	(1,124)	(534)	3	842	95	5	(98)	1,678	(13)	933	901	(321)	325	719	191
October.....	(467)	(1,469)	(707)	53	625	91	(6)	(149)	1,622	(19)	894	864	(432)	292	864	145
November.....	(821)	(1,909)	(940)	75	314	88	(21)	(271)	1,481	(26)	741	802	(565)	227	1,055	84
December.....	(1,242)	(2,430)	(1,222)	66	(119)	80	(38)	(480)	1,261	(33)	475	720	(717)	10	1,317	8
1970																
January.....	(1,700)	(2,996)	(1,540)	33	(656)	69	(55)	(725)	970	(40)	131	676	(877)	(63)	1,623	(76)
February.....	(2,222)	(3,625)	(1,894)	(21)	(1,311)	59	(74)	(1,015)	570	(48)	(313)	563	(1,055)	(258)	2,000	(184)
March.....	(2,754)	(4,268)	(2,252)	(78)	(1,990)	49	(94)	(1,314)	152	(56)	(771)	437	(1,235)	(457)	2,392	(297)
April.....	(3,260)	(4,888)	(2,601)	(130)	(2,645)	40	(112)	(1,598)	(232)	(63)	(1,202)	346	(1,406)	(648)	2,767	(400)

\*Critical to undocking.

Source: Apr. 30, 1968, Shop Over (Under) Loads Report.

AUTHOR'S NOTE: This workpaper summarizes the cumulative effect, i.e., the running balance, of the month-to-month allocation of manpower required for each production shop on all ships. Data for each shop was obtained from the Production Department Shop Over (Under) Loads Report.

**EXHIBIT V**

**Detailed Overhead Expense Statement—Report EXCS 7330-12, Feeder #6**

Outside marine machinists    Expense center 938    Quarter 3    Fiscal year 1968

Current quarter				Cost class/function	Fiscal year to date		
Labor	Material	Total	Budget	Code	Labor	Material	Total
:	:	:	:	:	:	:	:

Overhead		Direct (a)				Overhead		Direct	
Hours	Amount	Hours	Amount			Hours	Amount	Hours	Amount
47,188.1	\$255,135.69	186,413.7	\$875,497.97	Regular time (b)		136,093.3	\$710,646.14	518,263.0	\$2,389,881.28
3,555.1	26,553.59	31,761.4	186,962.33	Overtime (c)		11,801.5	84,989.93	92,416.2	523,790.85
200.0	1,000.34	1,540.9	6,054.15	Holiday premium		621.2	2,979.36	4,309.8	16,294.99
50,943.2	282,689.62	219,716.0	1,068,514.45	Subtotal		148,516.0	798,615.43	614,989.0	2,929,967.12
1,634.0	-----	10,174.0	-----	Annual leave taken		11,429.0	-----	55,222.0	-----
1,115.0	-----	11,762.0	-----	Sick leave taken		3,652.0	-----	28,796.0	-----
1,701.6	-----	6,722.4	-----	Holiday leave taken		6,360.8	-----	23,831.2	-----
38.0	-----	1,253.0	-----	All other leave taken		304.0	-----	5,460.0	-----
55,431.8	282,689.62	249,627.4	1,068,514.45	Total available		170,261.8	798,615.43	728,298.2	2,929,967.12

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**AUTHOR'S NOTES:**

- (a) Figures included above for Shop 938, outside marine machinists, are based on employee time cards and payroll records maintained by the Accounting and Disbursement Division, Comptroller Department.
  - (b) Average rate for 8 hours of work at regular pay rates for the quarter ended March 1968, was computed as follows:  $\$875,497.97 \div 186,413.7 \text{ hours} \times 8 \text{ hours per day} = \$37.50$ .
  - (c) Average rate for 8 additional hours of overtime work at overtime pay rates for the quarter ended March 1968, was computed as follows:  $\$186,962.33 \div 31,761.4 \text{ hours} \times 8 \text{ hours per day} = \$47.12$ .
- The overtime differential rate for the quarter ended March 1968, was determined by taking  $\frac{1}{8}$  the man-day rate at overtime pay ( $\frac{1}{8} \times 47.12 = \$15.71$ ).

721417

## **At Your Service, Mr. Congressman!**

By Costandine Machakos

**Congressman John B. Anderson of Illinois provides some interesting answers to questions often asked by GAO staff members.**

In the approximately 50 years that the General Accounting Office has been in existence, one of its principal goals has been to be of service to the Congress. We have strived in the past to meet the requests and needs of the Congress, and we in the GAO have often wondered how the results of our efforts are received. In an attempt to shed some light on questions often raised by GAO staff members and in order to better serve the Congress, we asked Congressman John B. Anderson of Illinois if he would be kind enough to take time from his busy schedule to answer some questions and give us some candid comments.

Congressman John B. Anderson represents the 16th Congressional District from Illinois and received his A.B. and J.D. degrees from the University of Illinois as well as an LL.M. degree from Harvard Law School. He was a member of the U.S. State Department's Diplomatic Service in 1952 and was sent abroad and stationed in West Berlin for 2½ years as an advisor on the staff of the U.S. High Commissioner

for Germany. He was first elected to the Congress on November 8, 1960, and presently serves as the chairman of the Republican Conference. In addition, he is a member of the Rules Committee and the Joint Committee on Atomic Energy.

Mr. Anderson's comments about a number of matters on the minds of GAO staff members follow.

1. *When you were a freshman Congressman, how did you initially become acquainted with the congressional services provided by the GAO?*

My experience stemmed from my committee duties and, while not unique, would not normally be shared by Members who never served on the Committee on Government Operations.

As a freshman Congressman in the 87th Congress, I was elected to the Committee on Government Operations which has a particularly close relationship with the General Accounting Office because the committee is, both by statute and by rules of the House, charged with the responsibility of considering

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**Mr. Machakos is a supervisory auditor in the Boston Regional Office. He is a graduate of Northeastern University where he received his B.S. degree in business administration and has been with the General Accounting Office since 1953.**

"AT YOUR SERVICE, MR. CONGRESSMAN!"

initially all proposed legislation, messages, petitions, memorials, and other matters relating to budget and accounting measures (other than appropriations). As related duties, the committee has also been assigned the responsibility of receiving and examining reports of the Comptroller General of the United States and of submitting such recommendations to the House as it deems necessary or desirable in connection with the subject matter of such reports, and studying the operation of government activities at all levels with a view to determining its economy and efficiency.

During the 87th Congress, the Committee on Government Operations, in discharging its duty under Rule XI, 8(c)(1) of the House, received and examined hundreds of reports of the Comptroller General. Sharing in this duty as well as participation in the investigations and hearings based on some of these reports provided an introduction in depth to the General Accounting Office and its assistance to Congress and its committees. Moreover, the then ranking member of the committee arranged to have a legislative liaison attorney from the General Accounting Office brief the minority members and acquaint them with services available to individual Members of Congress and with publications of the GAO.

2. *What, in your opinion, is the best way of introducing freshmen Congressmen to the services provided by the GAO?*

In my opinion, nothing can take the place of the personal touch in intro-

ducing freshmen Congressmen to the services provided by the GAO. In this connection, I am impressed with the indoctrination provided Members, both new and old, by the legislative liaison attorneys who have visited our offices. I have always found these gentlemen personable and effective. By the same token, I heartily endorse the seminars that have been instituted since my days as a freshman. These seminars sponsored by Members of the House and the Legislative Reference Service together with the American Political Science Association have been very well received. I understand that the Comptroller General has participated in such seminars and has briefed the new Members about the assistance that the General Accounting Office can provide Congress, its committees, and its Members.

Of course, GAO publications, such as the *Annual Report of the Comptroller General*, the annual *Compilation of GAO Findings and Recommendations for Improving Government Operations*, and the monthly *GAO Newsletter*, are also valuable for indoctrination purposes. But I think that, in this case, they are most valuable as a supplement to the personal briefings.

3. *Do you have sufficient time to read the many GAO congressional reports which may cross your desk?*

I wish I did have time to read the hundreds of GAO reports that cross my desk during each Congress. Unfortunately, I can peruse in detail only those of special significance to me. However, I make it a point to be apprised of the subject matter of other

“AT YOUR SERVICE, MR. CONGRESSMAN!”

reports. Staff members and I find that the tear-out digests included in each bound report are most helpful in this regard as is the annual compilation of GAO findings and recommendations.

4. *What is your opinion of these GAO congressional reports regarding usefulness to you, length of report, contents, recommendations, timeliness, etc.?*

Usefulness, length, contents, recommendations, and timeliness of reports are matters of subjective judgment, and what may seem right to one Member may not seem so to another, which could be one of the reasons the work of the General Accounting Office has not always been beyond criticism.

The Committee on Government Operations has conducted formal reviews of the activities of the General Accounting Office from time to time and has made recommendations for increasing the effectiveness of its reporting activities. The quality and effectiveness of the reports to Congress issued by the General Accounting Office have been questioned on each occasion. In reviewing many of these criticisms, I must agree that they were valid when made. However, I am well satisfied in noting that the GAO has always been responsive to changing requirements and to constructive criticism with the result that the style, format, and content of reports to the Congress have been much improved. However, I would prefer less of a time lag between completion of audits and investigations and the issuance of the resultant reports. The effectiveness of a report is closely related to its timeliness.

5. *What suggestions would you make for improving the GAO congressional reports so that they could be of greater use to a Congressman?*

Now that the audit reports to Congress encompass a broader scope than formerly, I have no specific suggestions for improving them. GAO reporting practices have evolved over a period of almost half a century and in their present form meet my needs and those of Congress as I see them. Specific information that I may need as an individual Member can usually be provided upon request. I am sure that as new and expanding Federal programs increase the need of Congress for more information and assistance, improvements will be indicated. For the moment, at least, I am satisfied.

6. *During your congressional career, which GAO congressional report do you consider most noteworthy to you and why?*

I could not begin to narrow down the thousands of reports issued by the Comptroller General to the one most noteworthy to me. I am sure that each is of significance in its own frame of reference. Recent reports that aroused widespread interest and are still fresh in my mind are the 1969 reports on the Economic Opportunity Act programs, and the construction grant program for abating, controlling, and preventing water pollution. I consider these two reports noteworthy because of their comprehensive analysis of complex programs and their objectivity in areas having great potential for controversy, but I would not want to be recorded as

"AT YOUR SERVICE, MR. CONGRESSMAN!"

ranking them more noteworthy than the many others of significance.

*7. In general, have the GAO congressional reports had any influence on you regarding the votes you cast on pending legislation? Can you mention an example?*

There is no question but what GAO congressional reports have been an influence in my evaluation of many legislative proposals. My vote is always the end product of a thought process which takes into account a number of factors including, where appropriate, GAO's impartial appraisals of the financial and management problems that would be involved in the proposed legislation. I would hesitate to assess the impact of any one report on any one vote since it could hardly be sorted out from the cumulative impact of a succession of GAO reports on the congressional mind. Moreover, it may be countered or reinforced by other inputs to the decisionmaking process.

*8. During congressional hearings in which you participated, which was the most noteworthy regarding contributions made by the GAO?*

The contributions made by GAO to congressional hearings are not always apparent even where they are most real. Much of the assistance provided by GAO to a committee entitled thereto is not evident as such in the hearing. One can see the audit reports and the reports on pending legislation and one can hear the testimony of the Comptroller General and other officials of the Office; however, one is not always fully aware of the extent of the GAO staff

assistance furnished the committee, of the informal conferences behind the scenes, and of the special investigations conducted for the committee at the request of the chairman. I would, therefore, no more describe the GAO contribution at a particular hearing as the most noteworthy than I would describe the size and shape of an iceberg having seen only the tip above water.

*9. In congressional hearings, do you feel that the GAO presentations have been informative and useful? If not, how do you feel that the GAO can provide a more useful service in congressional hearings?*

GAO presentations at hearings have impressed me by their persuasiveness and lack of bias. Certainly they have been informative and useful. The Comptroller General and other officials of the Office have been among the more competent and effective witnesses to appear at hearings which I have attended.

*10. While it is difficult to speak for others, would you care to comment regarding the value your fellow Members of Congress place upon the GAO?*

The consensus of Members of Congress appears to be that the agency has done an outstanding job for Congress and for the taxpayers.

*11. Overall, do you believe the present activities and functions of the GAO are useful to the Congress?*

As a source of information, the present activities and functions of the General Accounting Office are not just useful to the Congress, they are indispensable.



12. *How do you envisage the future role of the GAO and its relations with Congress in this fast-changing world?*

Certainly I would expect the agency to continue discharging its duty of reporting fully and fairly to Congress on matters which concern it. Thus, I see the role of the GAO in its relations with Congress remaining constant in mission and purpose while the agency adapts its procedures and reporting practices to meet the increasing congressional need for objective information and assistance. The adaptability of the

agency has been demonstrated recently by the establishment of a systems analysis capability in the GAO reflecting the Comptroller General's awareness of the growing need of Congress for assistance in determining the relative benefits and costs of the proposed establishment or expansion of Federal programs. I am confident that the responsiveness with which the General Accounting Office has in the past met changing requirements and constructive criticism will continue to be the tradition and practice of the agency.

721418

## The Role of Professional Activities in Career Development

By Willaim D. Martin, Jr., and J. Dexter Peach

Two articles in the Summer 1969 *GAO Review* discussed GAO's career development program and the general area of career development and planning. This article provides a more detailed discussion of the importance of professional activities in the career development of GAO staff members.

In 1968, GAO initiated a career development program. Although an integral part of an individual's career development stems from day-to-day job performance and formal training sessions, the program places significant emphasis on those professional activities which transcend day-to-day job performance. In this article, we explain in some depth why, in our opinion, professional activities are important to the career development of GAO staff members. We also describe some of the advantages of the various types of professional activities.

### *The Ever-Increasing Need for New Skills*

Anyone who reads a daily newspaper must be deeply impressed by the complexity of the problems facing today's society. With the increase in world population and the problems related to such an increase, one can expect the problems of the future to be even more complex. One must also be impressed by the speed with which changes occur in today's society. New techniques and ideas spawned by technological advances are soon outstripped by still

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Mr. Martin is an assistant director in the Civil Division. He joined the General Accounting Office in 1959 after receiving a bachelor of business administration degree from Wake Forest College. He has served as a professional development counselor and in 1968 received the General Accounting Office's Career Development Award.

Mr. Peach is a supervisory auditor in the Civil Division. He joined the General Accounting Office in 1960 after receiving a bachelor of science degree from the University of South Carolina. He is a professional development counselor and in 1969 received the General Accounting Office's Career Development Award.

Both are certified public accountants in the State of Virginia, belong to the American Institute of Certified Public Accountants and the National Association of Accountants, and are currently enrolled in advanced degree programs at The George Washington University.

newer techniques and ideas. Increasingly, there is a tendency for routine work to be mechanized. This tendency has manifested itself in the increasing numbers of jobs requiring employees with higher skill and knowledge levels.

Peter Drucker—the noted modern management theorist—has taken the position in his recent book “The Age of Discontinuity: Guidelines to Our Changing Society” that certain changes already visible in today’s society represent only “the tip of the iceberg” of change which will materialize in the years to come. Drucker not only foresees significant changes in technology, economic theory, and the role of social and political organizations, but also identifies the key discontinuity of today’s society as the role which knowledge has assumed as “the central capital, the cost center, and the crucial resource of the economy.” Drucker assumes that, in tomorrow’s society, the extent of an individual’s knowledge will determine his position and power. He theorizes also that the knowledgeable worker of tomorrow, to produce effectively, must be given challenging work and allowed to perform as a professional.

The relevancy of Drucker’s comments to career development in GAO is twofold.

First, technical or “knowledge” obsolescence is a problem GAO staff members will continually have to face as they attempt to conduct audits of increasingly complex Government programs. Most GAO staff members, by the nature of their work, are generalists instead of specialists and therefore have need for at least a minimum skill

level in numerous areas, many of them technical. Moreover, as changes occur, skill levels must be kept up-to-date; otherwise, the utility of the skill declines significantly or it becomes useless.

Second, performance as a professional carries a somewhat broader connotation than just everyday on-the-job performance. The true professional will make the necessary effort to ward off technical obsolescence, acquire needed additional skills, and give something of himself to improve his profession.

In our view, the key emphasis of GAO’s career development program is to increase staff members’ awareness of their professional responsibilities and encourage them to avoid becoming stagnant. Obviously, the types of professional activities which fill one person’s needs may be of little benefit to another. Under the program, each staff member must have a part in identifying, from among the opportunities available, those activities which provide the greatest benefits to him.

### ***Types of Professional Activities***

Just what opportunities are available? The principal ones are well known and include: (1) becoming a certified public accountant (CPA), (2) taking advantage of opportunities for continuing education and possibly working for an advanced degree, (3) participating actively in one or more professional organizations, and (4) writing articles on subjects of interest for professional publication or performing other similar research activities. Let’s consider just how each of

## PROFESSIONAL ACTIVITIES

these opportunities relate to the career development of GAO staff members.

### **Recognition as a Certified Public Accountant**

Although GAO has substantially broadened its recruiting base in recent years, about one-half of the new employees are accountants. For those persons with an accounting background, recognition as a certified public accountant still is considered the hallmark of professional attainment.

GAO has always encouraged staff members interested in obtaining a CPA certificate, chiefly through the sponsorship of review courses in Washington and certain regional offices. At June 30, 1970, there were 486 GAO staff members registered as certified public accountants. Substantial increases in this number can be anticipated when one considers that 83 GAO staff members have successfully passed the competitive examination and are fulfilling experience requirements prior to being awarded their certificates. Also, in the Washington, D.C., area alone, 17 of the 70 persons attending GAO's review course either passed all parts of the May 1970 examination or obtained the necessary parts to complete the examination, and the vast majority of the others passed two or more parts.

Any discussion of the merits of becoming a certified public accountant cannot be dismissed without briefly reciting the significant changes taking place in the accounting profession in recent years. Increased interest has been expressed in upgrading the educational qualifications of those persons allowed to take the examination and in provid-

ing some means of assurance that recognized certified public accountants keep current with changes in the accounting profession and new developments in related disciplines.

Specific examples of the significant developments occurring in the accounting profession in the past few years include:

- The publishing of a book in March 1969 entitled "Horizons for a Profession: The Common Body of Knowledge for Certified Public Accountants." This book contains a number of recommendations concerning the types of knowledge which certified public accountants should have and the changes which must be made to broaden the educational background of those entering the accounting profession. The final effects of this book are yet to be determined; nevertheless, it has become the catalyst for increased discussion about changes in accounting education.
- Subsequent to the publication of "Horizons," the appointment by the American Institute of Certified Public Accountants of a committee on education and experience requirements for certified public accountants. The December 1968 issue of the *Journal of Accountancy* included a paper prepared by this committee on "Academic Preparation for Professional Accounting Careers" which contained recommendations on educational requirements which certified public accountants should be required to meet.
- Increased expression of the view

that college accounting programs should be extended to 5 years. This thinking is related to the recommended changes in educational requirements in that 4 years will no longer be sufficient time for the accountant to obtain all necessary training.

—Action by the Iowa State Board of Accounting to require all certified public accountants wishing to register to practice in 1972 to furnish evidence of participation in continuing education for a minimum of 15 days within the preceding 3-year period. This action was consistent with a 1967 proposal by the President of the American Institute of Certified Public Accountants that the accounting profession undertake a program of “compulsory continuing education.”

The recent developments in the accounting profession were spawned by the ever-increasing awareness that the accountant of tomorrow will require knowledge in many disciplines other than accounting to effectively perform his job. Further, those already certified cannot be smug in their professional attainment but must continually reeducate themselves, to effectively cope with our changing society. Applicability of this type of thinking, of course, cannot be restricted to the accounting profession but can be equally applied to the need for continuing education by persons in disciplines other than accounting.

#### **Continuing Education**

The term “continuing education” has won increased acceptance in recent

years and is one that professional people can expect to hear for a long time. The action by the Iowa State Board of Accounting may be only a forerunner of actions requiring compulsory continuing education as a prerequisite for continued professional recognition—not only in accounting but in other professions.

The emphasis on continuing education has already had a significant impact on GAO. Since passage of the Government Employees Training Act authorizing Federal agencies to reimburse employees for the cost of outside training courses which are job related, the number of GAO staff members taking graduate-level training has consistently increased. In fiscal year 1970, there were 414 GAO staff members who received financial assistance for job-related courses.

Although the individual taking a course may be enrolled in an advanced degree program, the key to obtaining Office participation in the cost of the course is that it be job related in a way that will improve the individual’s ability to perform his job.

Because GAO staff members have varied educational backgrounds and perform work on a broad variety of assignments, the areas in which further training could be beneficial are diverse. Some of the more significant areas are discussed below.

1. *Accounting*—Listing this first may seem unusual, but consider the number of new GAO staff members who do not have accounting degrees. Although they are not expected to become deeply involved in technical accounting

work, they can expect exposure to situations where knowledge of accounting would be helpful. For those who aspire to higher managerial positions, a knowledge of accounting will be an essential part of the broad knowledge base enabling them to perform their jobs more effectively.

2. *Advanced Management and Behavioral Sciences*—Many GAO employees—in particular, those with an accounting degree—have an educational background heavy in technical courses with little emphasis in the management and behavioral science area. Yet, it seems obvious that a career objective of these staff members is to reach a managerial position requiring administrative as well as technical competence. A better understanding of modern management techniques and current theories of motivation as set forth by leading behavioral scientists would certainly appear to be a necessity for the GAO employee aspiring to a supervisory or managerial position.
3. *Analytic Techniques* — Government agencies have placed more and more reliance in recent years on the use of various types of analytic techniques in providing management with information necessary for decisionmaking. Usually extensive use is made of higher mathematics in the attempt to quantify information. If GAO is to continue to evaluate the effectiveness of Government programs, its employees will re-

quire a better understanding of higher mathematics and systems analysis techniques and their relationship to the planning-programming-budgeting system now in use in Government agencies. Without these types of skills, GAO cannot expect to effectively review agency programs and continue to be responsive to the needs of the Congress.

4. *Automatic Data Processing*—All of us are aware of the importance of computers in today's world and of their still untapped potential. GAO has made available to its staff members a number of internal training courses which provide a basic understanding of automatic data processing. In view of the importance of a better understanding of automatic data processing to future GAO audit efforts, GAO staff members should take the opportunity to build on this basic understanding by obtaining additional training.
5. *Miscellaneous and unknown*—This item is listed to close the circle of continuing education opportunities by providing for (1) the myriad of miscellaneous other areas in which a GAO staff member could seek self-improvement (such as the ability to write and speak effectively) and (2) those as yet unknown developments which will take place in the future and with which GAO employees should become familiar.

The opportunities for continuing education are many. In varying degrees, all of us have a need to renew our-

selves by taking advantage of such opportunities. Each individual should, in light of his background and interest, determine the opportunities which would be most beneficial to his GAO career and pursue them.

#### **Professional Organizations**

Membership and active participation in professional organizations offer a number of distinct advantages and opportunities.

First is the opportunity to meet and associate with individuals from other Government agencies, private industry, and public accounting, who bring with them different experiences and ideas. Because members of professional organizations have a common profession but come from diverse backgrounds within that profession, the program and publications of the organization must be so constructed as to have broad appeal to all elements within the organization. For the GAO staff member, the result is that membership in a professional organization can keep him from living a sheltered existence and can expose him to new ideas and opinions to which he otherwise might not be exposed.

Moreover, many professional organizations are in the forefront of developing continuing education courses for their members and others in the profession. Many GAO staff members are members of the American Institute of Certified Public Accountants, the National Association of Accountants, and the Federal Government Accountants Association and are well aware of the extensive efforts of these organizations in the area of continuing education.

Perhaps the most important of the

advantages of a professional organization is that it offers one of the best long term opportunities for continuing professional development throughout one's career. Staff members embarking on their careers should consider that, as the years go by, continued membership and active participation in a professional organization will be one of the best means of keeping current with the rapid changes taking place in their chosen profession.

Lastly, the goal of any professional organization is to foster improvement of the profession from within, by providing a forum for discussion of new ideas and concepts. As such, the professional organization offers the professional the unique opportunity of returning something of himself to improve his profession. In our opinion, one of the significant characteristics of the true professional is that he is interested not only in improving himself, but also in improving his profession.

The professional organizations open to GAO employees with both accounting and other backgrounds are many. The choice of organizations should be based on the individual staff member's interest. In any respect, the key is not just choice of an organization but also active participation in the organization's activities. Little evidence gathering is required to postulate that you will only derive from membership in a professional organization exactly what you put into it.

#### **Professional Writing and Research Activities**

Detailed discussion of this type of professional activity is not really necessary. It simply is the opportunity to

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take an area of interest, research it, and sort of "do your own thing." After all, that's what the authors are doing in this article, expressing their personal views about the role professional activities can play in career development in GAO.

For GAO employees or for any individual, this opportunity to express personal views is important, since reports worked on as a member of an organization must of necessity present a collective organizational viewpoint rather than an individual viewpoint. In addition to the personal stimulation of the individual, the sharing of experiences, exchanging of viewpoints, and expounding of new ideas in professional articles provide the individual with a further opportunity to contribute to the health and growth of his chosen profession.

### *Concluding Thoughts*

Opportunities for career development through participation in professional activities do not begin and end with those discussed in this article. The important fact is that the opportunities are many and varied. Within the broad framework of available opportunities,

each individual should participate in selecting and pursuing those which are best suited to his own career objectives and goals.

John Gardner in his excellent book "Self-Renewal" discusses the various attributes of the process of renewal and its importance in today's world to the renewal of the individual, the organization, and society in general. Gardner uses the term "self-renewing man" and describes him as "one for whom the development of his own potentialities and the process of self-discovery never end."

Although Gardner's definition of the "self-renewing man" can be related to all aspects of life, it has particular applicability to those working in a professional environment. The opportunities available for participation in professional activities offer us a means for continuing to renew both ourselves and our profession. The advantages of such participation perhaps are really not advantages at all but are essential elements of the continued professional growth necessary for the individual to maintain his professional stature in the face of today's dynamic society.



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# GAO Interest and Involvement in Defense Manpower Problems

By Charles M. Bailey

The following paper is based on an address by the author before the Civilian Manpower Management Institute at the Naval Training Center, Orlando, Fla., April 22, 1970. It discusses the interest of the General Accounting Office in manpower problems in the Department of Defense, some of the observations made during audit work in this area, and the direction of present and future efforts which are intended to contribute toward improved organization and manpower usage.

Sometimes the General Accounting Office is challenged as to its competence in a given area. At other times it is assumed to be the ultimate expert in almost everything concerning the use of the taxpayer's dollar. We are not easily discouraged when someone suggests that we're in over our heads, and although we don't mind admitting on occasions that we have developed some exceptional talents, we believe that the truth lies somewhere between the two extremes. In the case of manpower management, we frankly admit to being in the learning curve, but we believe we have lots of company.

Much of our recent work has indicated to us that managers everywhere

are developing a new or increased awareness of the nature of human effort as a critical resource. As one Defense official recently observed, so much attention has been given to money as a resource that the term "financial management" and its concepts are well defined and widely accepted, while relatively little comparable attention has been given to manpower *as a resource*. We agree with him that the time is ripe to build some "manpower management" concepts.

This is not meant to imply that nothing is now being done. We have recently learned of many projects which have been undertaken that appear to be solid groundwork for a new direc-

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Mr. Bailey, as the director, Defense Division, is responsible for overall direction of GAO work in the Department of Defense. He previously served as director of the European Branch and as assistant director, associate director, and deputy director of the Defense Division. Before being assigned to the Washington office in 1952 as assistant director of audits in charge of field operations, he was chief auditor for GAO's Western Zone, which at that time included the 11 Western States, and the territories of Alaska and Hawaii. Mr. Bailey has been with the General Accounting Office since 1935.

tion. There are many indications that we are on the verge of important breakthroughs in concepts and techniques for manpower management.

### ***Manpower As a Resource***

Let us look at how much of this manpower *resource* is utilized in the defense effort.

Information is not readily available to sum up precisely the total manpower requirements for defense programs. However, in 1965 a congressional subcommittee estimated that the \$6.6 billion cost of direct-hire defense civil service employees for that fiscal year would be roughly matched by costs for active duty military members used in supporting roles and the services of contractor employees, amounting to \$1.5 billion and \$4.5 billion, respectively. In all, they estimated the total cost of defense labor to be about \$12.8 billion at that time. This figure does not include any costs of military personnel in purely military assignments.

Comparable direct cost figures for the 1971 budget are estimated to be \$11.4 billion for direct-hire services and \$2.3 billion for military personnel in support work. Indirect costs—that is, through contract—amounted to about \$7.7 billion in awards of support- and service-type contracts for fiscal year 1969. In summary then, the value of manpower utilized in the defense effort—exclusive of military operational units—adds up to somewhere around \$22 billion at present levels. That represents a considerable resource.

### ***Basic Sources of Manpower***

The basic sources of manpower available to managers in defense pro-

grams are directly hired civilian employees, military personnel used (in other than their basic military duties), and contractors used to accomplish tasks with their own manpower resources. The term “basic sources” is used to distinguish between such supplementary sources of effort as overtime and the services of consultants, although overtime on occasions has been a significant source of manpower and is therefore of concern to manpower managers.

These sources are also summarized in the alternatives identified by a defense manpower official in discussing one of our assignments with us not long ago. He pointed out that there are just six alternatives available to a manager when he has a job to do:

1. He can use civilian personnel.
2. He can use military personnel.
3. He can go to contractors.
4. He can use available personnel on overtime.
5. He can postpone the work.
6. He can elect not to perform the work at all.

That pretty well sums it up—somebody has to furnish the manpower or the job simply does not get done.

### ***GAO Review of Resources***

The selection of alternatives by the military departments has been the subject of several reviews by GAO, largely associated with congressional interest concerning in-house versus contract sources of labor. Our principal interest was in cost studies underlying the election between in-house staffing and the use of contractors; but we were also concerned with questions of legality of

contract structure. In the latter area, we regard the Civil Service Commission as having primary jurisdiction because it is directly concerned with Federal personnel laws.

#### Civil Service Commission Rules

As a result of several situations questioned during the midsixties, the Commission has established a body of principles for determining when contracts for services are in conflict with the laws governing Federal service. In essence the Commission ruled that any situation is illegal wherein the relationship between the contracting agency and the contractor's personnel is tantamount to that of employer-employee. This was a needed clarification—or perhaps, more accurately, a restatement—of guidelines, and the Commission rulings have enabled agencies to restructure questionable contracts involving personal services to task-type contracts.

Although we were involved in some of these cases and our own General Counsel concurred in the basic opinion expounded by the Civil Service Commission, our principal consideration of contracting for services has been in comparative costs and in the factors, such as personnel limitations (ceilings), which have contributed to reliance on contractors.

#### Contract Versus In-House Operations

There has been a tendency in recent years, with the exception of fiscal year 1969, to increase the reliance on contractors because of the personnel limitations intended to control the number of Federal employees. In addition, the guidelines governing contract versus in-

house decisions provided by the Bureau of the Budget in Circular No. A-76 favor the use of contracts, or at least they have been construed to have that effect.

In brief, A-76 manifests the executive branch philosophy of relying on the private sector to satisfy the Government's "commercial and industrial" needs. We found, however, that A-76 was being applied in many cases to activities which were clearly not industrial or commercial in nature, the result being that comparative cost studies were not required. We also found cases in which cost comparisons had been made but contracts had been awarded or continued in spite of showings that in-house operations would be more economical.

In general, our A-76 studies showed that in-house operations frequently were more economical than contracts because of the need in contracts to provide for contractors' overhead and profit or fees. Contracting might be more economical when contractors furnish substantial amounts of facilities or equipment, but most of the activities in question have been performed within Government-owned facilities, the principal contractor contribution being manpower and supervision.

As an example of potential savings available by terminating the contract and converting the work to in-house operation, our cost studies<sup>1</sup> of a research activity indicated minimum annual savings of about \$475,000 in a total contract cost of a little over \$5 mil-

<sup>1</sup> Report on Savings Available by Using Government Rather Than Contractor Employees for Certain Services—Department of the Air Force (B-158685, July 22, 1968).

lion. This estimate is based on maximum redistribution of the contractor's overhead to other contracts, but the potential savings in this case could have been greater—as much as a million dollars—if not all the overhead were absorbed by the Government in other contracts. This particular organization was created with contractor support but with the intention of early conversion to in-house operation. Several years later when we made our review, no cost studies had been made, and it appeared to us that the principal reason for continuance of contractor support was inability to obtain spaces for civil service employees.

In the course of our contract versus in-house studies, we concluded that there was a general lack of uniformity in the cost factors to be considered as well as in the manner of application. Our work precipitated a great deal of study and discussion on costs by our Office, industry representatives, congressional committees, the Department of Defense, and the military departments. Although there is no final consensus, especially on the part of industry representatives, we believe that our efforts resulted in better defined guidelines generally acceptable to all other parties.

To sum up our views on selection between in-house and contract alternatives, it is our position that, in those cases where continuing services are not purely commercial or industrial in nature and the contractor would assume no significant risk, the decision should be based on cost unless there are compelling reasons to do otherwise. As to the matter of ceilings, it is our opinion

that the imposition of ceilings defeats its basic objective when the needed work is done through contract at much higher cost. In other words, the Government still buys the required resource—manpower—but in a more costly way.

#### **Other Management Considerations**

Aside from the question of selecting between in-house and contract performance, our attention has recently been directed to manpower management procedures applicable to certain operations for which decisions have been made to go the contract route. In other words, we are concerned with controls used through or by the contractor to insure economical and effective use of his personnel once he gets the job. The activities at which we are looking are the operating or support service contracts at major test ranges. In one case, the contractor's services have cost more than \$1.3 billion over the past 15 years, and in recent years have involved 10,000 employees and an annual payroll of about \$100 million.

We began to look into this situation because apparently no procedure had been provided to develop criteria for manpower requirements for the services required, although the contract arrangements consisted essentially of reimbursements for salaries, wages, and related costs for the contractor employes. Successive annual contracts or amendments are evidently negotiated on the basis of adjustments to the previous situation, rather than a zero baseline effort, for each contract period to allow for manning requirements based on the services to be performed.

Our review indicates that the agency has tended to accept the contractor

manning levels as a proper baseline. It appears to us that an effort of this size merits some procedure to assure the agency that the contractor manpower effort is fully directed to agency needs and that only minimum essential man-hours are paid for by the Government.

### ***Manpower as a Producer***

So far we've talked about manpower in the collective sense, which adds up to some pretty big dollar values. In a very real sense, however, manpower—as well as manpower management—ultimately breaks down to the individual performing the work itself: a man doing *his* job. At this level, manpower management takes on some different aspects. The essential concern is getting the right man in the right job at the right time. Also of concern is productivity, which is necessarily measured on an individual basis. In putting man-by-man effort together toward total program effort, we are concerned with organization.

Having the right man in the right job at the right time involves recruitment, placement, training, and developmental or career programs aimed at the future. Having the right man in the right place at the right time also calls for an acceptable determination of requirements.

### **GAO Review of Manpower Usage**

Some of these areas we have been concerned with include recruiting, training, staffing standards, productivity, and organization. We are also just beginning to look into career development in its broad sense, because our previous work has touched only on the fringes in dealing with the various ele-

ments, such as training, assignment, and rotation.

One of our inquiries in 1969 was concerned with the attention given to hard-to-fill categories of skills in short supply in comparison with the routine handling of recruiting and utilization of civilian manpower skills. In this instance we were concerned with clerical and professional as well as the blue-collar skills. We found that management in this area was largely decentralized and that procedures differed widely, even within installations. At one of the installations we visited, we found that there were no formal procedures for exchange of information on critical shortages and that not even informally had all vacancies been reported. We recommended to the Secretary of Defense<sup>2</sup> that some uniform guidelines be provided for identifying critical shortages and that reporting procedures be established to insure centralized departmental attention to these problems.

In September 1969 we reported to the Secretary of Defense<sup>3</sup> on a review of staffing standards and criteria. This review was primarily concerned with how the military services establish the number of personnel required for maintaining facilities and operating utilities. We also tested productivity and work-measurement procedures used to plan and evaluate work projects. We visited one installation in each of the military services.

At one establishment we found that guides had not been established to determine manpower requirements for craftsmen but that staffing criteria had

<sup>2</sup> B-146824 (letter), dated June 26, 1969.

<sup>3</sup> B-133370 (letter), dated Sept. 4, 1969.

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been developed for related management, supervisory, and administrative positions. Provision had been made for manpower validation studies, but the responsible area headquarters organization had not made such a study. Although we were unable to evaluate the initially established manpower ceilings, we noted that subsequent adjustments generally related to personnel ceilings or fund availability rather than to manpower requirements.

We also made work-sampling observations—a practice not used by local management—in order to evaluate productivity. Workers and craftsmen at that location were productive 61 percent of the time, indirectly productive 26 percent of the time, and nonproductive 13 percent of the time. We concluded that several areas needed management attention and that such work-sampling observations would be a useful device for identifying and directing such management attention.

In another study, reported to the Congress in December 1969,<sup>4</sup> we found that the usefulness of performance standards at selected installations was impaired by shortages in the staffing and the incomplete training of specialists. We also found that an unsuitable plan of standards development had resulted in inefficient utilization of personnel on a production line because factors used in developing standards were not compatible with actual functions and variances for individual jobs had not been developed inasmuch as

composite percentages had been computed covering several jobs. The key difficulty in this case was that the first and third operating sections exceeded the operational capability of the second, which controlled the entire output. We identified about 60 employees in excess of actual requirements. Subsequently 13 positions were eliminated, leaving an excess of over 40 employees who received total pay of about \$280,000 a year. We recommended that a review be made of this operation to redefine the various jobs, establish new standards, and balance the workload between sections and operators and that the staffing be adjusted accordingly.

Concerning the training of civilian employees, we recently completed a review with the objective of evaluating the administration and operation of overall training at the installation level, a major portion of our effort being devoted to in-house or internal training. Statistics reported to the Civil Service Commission indicate that, although approximately 80 percent of all employees trained are instructed within their own agencies, little has been done to identify the cost of such training. A congressional subcommittee report<sup>5</sup> has emphasized that Federal managers need such cost data in order to make sound decisions on the various training programs.

### *Manpower Management*

Our work in the manpower area to date has demonstrated the significance of manpower factors in program management. We are convinced that there is

<sup>4</sup> Need to Improve Performance Standards for More Efficient Use of Civilian Production Personnel in the Department of Defense (B-167982, Dec. 29, 1969).

<sup>5</sup> H.R. 329, dated June 1, 1967.

a constant need for making manpower planning an essential part of an agency's or an activity's overall mission planning.

Some factors affecting manpower are within the controlling authority of operational managers, while others are controlled from the outside or from higher levels. One of the most obvious of these controls beyond the discretion of managers is the ultimate limit on resources which can be made available for the defense effort. No doubt the most familiar of such limits is the personnel ceiling limitation or, more recently, the hiring limitation imposed by the Revenue and Expenditure Control Act of 1968. There is also the overall limit on money which comes down to the manager through budgetary processes.

There is an even broader limitation of the availability of skills within our total national manpower resources. This limitation produces the competition for services in which compensation, mobility, fringe benefits, and job challenge become integral factors.

#### Personnel Ceilings

Our initial work was largely concerned with ceilings as a factor in the contract or in-house alternative which gave rise to the A-76 studies previously mentioned. This work indicated that we should look deeper into how ceilings are used and should consider their effectiveness as a manpower management technique. As a result of our review covering 12 Army, Navy, and Air Force activities,<sup>6</sup> we concluded that civilian

personnel ceiling management lacked flexibility and that procedures available to activity managers for requesting needed personnel spaces were lengthy, cumbersome, and often unproductive. This situation, complicated by recruiting difficulties, had resulted in uneconomical or otherwise undesirable contracting for services.

We undertook a further study of ceiling controls while the restrictions under section 201 of the Revenue and Expenditure Control Act of 1968 were in effect. These restrictions became effective at the beginning of fiscal year 1969 and were repealed shortly after the end of the fiscal year. More precisely, the restrictions should be referred to as "hiring limitations" rather than personnel ceilings. The principal difference was in the manner of administration, but as a practical matter the result was much the same as far as the operational manager was concerned.

We subsequently updated our work to relate it to the procedures for administering personnel ceilings, instituted by the executive department following repeal of section 201. We found that fund limitations were currently a more controlling factor over employment than were the personnel ceilings. We consider this a demonstration that ceilings are unnecessary when effective overall program controls are established.

This is consistent with our general position that ceilings are a somewhat artificial and "last resort" means of controlling program effort. We are of the opinion that in an optimum situation the manager at the operating level

<sup>6</sup> Management of Civilian Hiring Limitations and Recruiting by the Department of Defense is Costly (B-165959, Dec. 30, 1969).

should be authorized to carry out a well-defined program without restraints as to the nature or source of manpower resources he applies, and we have made proposals along these lines.

### **Recruiting**

The recruiting problems we noted in connection with our earlier ceilings review were partly within and partly beyond the control of activity managers. We noted ineffective recruiting practices including failure to advertise in trade and professional journals, inability to make firm commitments to prospective employees because of hiring limits or ceilings, delays in selecting candidates and in contacting them, uncompetitive salaries offered, and failure to offer desirable tours of duty following completion of duty in remote areas—practices which are followed by Department of Defense contractors and other Government agencies. The Office of the Secretary of Defense, in response to our proposal that recruiting efforts be intensified, advised us of several actions being taken to strengthen recruiting practices and to increase their effectiveness.

### **Other Areas**

An example of a somewhat unlikely area that we have looked into involves labor relations and collective bargaining processes.

About 2 years ago we made a preliminary survey of the employee-management cooperation program authorized by Executive order. Although we believed that most of the program objectives had been substantially met,

one significant observation related to the varying degrees of recognition given to employee organizations, the tendency being to more readily give recognition to the larger units. We also noted that, in some instances, a constructive relationship was apparently lacking between employee organizations and installation officials, largely because there appeared to be a mutually accepted general attitude that disagreement was inevitable and total agreement could never be achieved. This atmosphere would frustrate the relationship needed to attain the basic purposes of the Executive order, and we suggested that emphasis be given to carrying out dealings between parties in an atmosphere of full cooperation and mutual respect.

These two issues touch directly on morale, but they indirectly involve costs, since they affect the time required for negotiations and resolving grievances as well as the employee effectiveness related to morale.

### ***The Challenge to Management***

In spite of the restraints which may affect the utilization of civilian employees, we believe that the greatest incentive can be achieved through the management of the work itself. This, we believe, is the greatest challenge, because the Government pay system often doesn't provide the incentive found in the private sector. We would recommend a continuous, good selling job on the goals of the service missions and the importance of the individual contribution. In a phrase, this might be



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boiled down to "mission orientation." We would also recommend down-to-earth communication by management, together with its sensitivity to the appropriate times when an employee needs to be kicked, patted, or left alone.

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## Women—An Emerging Presence in GAO

By Eve E. Sheppard

**This article discusses the development of women in GAO in technical and professional positions and compares their status with women in other Government agencies and in industry.**

### *An Appraisal*

Since the reign of Queen Victoria, life styles—particularly in the United States—have gone through dramatic changes because of various scientific, economic, technical, and educational developments. These life styles are now beset by social upheavals which will cause further changes. However swift and compelling the modes of living have altered since the romantic and nostalgic Victorian age, the family of man, by and large, still places dolls in the arms of girl children while expecting boy children to put together mechanical toys or to play at strenuous athletic games. The aptitudes of either child might evolve to adult preoccupation alien to child rearing, skyscraper building, or athletics.

Dr. Rebecca Sparling of General Dynamics explains a very interesting observation about herself: "There is nothing inherently feminine about mixing a given batch of materials, expos-

ing it to a definite temperature for a definite time and producing a cake. There is nothing inherently masculine in mixing a batch of materials, exposing it to a definite temperature for a given time and producing iron castings." She has done both and has found them satisfying activities.

### *Changing Times Set the Trend*

Definite ideas of what is woman's work and what is man's work remain as a barrier to the full equal opportunity of women. Yet crises occur and impel women forward. During World War II, because a large segment of qualified men were in military service, the efficient operation of Government business was imperiled. Training programs were initiated in both business and Government segments of our economy. Women were invited, even urged, to enter the labor force.

During World War II, the General Accounting Office was hard pressed to

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**Mrs. Sheppard is a transportation specialist in the Transportation Division and has been with the General Accounting Office in various capacities since 1945. Presently Mrs. Sheppard assists the Office of the General Counsel and the Department of Justice in handling legal matters involving Government transportation.**

accomplish its increased workload. Crash recruiting and training programs were developed to qualify persons for the various audit, claims settlement, and reconciliation functions of the Office. As was the case with industry and other Government agencies, these programs resulted in offers to women of positions rarely made available to them. During this period, the writer was introduced to the audit of transportation vouchers, an audit area previously an almost exclusively masculine preserve.

The observation made by Dr. Sparling of what is woman's work relates significantly to those women who entered the transportation classes in the early 1940's. That training program involved an 8-hour day, 6 days a week, and continued for 2 months. Such long hours were necessary because the transportation industry probably has the most complex pricing structure of any service in the American economy. The audit of transportation vouchers requires a specialized technique of applying the proper rate to each segment of the spectrum of commodities shipped by and for the Government. The rates are found in an expansive library of territorial tariffs. The tariffs read like a foreign language to the uninitiated. During the period when the Government received a 50-percent rebate from certain railroads because the route used was over tracks laid on Government grants of land, the audit was complicated by the necessity of determining the division of revenue earned by each carrier. Also mandatory to the audit of transportation vouchers is knowledge concerning the decisions of the Comptroller General, the courts, and the appropriate regulatory agen-

cies. Universities had yet to offer a B.S. in transportation, so the training program became, like the law office of yore, the laboratory for the future profession and helped to qualify persons as transportation technicians.

Just as there is a specialized language for accounting, engineering, mathematics, and medicine, transportation also has a language. The three women who were graduated from the first transportation class in 1943 were among the first of many who followed to learn that language. By 1945, the old, male-oriented order was changing—grumbling and storming a bit in the process. Transportation audits may have been but one of the areas to experience these assimilation problems.

### *Chit-Chat*

In retrospect there is humor. The spittoons furnished by the Government vied with waste baskets for space in the cramped offices, and they were interchangeably used by some of the railroad men. If a spittoon was not handy, spittle sailed into the nearest waste basket. Those nearby hoped the colorful flutter of bubbles would hit its mark. The vocabularies of these old-timers were abrasive. While dainty feminine ears may have heard, they pretended, for the most part, deafness. Importantly, women were proving their capabilities. Gradually, though grudgingly, the new breed was tolerated. In time, young, clean-cut men returned from military service and from specialized training. A definite aura of change took place in the Transportation Division. Spittoons gave way to cigarette trays or cigar receptacles. Transportation was becoming more sophisticated. New

types of equipment added to the rolling stock were dynamic innovations for the transportation of the future. The audit of transportation vouchers, although no longer concerned with land grant division of revenue, developed other complex attributes.

Women employees matured and many were among those who attended the off-campus courses given after hours at GAO in order to enhance their knowledge and appreciation of their careers in transportation. They found satisfaction in their employment. They had helped to bear the heavy flow of work during the World War II years. Many were earning more than would have been possible without their training. Although they were established in their positions, promotions for them were slow.

### **Progress**

By 1950, however, a number of women had been recognized as rate experts and had been assigned to positions of increasing responsibility. Notably, among them was Mrs. Margaret Quinn. Her varied career has led her to a position in which she works with the Office of the General Counsel and the Department of Justice in the resolution of transportation legal matters.

Women have achieved status in the Transportation Division in areas other than the audit techniques. For instance, Mrs. Avis Bour is chief of the Fiscal Management Branch and is charged with keeping one-third of the Transportation personnel functioning. The Fiscal Management Branch is entrusted with keeping carrier accounts' records

and claims in a fluid state of accessibility. After the audit is performed and overcharges are recorded, a system of accounts pinpoints the carrier's overcharges and processes the collection of these overcharges by deduction action or by routing the account to the legal staff for special or legal handling. A staff of 250, most of whom are women, process the workload. Mrs. Bour's job, which is one of high-level management, requires her to confer with representatives and officers of foreign and domestic freight and passenger carriers and also with officials of other Government agencies where matters of records, management, and accounting are concerned. She is principal advisor to the director, Transportation Division, on administrative policies relating to carrier billing practices. Presently the highest rated woman in the Transportation Division, she holds a GS-13 classification.

At this writing, Transportation Division has nine women in the GS-12 level, whereas a little more than 2 years ago, Miss Eleanor Mowbray, then a supervisor, was the only woman in this grade. Assigned to the Transportation Division professional staff late in 1969, she became its first ranking woman.

Miss Jerry Rubar, a former transportation specialist whose degrees in English and political science qualified her to teach high school subjects, decided in the 1950's to get another degree. Encouraged by her associates, she began to study law, a field in which she was intensely interested. Today she is a juris doctor. She was the first woman in the General Accounting Office to obtain a GS-14 grade. That grade remains the highest of achievement for any

woman in GAO. Four women are GS-14s today—Miss M. Tais Spencer, also a former transportation specialist; Mrs. Rita D. Hornyack; and Mrs. Margaret L. Macfarlane. All are attorneys in the Office of the General Counsel.

**The Evidence Shows**

Meanwhile, what has been happening to women in GAO as a whole is re-

flected in a survey of the status of women in grade 7 and above. The following chart shows figures for full-time, white-collar employment as of October 31, 1968, versus those figures for all agencies. The figures are from Pamphlet SM 62-04, June 1969, entitled "Study of Employment of Women in Federal Government, 1968" prepared by the U.S. Civil Service Commission. The worldwide, full-time white-col-

<i>All agencies</i>				<i>General Accounting Office</i>			
<i>Grade</i>	<i>Total employed</i>	<i>Women</i>	<i>Percent women</i>	<i>Grade</i>	<i>Total employed</i>	<i>Women</i>	<i>Percent women</i>
7.....	154,379	54,866	35.5	7.....	404	123	30.4
8.....	47,053	9,781	20.8	8.....	117	52	44.4
9.....	168,818	39,665	23.5	9.....	551	147	26.7
10.....	26,779	3,295	12.3	10.....	12	3	25.0
11.....	149,390	16,807	11.3	11.....	547	54	9.9
12.....	126,334	8,451	6.7	12.....	606	12	2.0
13.....	90,905	3,824	4.2	13.....	526	4	.8
14.....	45,588	1,743	3.8	14.....	338	3	.9
15.....	25,466	695	2.7	15.....	120		
16.....	5,907	97	1.6	16.....	45		
17.....	2,096	25	1.2	17.....	9		
18.....	1,016	9	.9	18.....	6		
Above 18...	616	16	2.6	Above 18.....	3		

lar employees of all agencies totaled 1,963,870, of whom 667,234 were women, representing 34 percent of the total. The total number of employees registered in the General Accounting Office in the white-collar category was 4,240, of whom 1,181 were women, representing 27.9 percent of the total employed. Plainly it can be seen that as of October 31, 1968, women have fared better in GAO than in other agencies in grades 8, 9, and 10.

To update the statistics revealed in the Government Pamphlet SM 62-04, the staff of the director of the GAO Of-

fice of Personnel Management furnished these data, to which the percentages have been added.

*GAO Staff in Grade GS-12 and above*

<i>As of June 30, 1970</i>			
<i>Grade</i>	<i>Total in grade</i>	<i>Women in grade</i>	<i>Percent women</i>
12.....	611	18	2.9
13.....	580	7	1.2
14.....	417	4	1.0
15.....	160		
16.....	45		
17.....	15		
18.....	8		

Women in the General Accounting Office are employed in an interesting

WOMEN—AN EMERGING PRESENCE IN GAO

scope of occupations. The numbers and positions occupied by groups, excluding foreign nationals, are as follows:

Occupational group	Employment, June 30, 1970		
	Total	Women	Percent women
Social science, psychology . . . . .	6	1	17.0
Personnel management . . . . .	28	16	57.1
General administration . . . . .	817	693	84.8
Automatic data processing . . . . .	61	34	55.7
Accounting and budget . . . . .	2,621	225	8.6
Management analyst/auditors . . . . .	315	31	9.8
Engineering and architecture . . . . .	11		
Legal and kindred . . . . .	225	70	31.1
Information and arts . . . . .	36	30	83.3
Library . . . . .	10	8	80.0
Mathematics and statistics . . . . .	35	11	31.4
Equipment, facilities, and service . . . . .	2		
Investigation . . . . .	18		
Supply . . . . .	30	19	63.3
Transportation . . . . .	371	115	30.9
<b>Total . . . . .</b>	<b>4,586</b>	<b>1,253</b>	<b>27.3</b>

Over one-half of the entire number of persons employed by the General Accounting Office are in the professional staff. Although women are definitely in the minority, the following chart, also prepared in the Office of Personnel Management, shows a decided improvement in recent years.

**Comparison**

In viewing the status of women in the General Accounting Office, one must

Recruiting year	Number of acceptances	Number of women acceptances	Women as percent of total acceptances
1968-69 . . . . .	455	48	10.6
1967-68 . . . . .	303	31	10.2
1966-67 . . . . .	332	51	15.4
1965-66 . . . . .	274	22	8.0
1964-65 . . . . .	323	16	4.9
1963-64 . . . . .	268	7	2.6
1962-63 . . . . .	315	3	.9

compare their positions with those in other agencies of the Government and with those in private enterprise. Mrs. Holly K. Hempkill, personnel management specialist in the Department of the Army, writes in the Winter 1970 issue of the *Defense Management Journal*<sup>1</sup> that civilian women are in less than 2 percent of the professional and scientific fields in the Army. Moreover, women in grade GS-13 and above jobs are scarce, making up less than 1 percent of the complement in these grades.

In the same issue of the *Defense Management Journal*, Dr. Hester Turner reports that women in uniform are in the following fields: meteorology, oceanography, computer programming, legislative liaison, logistics, and supply. There are 40,000 women volunteers in

<sup>1</sup> Volume VI, issue No. 1.

the military service, yet here also there is a plea for greater utilization of women's potential.

Mrs. Faith A. Seidenberg, writing in the May-June 1969 issue of *Case and Comment*, points out that there are very few women lawyers in the United States. She makes the assertion that a woman lawyer is something of an intruder in the American courtroom. Yet this is a field begging for her talents. Women of voting age number millions over the male of voting age, yet their representation in local, State, and national offices is minimal. The starting place for many politicians is the training they receive as lawyers. So, too, a woman lawyer aspiring to political heights would have a sound background and might acquire enviable status.

### ***Prejudices and Myths***

Some of the popular prejudices and myths about working women were shattered at the conference held at Dickson Art Center, UCLA, and sponsored on December 3, 1966, by the University of California Extension, Los Angeles, in cooperation with the Women's Bureau, U.S. Department of Labor. The conference reported on the expanding employment opportunities for career women, and the findings are published by the U.S. Department of Labor in a booklet entitled "Exploding the Myths."

Dr. Judd Marmor, author, psychiatrist, and clinical professor of psychiatry at UCLA said that he found employers to be prejudiced by the myth that women take off more time because of illness and that they are not as productive as men. A figure for 1961 shows that 8.6 percent of women changed jobs.

compared with 11 percent of men. Where women have higher responsibility, there is less turnover. Also, women over 45 tend to remain in the same job. In performance generally, women are more dexterous, are more precise, and are quicker.

### ***Overall View***

Value systems are changing at a rapid pace. Confrontation goes on daily, and the survival of society will require a restructuring of cultural mores. Today, one of the heart-rending considerations is the population explosion. When young people pledge that each couple will produce no more than two children and thereby replace only themselves, that limitation per se results in a less demanding role for the woman as a homemaker. Generally, at the age of 35 a woman has had her last child and she returns to the labor force. Statistics show that 31 work-years are before her. Thus, another myth dies—that, because women don't work long enough, it is therefore wasteful to train them.

The most compelling reason for a woman to be in the labor market at all is that the position of housewife is not available to her, either because the man she would have settled for never appeared on the scene or because she evaluated her capabilities as unadaptable to the role of wife and mother. The fact remains that a woman may need to work in order to earn her livelihood. This being so, she is entitled to her pursuit of happiness. Today, she is permitted to adopt children, that is, if she can provide a homelike atmosphere and can give them the advantages that

a normal family might provide without a male head of household. In this century many women have been the sole support and heads of households because divorce rates are high and because men die young. A woman may be left with the responsibility of providing for aging parents. Moreover, beyond stressing her right for equal opportunity, she should examine her goals.

In an address before the Society of Women Accountants of the District of Columbia on May 14, 1969, the Comptroller General of the United States, the Honorable Elmer B. Staats, said that women accountants are excessively in the minority in GAO, the ratio being something like 24 men to every woman.

An examination of the earned degrees conferred<sup>2</sup> during 1967-68 by 1,567 educational institutions in the United States gives a clue to the paucity of women not only in GAO but also in the accounting and administrative fields generally. More than 871,800 degrees were conferred. Bachelor's degrees, requiring 4 or 5 years, were conferred on 636,863 persons, of whom 277,116 were women. Of these women, 103,141 concentrated on education, 34,166 on English and journalism, 15,151 on fine and applied arts, 44,400 on social sciences, and 14,201 on foreign languages and literature.

Where a total of 80,440 persons received degrees in business and commerce, only 7,275 were women, or less than 10 percent. A further breakdown shows that although a total of 18,075 received degrees in accounting, only

1,292 were women. Of the total of 1,444 degrees given in secretarial studies, 1,405 were women. Of the 454 degrees given in transportation, only five were women.

The population of the United States is expected to reach the awesome total of 205 million in the 1970 census. An unfortunate drastic imbalance is disclosed in the ratio of men to women in the breakdown of the total figure. Swinging from an excess of 1,300,000 men to women in the year 1900, the momentum of the pendulum reverses to a ratio showing 5 million more women than men in the year 1968. In 1900, women were a minority group in both industry and Government, but in 1970 women compose one-third of the labor force. In the midseventies, it is projected that there will be 1 million more women than men between the ages of 35 and 45. In these years more women will be free from the demands of raising families and will find a need to return to work. Demography, uninteresting as are all statistical data, masks the serious economical and social problem which requires confrontation.

### *The Good Life and the Right Career*

Women want and need a valued place in society. To gain that position will require concentrating on better choices in careers. Facing the prospect of a single life, a young girl would do well to set her sights beyond the easiest grasp. That young girl could become a stunning woman, proud of her own home and her style of life with its many worthwhile activities. Becoming so, she has a right to be proud of her career

<sup>2</sup> Statistics from "Higher Education, Earned Degrees Conferred" M. E. Hooper and M. O. Chandler, published by the U.S. Department of Health, Education, and Welfare.



and she should not be stymied in seeking it.

An inquiring girl might look to examples of women who have achieved success. Dr. Dorothy Dillon is one. She is a specialist on Latin America and was selected by her employer, USIA, as its candidate for the Federal Executive Fellowship Program. That program, started early in the 1960's, provides that a Government agency continue its candidate on the payroll while he spends a year at the Brookings Institute where office space, secretarial service, and library facilities are provided. Dr. Dillon was the first woman selected for a fellowship at Brookings. During the period of her fellowship, Dr. Dillon wrote a book, her second on "The Two Americas." The book is now in the hands of a publisher. Getting her Ph. D. was no mean accomplishment as no assistance was offered. In past years universities have not offered fellowships to women, the thinking being that women will not use the knowledge. Hopefully, this opinion is changing. Dr.

Dillon has used her knowledge and has been continually employed in her specialty.

Capt. Rita Lenihan, USN, is historically one of the first directors of the Waves. The writer remembers her as a beautiful young woman, going out on the town one evening. She was wearing a gorgeous mink stole draped over a chic outfit. The time was before mink stoles became commonplace luxuries. When the oohing and aahing subsided, the young lieutenant passed off her triumphant appearance with a gay fillip: "Well, some people like cars, I like my mink stole." Two months later, she was off to a London assignment and continued her climb to chief of her corps.

With the many disciplines opening to women and the apparent trend in management temperament to make advancement in careers in these disciplines available to women in gradually increasing numbers, a young woman might well step into an office of the General Accounting Office to find a career which is both satisfying and rewarding.

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## Generalized Computer Programs— Are They Worth the Effort?

By Maurice Sady and Richard J. Joyce

**It is not uncommon to hear it said that proficiency in the application of a specific generalized computer program can usually be achieved by the average auditor in only a few days. The authors, while not disagreeing with this premise, discuss in this article an unusual series of problems encountered in a single application of such a program and the resources required to resolve them.**

Is this assignment suitable for application of a generalized computer program? Will the generalized computer program be compatible with the ADP system under review? Can the assignment be completed in less time and at less cost by utilizing the computer than would be required by other means? Where can I obtain expert technical assistance and support within our own Office? Is computer time readily available at a convenient location?

In all likelihood, most of us have, at one time or another, asked ourselves these questions when faced with the task of reviewing large quantities of intermingled records to identify and isolate those records pertaining to a particular audit objective. Until re-

cently, our choices were limited to such procedures as spending days working at an adding machine or calculator, utilizing a table of random numbers, or manually extracting a scientific sample from a mass of records. All this had to be done before we could even begin to audit the records.

As the use of computers in business applications became more widespread, the accounting profession became acutely aware that new methods of extracting and manipulating audit information were needed. The result has been a proliferation of what we commonly refer to as generalized computer programs, designed primarily for the professional auditor's use in extracting information from any one of several

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different data processing systems. Most of the major public accounting firms and some computer software firms have developed programs to automate those functions which the professional auditor has traditionally found to be overly time-consuming, laborious, and usually clerical in nature. It would be a misnomer to refer to these as audit programs; rather, they are generalized computer programs which can more properly be defined as data retrieval or extraction programs.

We in the General Accounting Office are most familiar with the Auditape program developed by Haskins & Sells; however, it is reasonable to expect that, after evaluation, other generalized computer programs developed subsequently will also be used in connection with our reviews. It is probable that one computer program may be more suitable for a particular assignment than others, but most are designed to give the auditor the capability of performing such tasks as computing, verifying, scanning, comparing, selecting, summarizing, and sampling through use of the speed and accuracy of the computer.

Along with other regional offices, we in the Philadelphia Regional Office have made increasing use of various ADP audit techniques and routines, including Auditape, to accomplish review objectives. Recently, we encountered a situation which embodied in a single assignment many of the problems which might be expected to arise in the application of a generalized computer program. Resolving these problems required the close cooperation of the regional and Washington data processing staffs in addition to the procurement

of certain services from a commercial source.

### ***Need for Generalized Computer Program***

Our office with three other regional offices was selected to participate in a review of supply management at naval shipyards. The ADP stock records at the Philadelphia Naval Shipyard which we were to review consisted of more than 100,000 line items. It was obvious that a manual screening of these records would be of minimum effectiveness and most time-consuming. Appropriately, the audit program prepared by the lead region (Seattle) suggested the use of Auditape to extend unit prices and quantities on hand, to obtain a variety of statistical data, to select inventory samples, and to evaluate the sample results.

### ***Will the Program Work?***

At our opening conference with officials of the Philadelphia Naval Shipyard, we learned that the inventory records were maintained on a UNIVAC III computer. We knew that Auditape was programmed to work with IBM and Honeywell equipment and that some sort of conversion would have to be made before we could use Auditape. During our initial discussions we ascertained that the shipyard did not have the capability to convert the tapes for processing on IBM equipment. In addition, shipyard officials cautioned us that we might encounter problems in having such a conversion made.

Initially, we asked ADP personnel of a number of Federal agencies in the Philadelphia area whether they had the

necessary capability. We learned that, although none had the precise capability, the conversion could be made by utilizing either software or hardware; that is, a computer program could be written to convert the data from Univac code to IBM code or a black box<sup>1</sup> might exist that would make the conversion automatically without the need for special programming. We learned also that the conversion would require a computer capable of reading magnetic tape with the same specifications as those of the UNIVAC III tapes. These specifications were: nine track, one-half inch width, density of 1,000 pulses per inch, and a recording code of binary excess three. In layman's terms, this means simply that the tape has nine bit tracks or paths running parallel along its length and is one-half inch wide, that within a linear inch of tape there are 1,000 magnetic impulses or bits which represent data, and that the proper combination of binary digits represents their decimal equivalent plus three.

Since we found no Government activity with the required ADP capability available for our use, we inquired of the Information Services Division of Univac and were informed that it did have a black box hooked up to a UNIVAC III computer which would convert the data to IBM tape code. We were informed also that the machine with an operator would cost \$350 an hour and that, depending on the density and number of records on the tapes, an average of two to five tapes could be

<sup>1</sup> The black box is a specially designed piece of equipment (hardware). The data are read through a plug board in the equipment. The plug board can be wired to convert the data to any tape code desired.

converted in 1 hour. After discussing this with our ADP specialists in the Office of Policy and Special Studies (OPSS) in Washington, we decided that it would be advisable to purchase these services.

### *Getting Started*

At our request, shipyard officials furnished us two separate inventory tapes. One contained data on 65,000 line items and the other contained data on about 40,000 line items. Again, shipyard officials cautioned that the UNIVAC III had certain peculiarities which might prove troublesome in having the tapes converted. These officials explained that the UNIVAC III tapes were written in 27-bit words which might consist of six 4-bit characters or four 6-bit characters depending on whether the data were numeric or alphanumeric (more on this later). In retrospect, we realize that we did not have a thorough enough understanding of the significance of this feature. Consequently, we had a real communications problem in our attempt to bring it to the attention of Univac personnel.

Univac gave us a tape dump<sup>2</sup> after conversion which we compared with a similar dump obtained from shipyard tapes and found them to be in agreement. Conversion of the two shipyard tapes required about 45 minutes of computer time.

Our next step was to prepare the Auditape specification sheets for processing the converted tapes. Arrangements were then made for us to use the GAO computer in Washington, and we

<sup>2</sup> A printout of all the data exactly as it appears on the tape.

felt that our problems were solved. Our optimism was short-lived, however, because our edit of the first inventory tape showed an inventory value of \$43 billion rather than the \$15 million it should have been. Needless to say, we felt stymied.

### *Assistance by OPSS Specialist*

Having reached the end of our rope, so to speak, we requested and immediately received the assistance of a highly qualified computer programmer on the OPSS automatic data processing staff.<sup>3</sup> We explained our objectives to him and the problems we had encountered. After analyzing tape dumps and after obtaining additional information from the shipyard and Univac, the programmer came to the conclusion that the Univac black box had converted all of the data as if it were alphanumeric. In other words, data on the shipyard tapes—such as stock numbers, project numbers, item descriptions, and various management codes—were written in alphanumeric and these data were converted properly. However, other data—such as unit prices, quantities, and dates—were coded as numeric but converted as if they were alphanumeric. As a result, we did not have a true representation of these particular data elements. The following information should serve to illustrate the significance of this numeric/alphanumeric feature.

A management code of ABCD would be expressed in binary excess three as follows:

A	B	C	D
01 0100	01 0101	01 0110	01 0111

<sup>3</sup> The computer programmer referred to is Mr. Charles R. Brown.

The 4-character alpha code requires 24 of the 27-bit UNIVAC III word. (Two bits are used for parity and one for sign.)

A quantity on hand of 1,234 would be expressed as follows:

1	2	3	4
0100	0101	0110	0111

It can be seen that this quantity requires only 16 bits of the 27-bit word and that two additional numeric characters could be added or, in this case, two leading zeros would be added.

The point being made is that six bits are needed to represent an alpha character but only four bits are needed for a numeric character; consequently, four alpha characters can be written in one UNIVAC III word, but, if all the data are numerics, six characters can be written in a word. In converting numeric fields of data as if they were alphanumeric, six bits rather than four were read through the plug board and translated as one character. The resulting errors were colossal, particularly with respect to the many items having a zero quantity of items on hand.

A zero quantity on hand is expressed in binary excess three as follows:

0	0	0	0	0	0
0011	0011	0011	0011	0011	0011

Interpreting this as four 6-bit characters rather than six 4-bit characters results in the following code:

001100	110011	001100	110011
--------	--------	--------	--------

The plug board conversion of these 6-bit configurations is:

9	+3	9	+3
---	----	---	----

(The sign is ignored except in the units position of the field.)

Through conversion of a zero quantity on hand to 9,393, it is not difficult to understand how we arrived at a \$43 billion inventory value.

It should be pointed out that this numeric/alphanumeric feature is a hardware characteristic. Programs written for a UNIVAC III computer do not have to take advantage of this feature and all data can be written as alphanumeric if the programmer so desires. However, if the feature is utilized, the program must designate those fields containing all numerics.

We determined later that the utility programs which Univac and the shipyard used to provide us with tape dumps did not utilize the feature and that all data were read as if they were alphanumeric. Consequently, the tape prints before and after conversion which we used for comparison purposes had to be the same.

### ***Resolving the Problem***

After an understanding of the nature of the problem was obtained the question remained as to how to get it resolved. The OPSS programmer decided, after considering several alternatives, to prepare a computer program to revise the format of the original shipyard tapes; that is, the data would be read into a computer and those fields which contained all numerics would be rewritten as alphanumeric on the output tape (two zero bits would be added to each 4-bit numeric character). This method, although workable, posed the additional problem of finding available time on a UNIVAC III computer to revise the format of the tapes and then have them converted again by Univac.

The OPSS programmer came to Philadelphia and, with assistance of shipyard personnel, began preparing the programs (separate programs were required for each inventory file because of the different file layouts). At the same time we began a search for available time on a UNIVAC III computer. The shipyard computer was being utilized three shifts a day, 7 days a week, and a backlog of production work existed; therefore, time could not be made available to us. We informed Univac of the problems we had with the converted tapes and of our plans to revise the tape formats. Univac agreed, in view of the problems we had initially, to convert the tapes again at no additional cost.

After completing the programs, the OPSS programmer accompanied us to Univac for the purpose of converting the inventory records. The first tape required almost 3 hours of computer time for compiling and debugging the program, for running the program to revise the format of the shipyard tape, and for processing the revised tape through the black box to convert it to IBM tape code.

In view of the amount of time required, we decided not to attempt conversion of the second file until we were sure that the data were converted properly and that we could process the file with Auditape. The Auditape specification sheets we prepared previously had to be modified somewhat as a result of revising the format of the tapes, and arrangements were again made to use the GAO computer in Washington.

As previously mentioned, the shipyard tapes were written in a density of 1,000 bits per inch, whereas the con-

verted tapes were written in a density of 556 bits per inch. Because of this expansion in the density, the 40,000 stock records were contained on two reels of tape. We annotated the fact that we had two reels of input in the Auditape specification card, and we began the edit of the first reel. Normally, when the last record on the first reel is edited, the tape will automatically rewind and a message is printed out to begin reading in the second reel.

It is difficult to describe our feeling of despair as we watched the tape flap around inside the tape drive after the machine continued to read the first input reel right off the end of the tape. Once again, we relied on our man from OPSS to tell us what happened. We learned that, in IBM tape code, an ampersand (&) at the end of a record designates the end of the reel. When the ampersand, commonly referred to as a tape mark, is detected, the reading process stops and the tape is automatically rewound. If a tape mark is not detected, the machine will attempt to read data right off the end of the tape. You are right if you guessed that our tapes did not contain tape marks.

Solution to this problem required reading the data through the computer until we neared the end of the tape, at which time the printer was turned on and the last few records were printed. From this printout we were able to identify the stock number of the last record on each of the two tapes. A program was prepared to read the tapes until the last stock number was identified and to write a tape mark at the end of that record.

After having tape marks written at the end of the tapes, we were able to process the inventory file using Auditape and to reconcile the number of stock records and dollar values with control figures obtained from the shipyard. We did this to assure ourselves that the data were not distorted in any way as a result of conversion.

With renewed confidence, we returned to Univac and went through the same process with the second file of inventory records. Being able to anticipate most of the problems, however, made the second go-round a simple and almost routine exercise.

Once the problems of converting the shipyard tapes had been accomplished, it was a relatively simple matter to utilize the Auditape routines to accomplish the objectives of the audit program. The shipyard concurred in our findings without question, and we anticipate that related action will result in substantial savings in the area of inventory management.

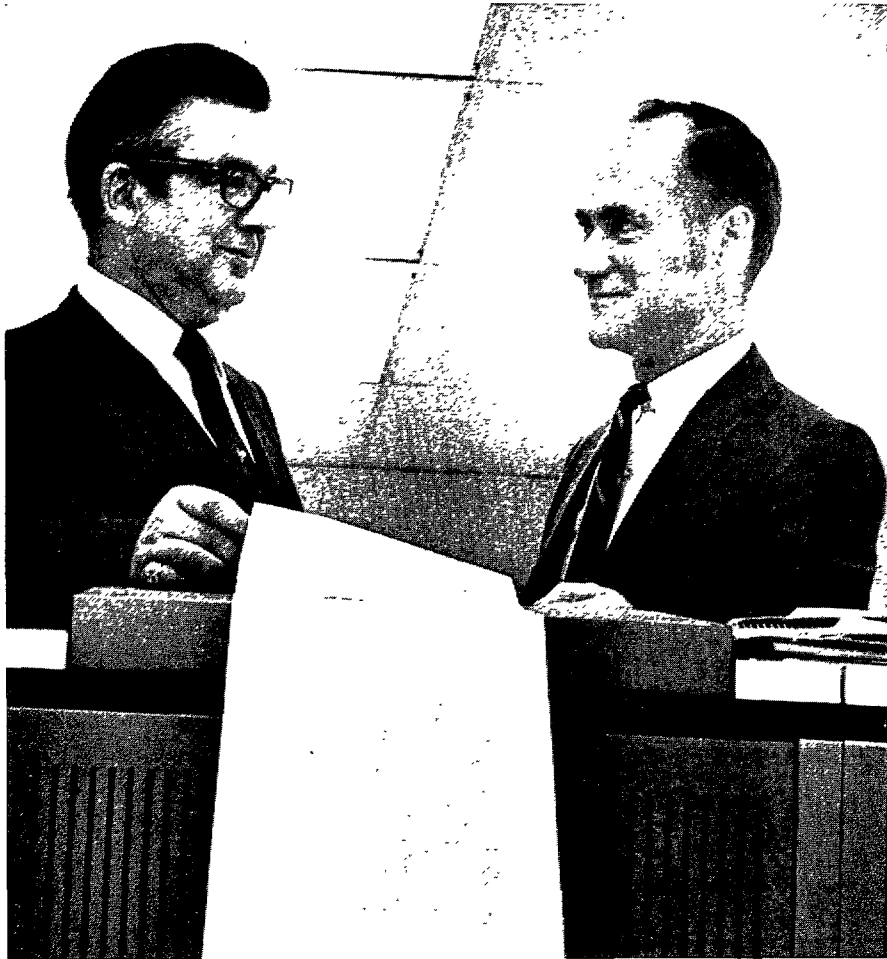
### ***Conclusion***

On the basis of our experience to date, we definitely feel that generalized computer programs are well worth the effort involved in applying them. We most certainly could not have effectively participated in the shipyard review without utilizing Auditape or some other generalized computer program. With each application we gain more experience in the use of these programs and become more aware that we have the means for manipulating large masses of data with reasonable assurance of accuracy and statistical soundness.

GENERALIZED COMPUTER PROGRAMS

Also, our experience has demonstrated to us that we have the available resources within our own organization to successfully cope with a variety of complicated automatic data processing problems. The future can hold nothing

less than a continuing increase in our utilization of generalized computer programs; consequently, we should utilize our own resources as fully as possible to gain the proficiency needed to meet this challenge.



GAO Watchdog Photo

The authors, Sady and Joyce, check over a computer printout from one of their tests.



## Auditape: A Versatile Audit Tool

By Philip B. Thibeau

This article demonstrates that the utility of the Auditape system extends beyond statistical sampling. Auditape gives an auditor the capability of reading, manipulating, and selecting information from masses of data stored as a pattern of magnetic spots on tape or as holes in punched cards. It can be used by persons who have no specialized knowledge of computers or programming languages and who have had only a limited amount of instruction. Generally, the specific functions it performs are arithmetic calculations, special analyses, and statistical sampling.

During a recent review at the Pearl Harbor Naval Shipyard, we were confronted with the problem of analyzing and evaluating the management of shipyard material, as well as the responsiveness of the naval supply system and other suppliers to the material needs of the shipyard. The broad objectives established for this assignment appeared almost impossible to achieve within the allotted man-days because of the sheer magnitude of the shipyard's operations.

—In fiscal year 1969, the shipyard's 6,000 employees accomplished 25 major ship overhaul and repair jobs and numerous other small jobs at a cost of nearly \$100 million.

—The shipyard's material—about 50,000 line items valued at over \$5 million—was recorded in three

separate inventory accounts: direct material, unassigned direct material, and shop stores, each of which would require a separate analysis.

—To meet its material requirements, the shipyard processed about 125,000 purchase requisitions in the course of a year. About 60 percent of these requisitions were directed to the local naval supply center while the remainder were referred to other sources, both in Hawaii and on the mainland. The analysis of responsiveness would be complicated by the diversity of supply sources, each with its own characteristics and problems.

Our review at Pearl Harbor was part of a major review of shipyard supply management which was also being performed at naval shipyards located in

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San Francisco, Calif., Bremerton, Wash., and Philadelphia, Pa. In recognition of the ambitious scope of work at each shipyard, the Seattle Regional Office, the lead region on this assignment, had provided for the application of statistical sampling techniques, using Auditape, in the analyses required to achieve the audit objectives.

We found that the primary value of the Auditape system in statistical sampling was its ability to quickly analyze the characteristics of the universe and to select the proper number of representative items for detailed examination. Without this capability, the mere selection of a sample would have been a time-consuming and arduous task.

It became apparent to us, while using the system for sampling, that our new-found programming capability provided us with the ability to tap any or all of the information in the computer data bank. This opened new vistas to us. For certain of our analyses, we were able to rapidly accomplish a 100-percent review of the universe without resorting to sampling. Once we had ascertained what information was in the data bank, we were able to isolate, rearrange, and summarize any items of interest. Why sample in those instances where every item can be examined with the speed of light?

Examples of what we were able to accomplish with our new knowledge are presented below.

### ***Analysis of Shop Stores***

At the time of our review, the shipyard's shop stores inventory included 21,000 line items located in 12 shops.

The computer data bank had an entry for each item, arranged serially by stock number. We examined the layout of the tape where data on the shop stores were stored to learn what information was included.

One thing we noted was that each item entry included identification of the shop store where the item was located. We would therefore be able to further refine our analysis.

We obtained overall shop stores statistics, such as the quantity on hand and value, for each of the 12 shops. In addition, we programmed the computer to compute the amount of excess material included in the inventory, using the shipyard's criteria for establishing stock levels. Our analysis showed that over 90 percent of the value of the excesses involved about 700 of the 21,000 line items and that these items were located in two production shops.

To obtain similar information without the use of Auditape, our staff would have had to work from a printout containing over 21,000 line items, classify the line items by production shop, and manually compute the amount and value of any excess quantities of the line items on hand. The use of Auditape enabled us to "zero in" on the source of the excesses, establish significance, and draw a sample in only a few hours.

### ***Analysis of Supply Responsiveness***

The shipyard's records showed that about 60 percent of its 125,000 annual material purchase requisitions were handled by the local naval supply cen-

ter and the remaining 40 percent were handled by other sources.

To test the supply center's responsiveness, we obtained its requisition history tape file which contained more than 60,000 records and, through the use of Auditape, obtained a printout of all shipyard-initiated requisitions that were satisfied by the center—4,000 out of 6,400. The result of this step was a listing of the 2,400 shipyard requisitions that were not immediately satisfied by the center. We then programmed the computer to take a statistical sample of the unfilled requisitions. The confidence and precision factors inserted resulted in only 33 line items being printed out for our detailed review.

To make an evaluation of supply responsiveness for those material requests outside the responsibility of the naval supply center (40 percent of the requisitions, or about 50,000 a year), we obtained a current tape layout for outstanding requisitions. In addition, to determine whether supply responsiveness was affecting production and hence resulting in increased costs, we were interested only in requisitions for material that was designated for production. Therefore, we made several computer inquiries which omitted all requisitions not coded as being for production items, and this resulted in a printout of outstanding requisitions for production items. These inquiries reduced the universe by about 30 percent.

To determine the length of time the requisitions had been outstanding, we made further computer inquiries and derived printouts of items on requisitions

that had been outstanding more than 30 days. The 30-day printout listed 2,630 requisitions valued at \$2,024,565. Numeric and monetary samples of the above data were made, and the stage was set for a detailed examination.

In addition, we obtained an analysis of all outstanding requisitions giving the source (supply center, local purchase, or mainland purchase) from which the material was requested and the application (direct material inventory, direct to production shop, shop stores, etc.) of the material. This analysis showed that a disproportionately high percentage of overdue, unfilled requisitions had been directed to local and mainland suppliers. (The naval supply center was much more responsive.) We then selected a sample for the purpose of ascertaining the effect of these unfilled requisitions.

Significant audit time would have been required to provide this type of coverage on a statistically sound manual basis. For example, the manual deletion of about 3,600 non-productive-type items from a universe of 12,000 and the aging of the outstanding requisitions would have been extremely time-consuming. Also, it would have been a formidable task to manually identify and list the 6,400 shipyard requisitions directed to the supply center. The mathematical calculations alone would have required several man-days. With the Auditape, this work took about 15 hours, including 5 hours of computer time.

### *Other Analyses*

The audit program required a determination as to whether direct material

was being purchased prematurely by the shipyard, placed in storage, and held for prolonged periods of time prior to use. The shipyard had a direct material inventory consisting of more than 5,000 line items valued at \$1.7 million.

We obtained the shipyard's tape layout of the direct material inventory account and programmed the computer to provide an analysis of line items and related value of the three "on hand" classifications and the "due in" balances. This gave us information on the status of various subdivisions of the account.

To determine the length of time the items of material had been in storage, we programmed the computer to give us summaries of items that had been held in storage more than 30, 60, 90, 120, and 360 days and related values. These summaries gave us quick identification of indicated problem areas and led us to obtain a printout of all items held for more than 60 days. This printout gave us the receipt date, quantity, and value of the material, and the name of the ship that required the material. The total value of items held more than 60 days was also obtained. We then drew a statistical sample of these items to examine into the causes of premature procurement.

For unassigned direct material, the Auditape enabled us to screen the shop stores account consisting of 21,000 items and to extract a list of about 5,000 items valued at \$1.8 million. This was done by programming the computer to delete all shop stores items that were not coded as unassigned material. We then programmed the computer to delete

all nonstandard stock items and received a printout of all standard items listing the balance on hand, unit price, inventory value, and demand data. A sample of these data was received and reviewed in detail.

To obtain the above information manually, we would have had to analyze and schedule data from several printouts containing about 21,000 line items. The Auditape time for this procedure was less than 2 hours.

In reviewing shop stores insurance items (items not normally stocked in the supply system), we obtained sufficient statistical data, after about 2 hours of Auditape time, to assure ourselves that there were no problem areas warranting further work. Again, a manual accumulation of data to arrive at this decision would have taken considerable time.

After receiving printouts for the data desired and obtaining statistically sound sample data, we reviewed, in detail, all aspects of the sampled requisitions from their inception in shipyard planning to their end-use status. This procedure included a review of the shipyard's planning and supply functions, production shops, and warehouses. Additionally, the samples were used to test the procedures and positions of the naval supply center and supply system concerning stock levels and demand history and the reasons for the center's and the system's not being able to respond.

### **Conclusion**

Auditape is a versatile tool. It can be useful not only for statistical sampling but also as a means of access to the

## AUDITAPE: A VERSATILE AUDIT TOOL

entire computer data bank. It has a surprising capability to analyze the stored data. Avenues of investigation are opened by it that would otherwise be impractical because of exorbitant manpower requirements.

721423

## Using an ADP Information Retrieval System in Auditing an Educational Assistance Program

By Robert A. Wlodarek

Management's increasing reliance upon automated information systems to direct and control organizational activities has thrust the auditor into a changing environment for data collection and analysis. In recent years GAO has been placing increasing emphasis on the use of automated data retrieval systems to manipulate, extract, and analyze data from card, tape, and disk files. The retrieval systems are lengthening the auditor's reach into voluminous files, strengthening his analytic grasp, and sharpening his vision for significant operational relationships.

The Chicago Regional Office recently used Audassist, an ADP information retrieval system developed by a public accounting firm, to make an audit of the Veterans Administration (VA) educational assistance program.<sup>1</sup> The purposes of the educational program include assisting eligible veterans and servicemen to undertake higher education and to make a vocational readjustment.

The audit was undertaken to test the eligibility of veterans' receiving educational assistance, to determine the propriety of the payments made to veterans, and to examine into the reasons

for, and collection efforts on, educational assistance accounts receivable.

The GAO Regional Office in Los Angeles was designated as lead region and the Boston Regional Office as participating region to conduct detailed examinations in these two cities. The Chicago Regional Office used Audassist to obtain audit samples and analytic summaries from VA magnetic tape files. The files are centrally maintained at the VA's Data Processing Center, Hines, Ill.

Audassist was used to provide audit staffs in Los Angeles and Boston with the following information from the Data Processing Center files:

1. Preliminary 100-item samples—  
for statistically determining the characteristics and eligibility of

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<sup>1</sup> Previous articles and news items in the *Review* have described the Auditape system developed by Haskins & Sells. The system referred to in this article is known as Audassist, and was developed by Alexander Grant & Co., Chicago, Ill.

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- veterans currently receiving educational assistance.
2. Additional 400-item samples—to permit increasing the preliminary samples (item 1 above) to achieve desired precision and reliability.
  3. 200-item samples—to review reasons for educational accounts receivable and the efficacy of subsequent collection efforts.
  4. Analytic schedules of accounts receivable—summarized as to age, school, and type of institution.

The specialized nature of the review dictated that staff members specializing in ADP techniques be brought into the review during its early stages. Plans for conducting the detailed examinations and for retrieving and analyzing tape-file data were developed concurrently. The review involved VA and GAO officials in Washington; the GAO regional review staff at Chicago, Boston, and Los Angeles; and the administrative and technical staffs of the Data Processing Center. Effective coordination between these widely dispersed groups depended upon good communications. For example, data-handling problems encountered at the Center could affect the program for audit field work being prepared in Los Angeles. Similarly, audit programming decisions made in Los Angeles and Washington could affect plans for extracting data at the Center.

It was not necessary to expand the review beyond the preliminary samples drawn (see foregoing item 1) because of the VA's favorable reception to field work performed by our Los Angeles and Boston Regional Offices. Neverthe-

less, the selection of samples on a probability basis created the capability for determining precision of, and confidence in, sampling results.

In our opinion, the Audassist retrieval system, with the support of the Center's special programming, gave the review better direction and focus and permitted audit field staff to be used more effectively. The retrieval system insured the adequacy of sample design and increased the number of options available to accomplish program analysis. Data retrieval systems, we believe, significantly advance the auditor's techniques of information handling and program analysis.

### *Description of the Retrieval System*

The Audassist retrieval system is a generalized computer program designed primarily to meet the one-time or occasional data needs of auditors and other management analysts. The system permits flexibility in the sequencing of instructions to age, calculate, stratify, sample, and test conditions. Briefly,

- Age—computes elapsed time, in calendar days, of a record, such as an account receivable.
- Calculate—performs the basic mathematical operations of addition, subtraction, multiplication, and division.
- Stratify—classifies data into as many as 17 categories in a single processing run.
- Sample—selects one or more samples using a choice of systematic selection techniques. Several sam-

ples may be drawn during one processing run.

**Test**—identifies records with certain designated characteristics.

The system physically consists of control forms, coding sheets, an instruction manual, and a computer program residing on magnetic tape or disk. The computer program contains three major subroutines or phases—data conversion, processing, and output. Each phase requires the user to encode instruction sheets.

*Data conversion* creates a fixed-length record which has a maximum length of 200 characters and as many as 19 data fields.

*Processing* directs the computer (in 25 instructions or less) to make calculations, test logical relationships, or select items.

*Output* provides printouts of as many as 13 information fields. These fields may display from one to three levels of totals.

The present version of the system requires an IBM 360 computer, model 25 or over, with tape and disk capability.

The firm that developed the retrieval system provides its auditors with 5 days training in use of the system. A member of the GAO Chicago Regional Office attended one of these seminars in July 1969.

### ***Review of VA Educational Master Records***

VA's master file on educational assistance consisted of 100 reels of magnetic tape containing more than 2 million records. Six types of transactions were intermingled in the master file. For

purposes of our audit, we were interested in two transaction types: current and terminated awards. VA master records are not of uniform length because of variable-length information, such as details on veteran dependency.

We arranged with Data Processing Center officials to have the agency ADP staff write a special program to provide us with abridged copies of the master files. Because our information needs were limited geographically and as to types and particulars of transactions, our abridged copies were restricted to—

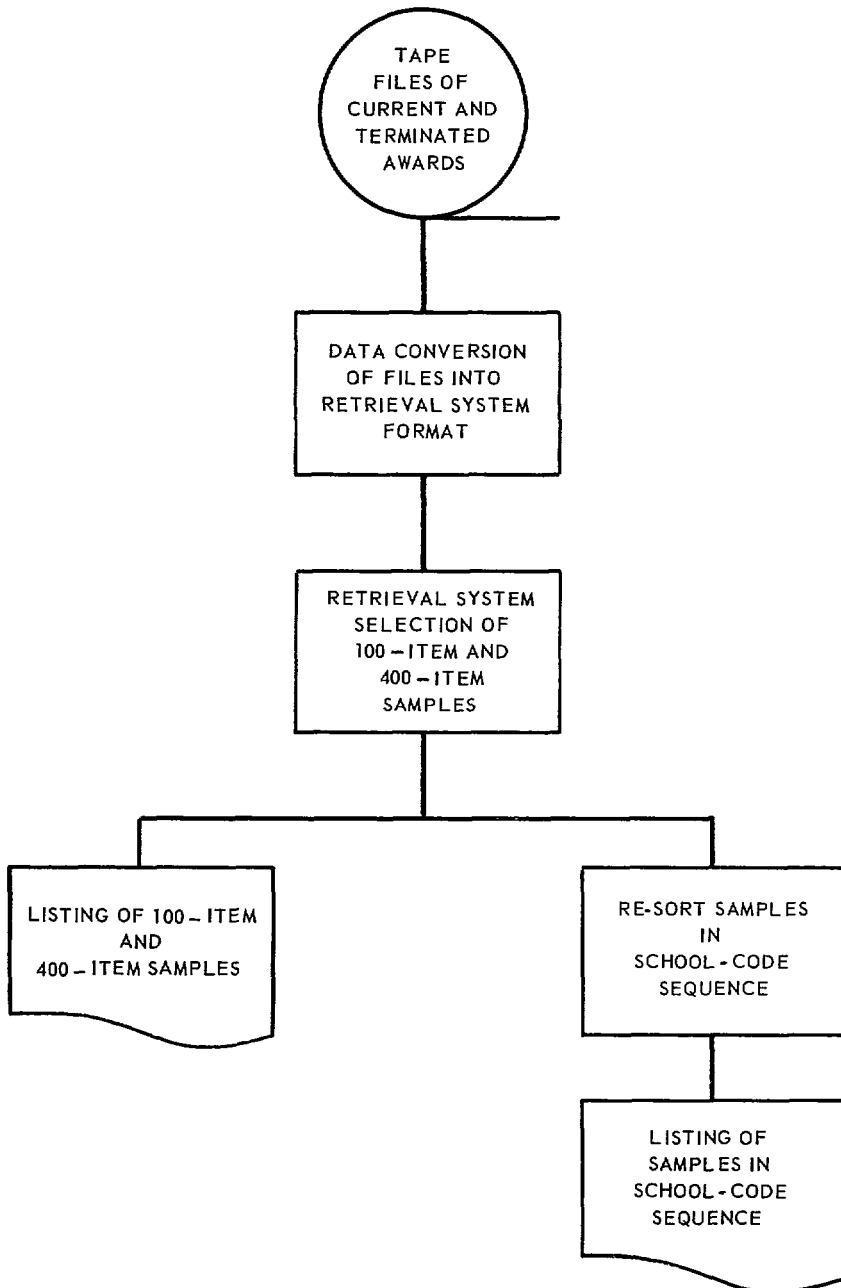
- Assistance payments administered by the Boston and Los Angeles VA regional offices,
- Current and terminated award types of records, and,
- Only those portions of the foregoing records needed to satisfy audit objectives.

We furnished Center officials with programming specifications setting forth records and data fields to be retained, item and dollar accumulators to be established for control purposes, and requirements for printed and tape output.

Eliminating the records for all VA regional offices except Boston and Los Angeles reduced the master files to 12 reels containing approximately 237,000 records. Further eliminating all transaction types except current and terminated awards reduced the file to four reels containing approximately 176,000 records, and two supplementary reels of receivable records containing approximately 12,500 accounts.



FLOWCHART 1  
SAMPLE SELECTION OF CURRENT AWARDS  
USING RETRIEVAL SYSTEM



The Audassist system requires records to be in fixed-length format. Our audit objectives did not require access to certain fields in the master file. Eliminating these fields had the effect of converting the VA's variable-length records to uniform-length records.

In establishing dates for starting our field examinations at Boston and Los Angeles, we considered the Center's leadtime needs for preparing and testing programs and scheduling production runs. The Center segmented our requests into three phases of effort and provided one segment at a time. This arrangement shortened leadtime and reduced the complexity of the Center's programming effort.

### ***Selecting Samples and Preparing Analytic Summaries***

The Los Angeles Regional Office requested a selection of 500 items for each VA regional office as a maximum-sized sample of veterans currently receiving educational assistance. This selection was to consist of a 100-item preliminary sample and a 400-item supplementary sample. The 500-item sample was considered the maximum size necessary for achieving 95-percent reliability in estimating true values of the universe within  $\pm 2$  percent.

As shown in Flowchart 1, the Audassist system was used to reformat the tape files provided by the Data Processing Center, select the samples of current awards, and prepare separate listings for the two VA regional offices. Also, tape files containing the samples in file-number order were re-sorted to provide lists in school-code sequence. This rearrangement permitted audit

staffs to examine school files at the VA regional offices more conveniently.

The retrieval system was also used to obtain samples and analytic summaries of veterans' accounts receivable.

As illustrated in Flowchart 2, two types of receivable samples were developed. Sample 1 consisted of 200 veteran receivables selected from the combined universe of current and terminated awards. This sample maintained the proportionality of the current and terminated awards. Because terminated award cases were heavily represented in sample 1, another sample was drawn and furnished to the lead region for its consideration. Sample 2 was evenly weighted, consisting of 100 current and 100 terminated awards.

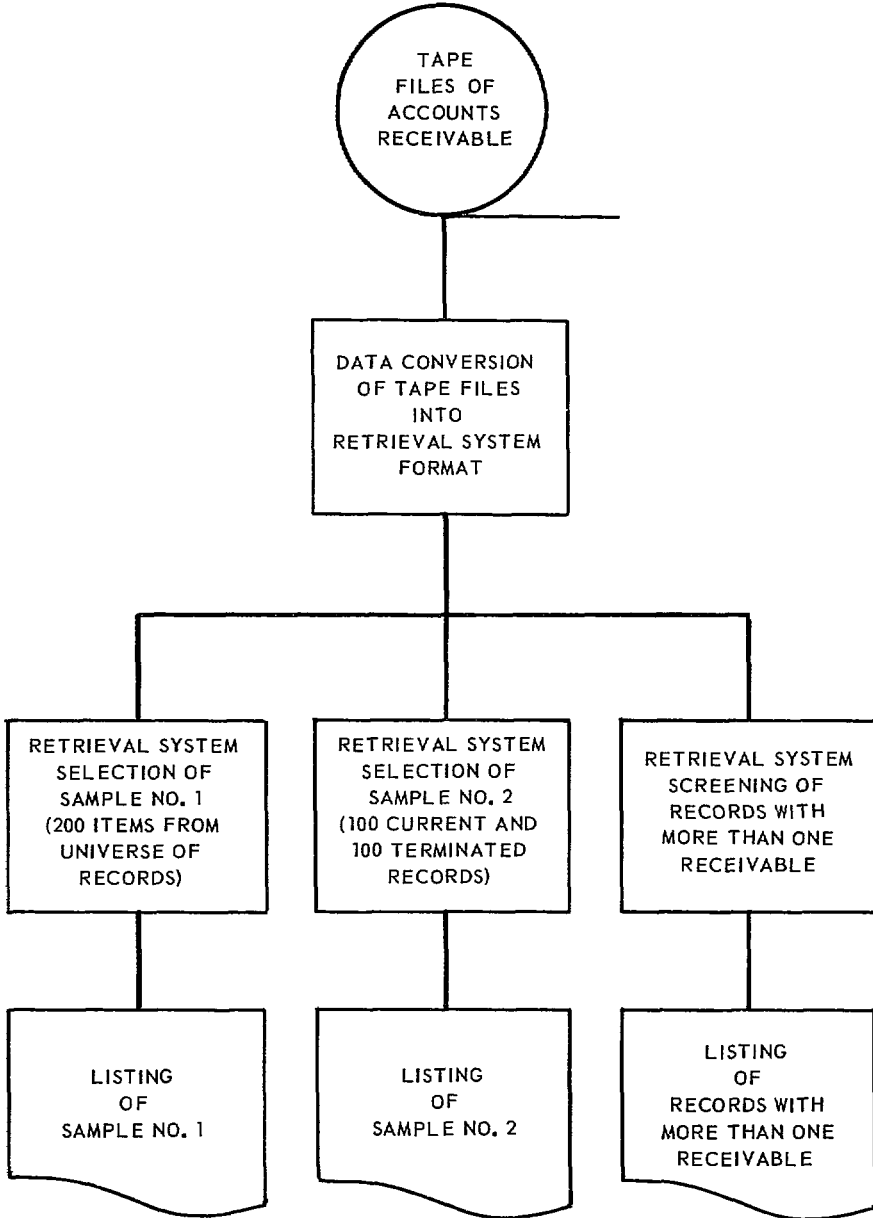
We used the retrieval system to interrogate the files to find records containing more than one receivable. The lead region subsequently asked for a listing of multiple-receivable records to inquire into the circumstances of these receivables.

The retrieval system was used to analyze receivables by discovery date—the year and month in which the overpayment was discovered or automatically computed—school code, type of institution, overpayment cause, and schools with more than four overpayments, in the manner shown in Flowchart 3. As a result, the lead region requested, as a basis for further review, a listing of schools with more than four receivables.

### ***Benefits of Using Retrieval System***

The Data Processing Center's special programming reduced the 100-reel mag-

FLOWCHART 2  
SAMPLE SELECTION OF ACCOUNTS RECEIVABLE  
USING RETRIEVAL SYSTEM



netic tape file of educational master records to a manageable six-reel file. The Audassist system, used in conjunction with the magnetic tape files specially prepared for us by the VA, enabled us to sophisticate the design of the review, obtain data to fit the design, and provide effective options for assessing the course and conduct of the educational assistance program.

As a result of the audit, the Office is preparing recommendations to improve VA operations by automating certain aspects of educational assistance procedures. These improvements are intended to reduce processing costs, provide quicker servicing to veterans and reduce VA's educational assistance overpayments. Also, the Office has recommended that the VA periodically obtain additional analytic data on overpayment receivables by school as an aid in managing the educational program.

The savings directly attributable to use of Audassist are not measurable for there has been no prior audit of the VA educational program that is directly comparable. The audit would have been substantially modified if, instead of using centralized tape records, we had used local documents at the VA regional offices.

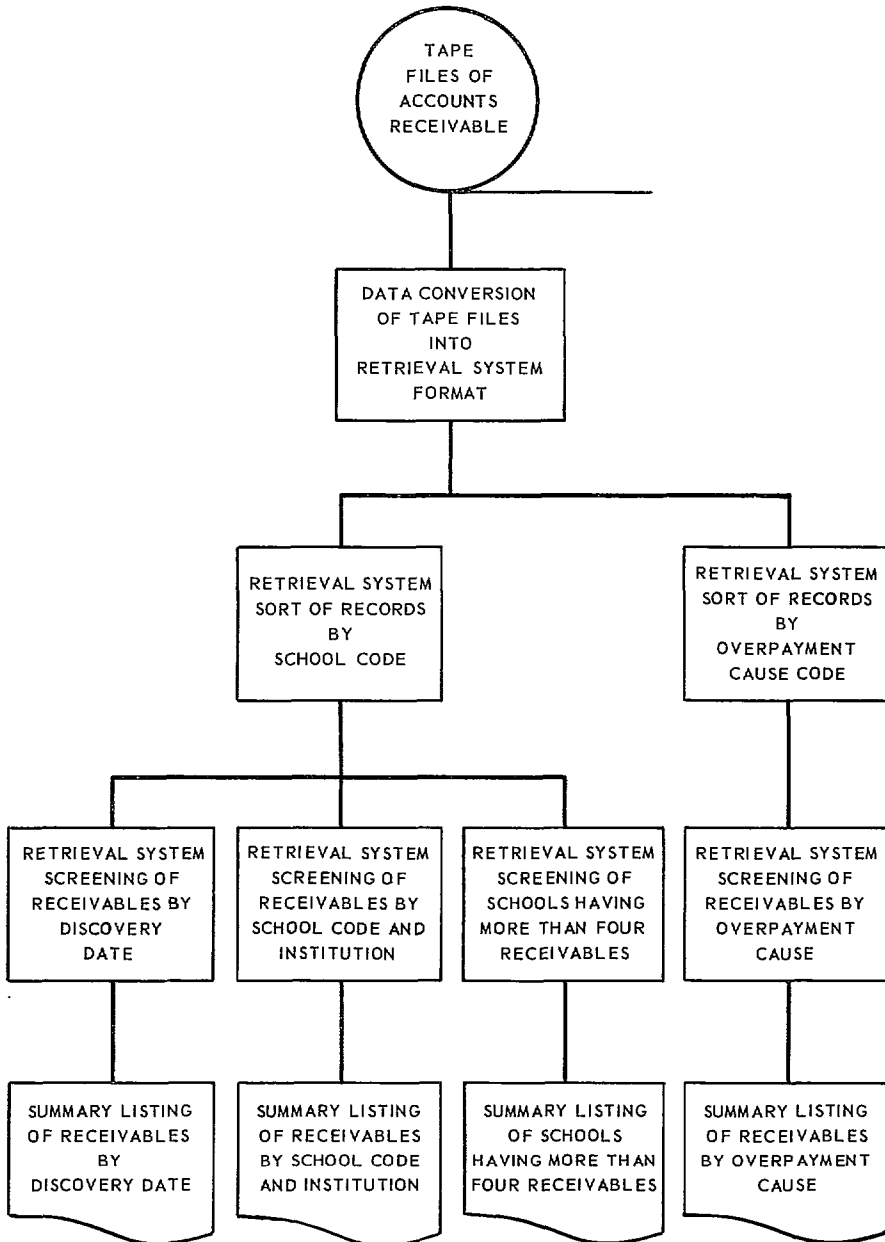
We obtained statistically sound samples from a conglomeration of 2 million records. These samples were extracted with ease when considering the alternatives of selecting hard-copy samples manually by means of random numbers, systematic sample procedures, or terminal digits.

Had we been restricted to hard-copy records in regional offices, it would have been prohibitively time-consuming to determine probability samples; pull the case files; review file contents; and schedule seemingly significant events, transactions, or relationships. With the retrieval system, most of this detailed work was relegated to the computer.

The project developed good rapport among the dispersed participating groups working on the audit. Within GAO, we found that we were achieving maximum benefits from field work; the unhampered interchange of information permitted the Office to take prompt advantage of new-found data.

Use of the central tape files in conjunction with the Audassist retrieval system brought about highly desirable interaction between parallel and complementary groups and, we believe, assisted accounting-oriented staff to overcome inhibitions of auditing in an ADP environment.

FLOWCHART 3  
ANALYSES OF ACCOUNTS RECEIVABLE  
USING RETRIEVAL SYSTEM



721424

## The Versatility of a Computer In Auditing

By Warren Nogle

The San Francisco Regional Office has used computer techniques in several recent audits. In each case there either have been significant savings in audit time or the use of the computer has permitted analyses which could not have been made any other way. In this article, four of these applications are described. These applications underscore the great potential that exists in the use of computers in GAO audit work.

### *Blue Shield*

This assignment was an audit of the controls over payments to physicians for nursing home visits under the Federal Medicare and State Medicaid programs in California. Blue Shield, a private corporation under contract to the Social Security Administration and the State, processes and pays claims for services provided under these programs.

Blue Shield, for all recipients to whom a payment has been made, maintains magnetic tape records containing:

1. Patient medical number,
2. Patient name,
3. Diagnostic code,
4. Type of service rendered (standard codes have been developed for each type of service provided),
5. Dates of visit or service,
6. Amounts paid by—
  - a. Medicare
  - b. Medi-Cal

7. Names of providers (doctor, hospital, nursing home, etc.), and
8. License numbers of providers.

These tape files, which exceeded 170 reels for fiscal year 1969, contained an estimated 27 million entries. During previous work at Blue Shield, our auditors had problems in that it was not practical to analyze manually such a large volume of data. They did use various manual methods, such as the case-study approach, in an effort to analyze the data; however, the sheer volume prohibited meaningful projections based on the very small number of cases that could be analyzed in this manner. Blue Shield took issue with this approach because results had not shown conclusively that significant error rates existed.

In our more recent work, our auditors developed, during visits to selected nursing homes in California, a list of

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1,395 patients receiving services under the Medicare and Medicaid programs. They wanted to then compare this information with Blue Shield's records to ascertain whether the billings submitted by the providers for services rendered were appropriate and accurate.

It was decided that the computer could do this; but, to keep the assignment within manageable and economical limits, a 1-month period was selected for a trial application. This involved about 1.8 million records contained on 13 reels of tape. Blue Shield agreed to provide the tapes for our analysis. We, therefore, made arrangements with the General Services Administration's Regional ADP Service Center (a Honeywell 200 tape-oriented system) to copy the tapes so that the master records could be returned to Blue Shield immediately, yet leaving us with a permanent record to work with. A data card was also punched for each of the 1,395 patients, showing name, medical number, and nursing home identifying code (the Blue Shield tape record did not have a nursing home identifying code so we created our own).

We designed our own COBOL program to extract the records of the selected patients from the master files. The patient records were contained in the master files in ascending numerical sequence. Of the many thousands of patients with records on the tapes, we were interested in only 1,395; consequently, we programmed the computer to read a record and then search the cards of our 1,395 patients (also arranged in ascending numerical sequence) for a match. When the computer found a match, it would store

the patient's record on an output tape. The program was designed to accumulate the records of each patient, if he had multiple records, on the tape. The multiple records were accumulated in sequence, and thus, for every patient with multiple records, all records would be together.

After we had the tape on our patient sample, we programmed the computer to accumulate the patient records by nursing home. Our data, from which we had selected the 1,395 patients, had been developed by visiting specific nursing homes. Consequently, for ease of analysis, we wanted the patient records also listed by nursing homes so that we could compare the services provided at the nursing homes with the services paid for by Blue Shield. Our workpapers documented actual services given to each patient by a provider and the number of patients that the provider serviced on any given day. The tape records showed the services that the provider had been paid for by patient. By comparing the number and type of services provided by a provider for patients in a nursing home for any specific day, we could ascertain if the proper fees had been claimed by the provider.

The results of this computer run were so successful in demonstrating weaknesses in the payment system that we did not have to extend our tests to the rest of the year to prove our point to Blue Shield management.

Typical of the errors noted were:

1. Physicians were seeing several patients during one nursing home visit, but claiming fees for single visits for each patient. This is con-

trary to the rule that allows a reduced fee per patient for multiple patient visits.

2. Radiologists were charging separate set-up fees for each patient even though more than one patient had received X-ray services during a single nursing home call.

The first results were so promising that members of our staff decided to extend the analysis to additional Medi-Cal data contained in the tape records. On previous audits, similar projects had been considered but the results were unpredictable and the cost in man-days would have been prohibitive. With the computer, however, the data could be analyzed rapidly for a relatively low cost.

We again designed our own COBOL program to select four payment codes (payment codes identify the type of service provided and the number of times the service was provided), to compute the totals (segregated by Medi-Cal and Medicare programs), to indicate the number of times the services were provided, and to compute the average cost per visit for each of the two health-care programs. Again the results were significant.

The next project was more sophisticated and involved a comparison of the type of service provided with the date of service, the number of visits, and the differences in payment amounts between the Medi-Cal and Medicare programs. In this manner, we hoped to discover whether duplicate and unreasonable charges were being made by providers. We designed another COBOL program to accomplish this objective.

The successful conclusion of this project demonstrated convincingly the distinct advantage of using the computer to assist in analyzing large amounts of data in a more than superficial manner. The Blue Shield applications cost approximately \$1,600 and resulted in at least 160 GAO man-days saved (\$8,000 in estimated savings).

### ***Forest Service***

Our staff designed detailed schedule formats in preparation for a review of the utilization and management of Forest Service vehicles. However, we found that although elements of the necessary information were produced in various agency computer printouts, no one report contained all the data we needed. Additionally, certain mathematical computations were necessary to make a meaningful audit analysis of the data. Our auditors realized that if the data was involved in computer printouts it should be possible to use the computer to extract the needed information, perform the computations, and print out the data in the desired format. They therefore requested that a COBOL program, which would generate the compilation of four schedules, be designed.

For one schedule, the program selected four forests, selected six different classes of vehicles by forest, totaled the cumulative maintenance cost for each vehicle class, totaled the cumulative mileage for each vehicle class, and then computed the maintenance cost per mile for each vehicle class for each of the four forests. By comparing the cost per mile for each vehicle class, we were able to ascertain which forest made the most efficient use of its vehicles. We



were also able to study in-house versus contractor maintenance for certain vehicle classes. We found, for instance, that:

1. Some vehicles were not meeting Forest Service mileage standards,
2. Some vehicles were exceeding maximum maintenance cost limits, and
3. Some vehicles were excess to Forest Service needs.

These results were positive, and our computer program, with slight modifications, was subsequently used by another regional office in auditing the Forest Service in its area.

We estimate that the computer assist to the Forest Service audit team saved approximately 40 man-days per region. The Forest Service provided its Control Data Corporation model 3600 computer and its programmers without charge to GAO. We maintained audit integrity by reviewing the coding of the COBOL programs and, in one instance, pointing out coding errors and suggesting the correct coding.

#### *Naval Air Station, Alameda*

The review of the management and utilization of shelf-life items at the Naval Air Station, Alameda (NAS-A), required both (1) the identification of all shelf-life items stocked and (2) the selection of a random sample. We determined that an Auditape application was feasible. The installation provided our staff with approximately 32,000 cards, each card containing the following information on the shelf-life item:

Federal Stock Number  
Quantity on hand

Unit price  
Commodity manager  
Location  
Shelf-life codes  
Unit of issue  
Condition code

Using a card sorter, we eliminated all cards having a negative balance (a negative balance may arise because of posting a transaction prior to the physical storage of an item or a delay in posting a receipt transaction). We eliminated the negative balances because we had no way, short of physical inventory and complete reconciliation to records, of ascertaining the accuracy of a negative balance card.

NAS-A maintains locator records for shelf-life items for three satellite activities. Since we were interested in only NAS-A, we used an Auditape "exclude routine" to eliminate cards for other installations. We also eliminated all cards having a zero balance, because we were interested in only the cards for inventory items with quantities on hand. Using a "mathematical" routine, we then computed the total NAS-A inventory value. This was followed by a "sample" routine, to select a random sample, and a "print/punch" routine to list our sample items. The sample so produced was subjected to the audit program steps.

Use of the methods described resulted in our staff being saved much tedious manual effort in assembling data for review and gave us reasonable assurance that the population from which the sample was drawn did include the entire universe in which we had an interest.

***Military Traffic Management and Terminal Service***

During an audit of ammunition shipments to Southeast Asia at the Military Traffic Management and Terminal Service (MTMST), our auditors were intrigued by the length of time it took to unload some ships, and by the apparent lack of any efficient scheduling of shipments to discharge ports.

We thought that it might be feasible to improve the scheduling of shipments through automation and to use the available computer facilities at MTMST to do so. There are many variable factors involved in scheduling shipments of ammunition on seagoing vessels, and analysis of all the variables plus their interrelationships is a staggering project.

A partial list of variables we considered follows:

1. Port of origin,
2. Port of destination,
3. Number of tons of cargo carried by the ship,
4. Number of days en route to destination and number of stops en route,
5. Number of days a ship waited to begin off-loading once it reached its destination,
6. Tonnage off-loaded during a full day of operation,
7. Tonnage off-loaded on the first and last days of off-loading,
8. Time required to rig a ship for off-loading and to unrig a ship after completing the off-loading, and
9. Days of zero tonnage off-loaded due to enemy action, equipment

failures, or miscellaneous other occurrences.

To ascertain whether improvements in scheduling could be made, our auditors decided to use the computer to simulate the shipment of ammunition. One of our staff members, who had recently obtained his master's degree in operations research, developed a Fortran IV program for a Burroughs 5500 computer. The program simulates bringing a ship into port, assigning it an off-loading berth, off-loading the tonnage carried, sending the ship on its way again, and bringing in a replacement. A relatively simple program will approximate the optimum situation. Therefore, we added refinements to the program to account for the many variables listed above.

We assigned a code for three distinct areas of origin: east coast, west coast, and intratheater (for ships that stopped at other destinations prior to the unloading of their ammunition). Using actual data, we constructed a probability distribution of the transit times from each of the three ports. The program uses a random-number generator to select a transit time for each ship from a port of origin on the basis of the actual day of departure. Thus, we have a ship leaving the west coast on a specific day with a transit time selected from a list of actual transit times. By adding the transit time to the day of departure, the day of arrival is computed. On the day of arrival, the ship enters a waiting list (queue) to await its turn to off-load.

We constructed a probability distribution of the actual amounts of tonnage off-loaded per day for 335 days. The

program selects a tonnage to be off-loaded based on a random number from a random-number generator. In constructing the probability distribution, we realized that certain zero days were inevitable because of influences beyond the control of the off-loading facility. Enemy action caused several zero days; therefore these were included within the distribution. Other zero days were eliminated because they resulted from factors that we hoped to eliminate by efficient scheduling. Basically then, we have a program that selects a transit time and the amount of tonnage off-loaded from an actual list, but in a random manner.

Of necessity we had to start the process from one given day. We therefore started the program with the ships that were actually on berth off-loading and the tonnage onboard on that chosen day. We also had ships that were waiting to go onberth to off-load and we knew the day of arrival and the tonnage carried by ships en route on the first day of processing.

Since we were interested in a period of time extending for 335 days, and since each cycle is based on random numbers, we could run the program several times and obtain a distribution of experience. We could then evaluate the distribution of experience to determine whether our program was operating as an approximation of the efficient scheduling we hoped to demonstrate.

We were continually refining the program. Each refinement we made pointed to additional ones that could be made. As we continued to improve the pro-

gram, we discovered irregularities in the data obtained from the field. For example, we knew the number of waiting days for all ships during the 335 days, but our simulation came up with several hundred days in excess of the actual number of waiting days. We were confident that our simulation was giving us an accurate picture of what had been described to us as occurring in the field; therefore, we were certain that a form of de facto scheduling was occurring in the field for which data had not been provided to us.

Although our simulation was an attempt to demonstrate the feasibility of automated scheduling, it was obvious that, through varying the parameters, we could discover the probable effect of many decisions that might be made.

While our model could not be used for the actual scheduling of shipments, it did indicate the feasibility of the computer's scheduling shipments and estimating workload and traffic.

We discontinued work with the model because of our reporting deadline, but agency officials expressed interest in it, and told us that they will be looking into the possibility of using their computer in scheduling shipments in the future.

In our opinion, this factor alone—stimulating management awareness of new techniques which may materially improve productivity—was a worthwhile payout on the assignment.

### **Observations**

One of the results of the Blue Shield assignment is the demonstration that, with the aid of the computer, we can effectively analyze large amounts of

data. We will undoubtedly be called upon to do this frequently as the number and uses of computers in Government continue to increase.

The Forest Service and shelf-life audits are in fact almost commonplace applications already and of such a routine nature as not to be of particular significance; they are mentioned only to illustrate that the frequency of application is on the rise.

On the other hand, we regard the job at MTMTS as an example of creative auditing. Using operations research techniques and the computer, we attempted to evaluate a complex function that would defy other means of analysis. The simulation of ammunition shipments also demonstrated the potential for this technique in management areas where comparisons of the probable results of alternative solutions to problems

can be evaluated before management is forced to make a real life decision.

We do not believe that every auditor of the present and future will have to know all the complexities of computer operations, such as programming for example, but he will have to have some general knowledge of the subject. He will have to be alert to potential audit applications and be quick on the draw to contact the regional specialist to obtain qualified assistance in planning for and utilizing the computer in his audits.

We have devised a 1-day course in San Francisco to help make all auditors aware of the computer's audit potential and the ready availability of "our man on computers." In this way we hope to generate a favorable climate for the development of increasingly sophisticated computer applications that will in turn allow us to become more perceptive and productive in our audit assignments.

## Techniques for Obstructing Reviews

Recently, while reviewing an Office of Economic Opportunity report entitled "Improving Headquarters Grant Practices in the Office of Economic Opportunity, March 1970," *L. O. Heilmeier* and *Roy J. Kirk*, of the Civil Division, GAO supervisory auditors, noticed in the report an entertaining article bearing the intriguing title "Ploy and Counter Ploy." The article was written by Seymour Bress and Kenneth Baum of the Health Services and Mental Health Administration, Department of Health, Education, and Welfare, and was designed to alert the 18-member task force engaged in the study to the pitfalls that might be placed in their path by the bureaucracy. The GAO auditors experienced some difficulty in locating the authors of the article, being shunted about for a week from one person to another before finally locating them. The auditors observed that this in itself is an effective ploy not mentioned in the article.

The *Review* is indebted to Messrs. Heilmeier and Kirk for discovering the article and to its authors for permission to reproduce it here for the appreciation and instruction of all GAO staff members.

### PLOY AND COUNTER PLOY

or

#### The Bress Bypass and the Baum Ritardando

The life of every devoted and dedicated bureaucrat is plagued with periodic hazards in the nature of reformers. These recurring blights appear to have a 4-year cycle, roughly coinciding with presidential elections. Though sometimes traumatic, the seasoned bureaucrat takes such periods of stress in stride. Not only does he survive, but he also avoids adopting all but a token, and inconsequential, number of those well-intentioned, though misguided, recommendations for making improvements ("impossible!") in "his" program.

Until now, the bureaucrat has had to develop the highly refined skills required to function with such annoy-

ances on a hit-or-miss basis. Those who "hit" prospered; those who "missed" seldom progressed out of the Federal bush leagues. It is the purpose of this paper to bring some order into the present chaotic training of career professionals in this extremely important administrative area, too frequently overlooked in the standard curriculum. A careful study of the techniques described below will allow even the most inept administrator to protect his program from any effective change initiated by outside agitators.

First and foremost, BE COOPERATIVE. Welcome the outside study group with open arms; tell them the

great things you expect from them; tell them that your entire organization is open to them, that you have already discussed their pending study with your staff and have urged them to provide you with any information you want, and that to help provide any other assistance they may require, you are assigning the group a LIAISON OFFICER, a senior staff person who will help the study group meet those key people and others they want to interview. Selection of the proper staff person is critical to this entire facade, known among professionals as the BRESS BYPASS, in tender memory of Seymour Bress, who first analyzed the technique and recorded it for posterity in the *Journal of Arcane and Superficial Administration*, the Bible in the field. Use of this technique means that the investigating group will never again set eyes on the program director. The LIAISON OFFICER will be equally cooperative as his superior, but if any meaningful information ever crosses his lips, he has obviously climbed the last rung of his career ladder. If he has been well trained, however, it will not be apparent even to the most astute “digger” that phase two is about to begin—the BAUM RITARDANDO, or grand stall—named in honor of one of the chief architects of the technique.

The specific techniques used are listed in random order below. They may be used singly, or in any combination, and at the discretion of the LIAISON OFFICER and his assessment of the sophistication of the reviewing group. One last cautionary note: BE COOPERATIVE.

### ***Critical Papers Mysteriously Disappear***

“I’m terribly sorry, Jack. I was sure those papers were on my desk. I must have mislaid them.”

This is a very effective technique and can produce quite lengthy delays before the missing papers must be produced. We have seen this technique used quite effectively twice in the same agency by different individuals.

1. In the first instance an associate bureau director wished to avail himself of the services of a consultant who he hoped would be able to help him reduce the amount of administrative chaos he inherited from his predecessor. His executive officer was not interested in having the consultant brought in. Somehow his office lost the papers which had to be processed before the consultant could be hired. They were not found until after the date the consultant was no longer going to be available.

2. In the second instance, the investigating group was after certain information known to be in the possession of the liaison officer. It was a handwritten listing he had worked up at great expense; other copies were not available, and he had “lost” his copy, at least temporarily. Two weeks later they still had not been found.

### ***Don't Return Phone Calls***

This delaying tactic is quite effective, if only for short periods of time. Short periods of time should not be overlooked, however, since their cumulative effect can be quite substantial.

***It's Illegal***

This can be a highly successful dodge when a rather unsophisticated review group makes an unacceptable recommendation. More often than not, it is enough to state that it is a wonderful idea, that you would be happy to implement it if you could, but your legislation or regulations do not permit it. It is absolutely amazing how often you will be able to convince the naive investigator that what you say is so without having to document your claim.

***I'm Afraid That You Do Not Understand the Subtleties of the Situation***

This can be an effective technique with more naive groups, but it should be used with caution, since it is used to belittle the competence of the investigators and make them feel inferior and inadequate. If done with the proper nuances, and gently enough, it will keep the investigators from digging in their heels and asking, "Well, dammit, what are the subtleties of the situation?" You want to avoid that at all costs, since you will not be able to explain them without looking foolish. If properly executed, this technique will result in the investigators abandoning that particular recommendation and leaving rather chastened.

***Establish an Implementing Group***

"Jack, that was one of the best recommendations I have ever heard, and I am immediately going to establish a high level task force to work up the implementing procedures." Of course, as it turns out, "immediately" is not

quite all that quick, since the first meeting of the task force cannot be held until the chairman returns from his 'round-the-world' trip in 6 weeks, and somehow or another, the remaining members will never be able to work their schedules in such a way that there will actually be a meeting during the life of the incumbent administration.

***Statistics Locked in the Computer***

This is one of the more effective ruses adopted by the knowledgeable liaison officer. "Yes, Jack, we do have that information in our computer and will have it run for you as soon as we complete our present peak workload processing run," or "as soon as it is repaired." In either event the data is not likely to be available while the "outsiders" are still around.

***That's an Exception***

"Yes, we knew about that situation, but it's a rare exception." This will effectively disarm all but the most sophisticated groups, since you are implying that if they had done a more thorough and workmanlike job they would have realized that they had come across an exceptional system. Rare will be the investigator who will ask you how you know it is an exceptional situation.

***Have To Go Through Channels for That***

This is particularly effective when you have developed good rapport with the investigating group, since they would not want to embarrass you by going over your head. It can be used for about 2 weeks of delay.

***Withhold Needed Information***

This can be quite effective, especially in those situations when the reviewing groups seem to be on to something, but are hitting it at a tangent. Discreet withholding of pertinent information may effectively speed them down the tangential road so that they will never uncover what they just missed.

***Open Your Files, But Not Your Knowledge***

Open your files to the investigating groups, but do not offer them any assistance or guidance in how to search through the files or even what to look for. You'll drown them in a sea of paper.

***Corralled Council Caper***

The study team has come up with a number of excellent (?) recommendations which can be easily implemented by a minor change in regulations. In this program, regulations can be changed only upon approval of its Advisory Council. Lucky is the bureaucrat faced with such a problem. After commending the review group for the outstanding quality of its study, and assuring the members that his Council is bound to approve the changes after only the most perfunctory discussion, he leaves our naive investigators lulled into a blissful sense of good feeling for the world and their lot in particular. Sorry will be their disillusion. The night before the Council is to meet, John J. Bureaucrat invites his Council members to an informal gathering. Over free-flowing beer and pretzels he circulates among his guests dropping hints

as to how the proposed regulations are going to destroy his program. At the meeting the next day, the Council members hardly know why they are opposed to the new regulations, but their opposition is devastating.

• • • •

If the foregoing techniques don't work, the following ploys have been used quite successfully.

***Take Things Out of Context***

Take portions of the report out of context, distort what you do take, and then write blistering memos to discredit and ridicule the report. By the time anyone becomes aware of this ploy, considerable damage may already have been done, and with luck the report is scuttled.

***Trial by the Press***

This is a very effective technique, and one frequently used, when the subject matter is right. Note these recent headlines, "400 Monkeys To Be Murdered at NIH Because of Research Cutbacks," or, "19 Regional Medical Programs Serving the Poor To Be Closed Because of Lack of Funds," or in yesterday's paper: "Test Scores of Montgomery County School Children Drop Four Years in Row—Better Schools Urged."

***Try Some Political Pressure***

We heard of one case where a certain PHS component did not move to Virginia with the rest of its organization after its chief 'phoned his boyhood friend, the Vice President, and reeled off a sorrowful tale of woe at the im-



pending move. Any prestigious person may be used to apply the pressure; it need not be the Vice President.

There are many other techniques

which may be adopted by the astute bureaucrat, but the astute bureaucrat will be able to figure the rest of them out himself.

# Cost Accounting Standards for Defense Contracts

On August 15, 1970, President Nixon signed into law the bill to extend the Defense Production Act of 1950 which, among other things, provided for the establishment of a Cost Accounting Standards Board to develop and promulgate cost accounting standards for negotiated defense contracts.

Key provisions of this amendment to the law are as follows:

- The Board is to be an agent of the Congress, independent of the executive departments.
- The Board is to be composed of five members consisting of the Comptroller General as chairman and four others appointed by him for 4-year terms. Two of these shall be from the accounting profession, of whom one is to be particularly knowledgeable about the cost accounting problems of small business; one member is to be a representative of industry; and one is to be from a Federal department or agency.
- The Board is empowered to promulgate cost accounting standards designed to achieve uniformity and consistency in the cost accounting principles followed by defense contractors and subcontractors under Federal contracts. Such standards "shall have the full force and effect of law."
- Such standards are to be used by Federal agencies and by defense contractors and subcontractors in estimating, accumulating, and reporting costs in the pricing, administration, and settlement of negotiated prime contract and subcontract national defense procurements in excess of \$100,000.

- Contracts and subcontracts exempted—
  - Those where price negotiated is based on established catalog or market prices of commercial items sold in substantial quantities to the general public.
  - Those where price negotiated is based on prices set by law or regulation.
- Before becoming effective, proposed standards, as well as related rules and regulations of the Board, must lay before the Congress at least 60 days. During this period, the House and Senate have the opportunity to resolve that "the Congress does not favor the proposed standards, rules, or regulations."
- Proposed standards, rules, and regulations must also be published in the *Federal Register* and affected parties given 30 days to submit comments for the Board's consideration.

Although headed by the Comptroller General, the Cost Accounting Standards Board will be an agency whose functions are separate and apart from the functions of the General Accounting Office.

## *Senate Action*

As reported at some length in the Summer 1970 issue of the *Review*, hearings were held by the Subcommittee on Production and Stabilization of the Senate Committee on Banking and Currency on March 31 and April 1 and 2, 1970. The committee reported its recommendations on May 21.

The Senate passed its bill (S. 3302) on July 9, 1970, calling for a Cost

Accounting Standards Board with power to develop and promulgate cost accounting standards.

### **House Action**

Hearings on the proposal were held by the House Committee on Banking and Currency on June 19, 20, and 22 and July 7. Numerous witnesses appeared before the committee, including the Comptroller General. The hearing record contains extensive testimony both for and against the bill (H.R. 17880).

The House committee's report on the bill was issued on July 27 (H. Rept. 91-1330). It provided for a Cost Accounting Standards Board, chaired by the Comptroller General, but its function was limited to *recommending* to the Congress "cost accounting standards designed to achieve uniformity and consistency in the cost accounting principles followed by defense contractors and subcontractors under Federal contracts." And such recommendations were to be made by June 30, 1971.

The report pointed out that:

The GAO report concluded, after 18 months of intensive study and research, that it is feasible and desirable to establish and apply cost accounting standards to negotiated defense procurements. GAO's conclusions were shared by the Office of Management and Budget, the Department of Defense, and other major Government agencies. Four major professional accounting organizations agreed with these conclusions. Such standards do not now exist and there is no reason to expect that they will emerge spontaneously from existing institutions or mechanisms without this enabling legislation.

The committee also noted, with respect to defense industry testimony—  
On the other hand, your committee received

considerable testimony from representatives of the defense industry that there already exists a vast body of knowledge on the subject of cost accounting. There has developed over the years a large measure of uniformity within industry on the basic segregation of costs between those directly identifiable with a contract and those costs incurred for the benefit of many contracts, and which are referred to as overhead or indirect costs. This body of existing knowledge includes, in some instances, cost accounting standards and principles which adequately serve management needs.

It concluded that further review should be made of existing standards. The report stated:

Your committee feels that before efforts are directed toward the development of new standards to accomplish the objectives recommended by the Comptroller General, a comprehensive review is needed to identify existing cost accounting standards already in use. This should include but not be limited to standards now embodied in ASPR section XV, pronouncements by the American Institute of Certified Public Accountants related to the field of cost accounting, standards established for use by regulated industries, and standards developed by trade associations for use within their industry. Circumstances should be identified in which standards do not already exist, and in which there is need for additional new standards.

The House of Representatives debated the bill at some length on July 31 and adopted the section pertaining to cost accounting standards essentially as reported by its Committee on Banking and Currency. The principal change was to call for annual reporting of recommendations on cost accounting standards rather than reporting once (by June 30, 1971).

The Comptroller General expressed objection to the House passed bill which established a Board empowered only

to recommend cost accounting standards to the Congress. He advised the congressional committees concerned that:

The bill as passed by the House limits the Cost Accounting Standards Board to developing recommendations for standards to be considered by the Congress. Each recommended standard would presumably go through the entire legislative process of committee consideration, floor action, and Presidential approval before becoming effective. Aside from the likelihood that this would be a very time-consuming process in achieving a set of cost accounting standards, we doubt whether the Congress would want to become involved in such details in an area which requires a considerable amount of technical cost accounting expertise and coordination with Government, industry, and the accounting profession. Even assuming that Congress desired to legislate standards, such standards as are enacted could not be modified or amended without again going through the whole legislative process.

### ***Conference Report***

The House provision for a Board that would recommend standards to the Congress was dropped in favor of a Board with authority to promulgate standards. The Senate adopted the conference report on August 12 and the House agreed to it the next day. House and Senate conferees reported on August 8.

### ***Presidential Statement***

In a statement made on signing the bill into law on August 15, President Nixon said that he had no objection to that part of the bill which provided for the establishment of cost accounting standards. But he did take exception to having this function vested in an independent Board outside the executive branch. He stated:

Conceivably, this aspect of the bill could be justified theoretically on the ground that the establishment of those standards will facilitate the congressional function of oversight of Federal expenditures. As a practical matter, however, the establishment of these standards will necessarily affect the negotiation and administration of government contracts. Those functions are the responsibility of the executive branch under the Constitution.

The Comptroller General and the American Institute of Certified Public Accountants testified in favor of establishing an independent board within the executive branch. I fully agree with that approach.

Since I am convinced that this provision of S. 3302 as presently formulated would unavoidably violate the fundamental principle of the separation of powers between the legislative and executive branches of the government, I request the Congress to enact an amendment as soon as the House returns from its recess to place the functions of the Board in the executive branch.

# National Association of Accountants Conference Report

The 51st annual international conference of the National Association of Accountants with the theme "Preparing for the Future" was held in Minneapolis, Minn., from June 21 to 24, 1970. The following GAO staff members attended:

*A. T. Samuelson*, director, Civil Division.

*Max Neuwirth*, associate director, Civil Division.

*William D. Martin, Jr.*, assistant director, Civil Division.

*Frank Zappacosta*, assistant director, International Division.

*Jack L. Mertz*, special assistant to the director, Civil Division.

*Donald M. Mutzabaugh*, special assistant to the director, Civil Division.

*Gerard J. Wilker*, supervisory auditor, Civil Division.

The opening address entitled "Success . . . Is Awareness" was given by Dr. Hideya Kumata, Director of the International Communications Institute, Michigan State University. Dr. Kumata stated that the age-old adage of "seeing is believing" is no longer proper and it should be "believing is seeing." He implied that people seek out what supports their individual beliefs. If you have no feeling on a matter you can be objective, but if you have a vested interest in the matter you may be less than objective. We need to break this

tendency if we are to realistically cope with the problems facing us today. An awareness of the responsibility we have to break this tendency is a necessary ingredient for success. He expressed the belief that the communication of facts seldom influences change as you believe what you want and the communication only helps support your beliefs. So that the communication gap that exists can be closed, Dr. Kumata urges us to LISTEN. Listening was described as a skill that all managers should have and use to the fullest extent.

## ***U.S. Economy in Transition Period***

The Honorable David M. Kennedy, Secretary of the Treasury, said that the U.S. economy is moving from a wartime to a peacetime economy and we are now in this period of transition. The present upward price trends reflect a lag in the impact of anti-inflationary pressures on labor demands for higher wages. The economy is undergoing a transition from a "demand-pull" inflation, in which the inflation is caused by excessive demand for goods, to a "cost-push" inflation, in which price increases are due largely to increased costs, chiefly rising labor costs. Altering economic policies prematurely would risk "losing all of the gains against inflation that have been won over the past 18 months."

Mr. Kennedy described the budget deficit as a "revenue shortfall" brought about by a reduction in profits and slowdown in the economy which has resulted in fewer taxes being paid in. He emphasized that the U.S. economy is stronger than any one or collection of economies in the world and that it is moving once again toward stability, doing so with a minimum of pain that of necessity accompanies this process.

### ***Accounting Improvements Urged***

The Honorable James J. Needham, Commissioner, Securities and Exchange Commission, speaking on the current status and trends in corporate reporting, stated that there is an urgent need for improvements in accounting principles, procedures, practices, and financial reporting. He urged the accounting profession to strive to achieve a more independent status in order to present financial information as thoroughly and honestly as possible for the benefit of the public. He believes that the public investor has a right to expect the financial officers to encourage their managements to adopt more responsible accounting methods and that financial executives should not hesitate to exert such efforts.

Mr. Needham said that a great deal of criticism has been directed at management for resorting to "accounting gimmickry" in reporting business combinations, so as to improve earnings per share data. He referred to the problem as having two facets; management has devised and issued a great variety of complex securities and it has applied

pooling-of-interests accounting to as many combinations as possible by stretching current criteria for pooling-of-interests accounting to the breaking point.

He stated that the SEC has always believed that the accounting profession should set the standards and that all others should voluntarily comply with them. He stated that he is hopeful that the accounting profession does not reach the point where Government intervention is required. It is his belief that the AICPA has in the past formulated principles which are persuasive on their merits and that coercion has not been necessary. He emphasized that it should not be necessary in the future if the Accounting Principles Board, the SEC, and financial executives contribute jointly to the solution of problems which jeopardize the public interest.

### ***Role of the Computer in Business Management***

Terrance Hanold, President, The Pillsbury Co., Minneapolis, Minn., said his subject suggests there is a relation between the computer and management but in actuality a continuing, reciprocal, interacting involvement does not exist.

He stated management's habitual reluctance to form a speculative association with an unreferenced character provides one basic reason why top management fails to relate to the computer. The other basic reason for the lack of relationship lies in the brazen indifference of the computer to top management. If we are to establish a relationship, these problems must be

attacked in the right order and that order is the fault in the computer which must be fixed before we can mend the flow in top management.

Mr. Hanold analyzed this state of affairs by noting the nature of management in each of its four levels; the supervisor, the middle manager, the general manager, and the executive manager, and how the computer has related to these several levels of management.

1. The supervisor oversees the performance of repetitive operations and manages by the manual—the computer has avidly absorbed the routine, programmed the management manual into its data files, and occasionally swallowed the supervisor as well.

2. The middle manager has charge of a function and directs the daily flow of transactions with other functions or operations of the firm, and with the world outside. He must quickly respond to constantly changing conditions and manage by selective action—the computer has been increasingly useful to middle management in transmitting all the current information essential to good operating decisions.

3. The general manager has operational responsibility for his department, division, or subsidiary. He relies on middle management to carry on current business. The general manager has full authority to set the essential goals for his business over its operational horizon and has full accountability for the performance of his organization against those goals. He manages by objective—to the general manager the computer has been useful in updating his view of operations and conse-

quently he has a more confident feel of the state of his business and of the performance of his staff.

4. The executive manager—top management—is responsible for the performance of all functions and operations of the firm, and for the formation and execution of the strategy established for the survival and success of the corporation over the plannable future. Since he must exercise insight as well as foresight, he must practice management by perception. Finally, at the executive management level, where contact with current operations is minimal, so is the relationship with the computer minimal.

Mr. Hanold gave three basic reasons for this minimal relationship of top management with the computer. One of the reasons for this condition is structural. In most organizations information systems are an appendage of another department and report through that department head. Hence top management sees the function as a subordinate part of another function.

Another reason is that the department to which information services are attached is usually concerned primarily with internal operations. Thus the computer—in machine capability, programming and staff—is primarily designed to support operations. But top management is primarily concerned with planning the future shape of the enterprise and with forecasting the environment in which it will function.

The third reason for the gap between top management and the computer is the obvious fact that executives cannot relate to something with which they have no contact.

***Appraising Performance Measurements and the Use of Incentives***

Jean J. Revelt, Manager of Marketing Services, Lincoln Electric Co., Cleveland, Ohio, identified the elements of his company's incentive management system as being honesty, progressive attitude, guaranteed employment, individual recognition (performance brings advancement, contribution brings reward), and promotion from within. An integral part of this incentive management system was stated to be the company's merit rating system. Mr. Revelt described the rating system as being based on an evaluation of the employee and his work in the areas of dependability, quality, output, ideas, and cooperation. An employee accumulates "points" based on an evaluation of his contribution in these areas. His total "points" are then used as a factor in determining the employee's annual bonus. It was pointed out that this system has proven to be very successful and it is not uncommon for an employee to receive an annual bonus which is greater than his annual salary even though the company's salaries were stated as being competitive. This bonus system is in effect for both the management and production levels at Lincoln Electric which is primarily a family-owned company with a non-union work force.

Mr. Robert W. Shopoff, Director of Administration, Dresser Industries, Dallas, Tex., stated that his company does not have an incentive plan for production people, only management level employees. He described the main

elements of an incentive system as being the establishing of policies, ground rules, goals, and objectives; determining what can be measured; comparing results with goals; and paying off on results.

The philosophy of his company's incentive system has these elements:

- The development of good management and its remuneration are vital to progress.
- The desire to be a "results" organization.
- The use of incentive plans rather than profit sharing plans.
- An incentive plan is no substitute for management; in fact, it requires better management.

Mr. Shopoff emphasized the necessity to DEFINE the results you want from a member of the organization, IDENTIFY those whose performance can be read unequivocally by means of reliable indications of his accomplishment, and REWARD in proportion to this accomplishment. He stated that there is no one plan that is applicable to all situations in a diversified company.

***Costs for Decisionmaking***

Dr. Darwin J. Casler, Chairman, Accounting Department, Mankato State College, Mankato, Minn., and Carl Crankshaw, Division Controller, Controls Division, Reliance Electric Co., Cleveland, Ohio, discussed what is involved in identifying and utilizing costs for decisionmaking. As an assist to the modern manager, considerable emphasis was placed on differential or incremental costs. This type of cost was



described as the increase or decrease in total cost which results from a comparison of alternative courses of action.

It was brought out that management needs relevant accounting information for decisionmaking. In keeping with this concept it was stated that the responsibility of the management accountant includes:

- Identifying relevant financial data required for specific decisions,
- Analyzing and summarizing these data in a useful and meaningful way,
- Providing management with a report on probable financial impact of decisions, and
- Interpreting and advising management as to the meaning and significance of the report and the data therein.

Management accounting was stated to contribute to decisionmaking by:

- Providing relevant historical data for use in forecasting the future,
- Coordinating and integrating various estimates,
- Reviewing and evaluating assumptions made in assembling data,

- Presenting data in meaningful form for decisionmaking,
- Providing feedback which compares actual results with estimates and plans, and
- Recognizing and using different costs for different purposes.

In a discussion of the approaches to cost taken by accountants and by economists it was stated that the economists have traditionally placed heavy emphasis on theory and the future while the accountants have traditionally emphasized the past and historical reporting and the practical rather than the theoretical. The management accountant, however, was portrayed as adopting appropriate economic concepts such as differential cost analysis, imputed cost of capital for investment decisions, and the opportunity cost concept of profits foregone by not taking the best alternative course of action.

It was also brought out that the management accountant's role is steadily increasing in its significance in that he is enjoying greater participation as a member of the management team and he is providing more useful data for management decisions.

## Notes on Annual Symposium of Federal Government Accountants Association

The 19th annual symposium of this association was held in Miami Beach, Fla., June 18–20, 1970. GAO staff members attending were:

Office of Policy and Special Studies:

*E. H. Morse, Jr.*, director.  
*Daniel Borth*, deputy director.  
*Mortimer A. Dittenhofer*, assistant director.

Program Planning Staff:

*Harry C. Kensky*, director.

Civil Division:

*Bernard Sacks*, assistant director.

Defense Division:

*Charles M. Bailey*, director.  
*Sam Pines*, assistant director.

Regional Offices:

*Walton H. Sheley, Jr.*, regional manager, Dallas.  
*Herbert E. Larson*, assistant regional manager, New York.  
*Howard G. Cohen*, audit manager, Boston.  
*Zane Geier*, audit manager, Atlanta.  
*Robert J. Piscopink*, audit manager, Detroit.  
*Gerald T. Kelly*, supervisory auditor, St. Paul.

### Speeches

The keynote address for the symposium was delivered before a large

audience by Adm. Hyman G. Rickover. He spoke on "Accounting Practices—Do They Protect the Public?" His provocative address noted numerous ways in which, in his opinion, the professional accountants including those in Government have been "dilatatory" in trying to protect the public interest. He also urged that Federal accountants assume a greater responsibility for the public well-being.

Another presentation of especial interest was made by Larry A. Jobe, Assistant Secretary for Administration, Department of Commerce, on "Financial Management in the Federal Government—Are We Doing Less With More?"

The Rickover and Jobe papers and a number of others presented at the symposium will be included in the December 1970 issue of *The Federal Accountant*, published by the FGAA.

GAO staff members participating in the technical program included:

*Charles M. Bailey*, director, Defense Division, who spoke on "Profits and Prophets on Government Contracts."

*Daniel Borth*, deputy director, Office of Policy and Special Studies, who spoke on cost accounting standards for defense contracts.

*Mortimer A. Dittenhofer*, assistant director, Office of Policy and Spe-

cial Studies, who discussed the GAO-led interagency project to develop auditing standards for Federal assistance programs.

**FGAA Officers from GAO**

FGAA national officers for 1970-71 introduced during the symposium included the following from GAO:

President, *E. H. Morse, Jr.*, director, OPSS.

Regional vice presidents:

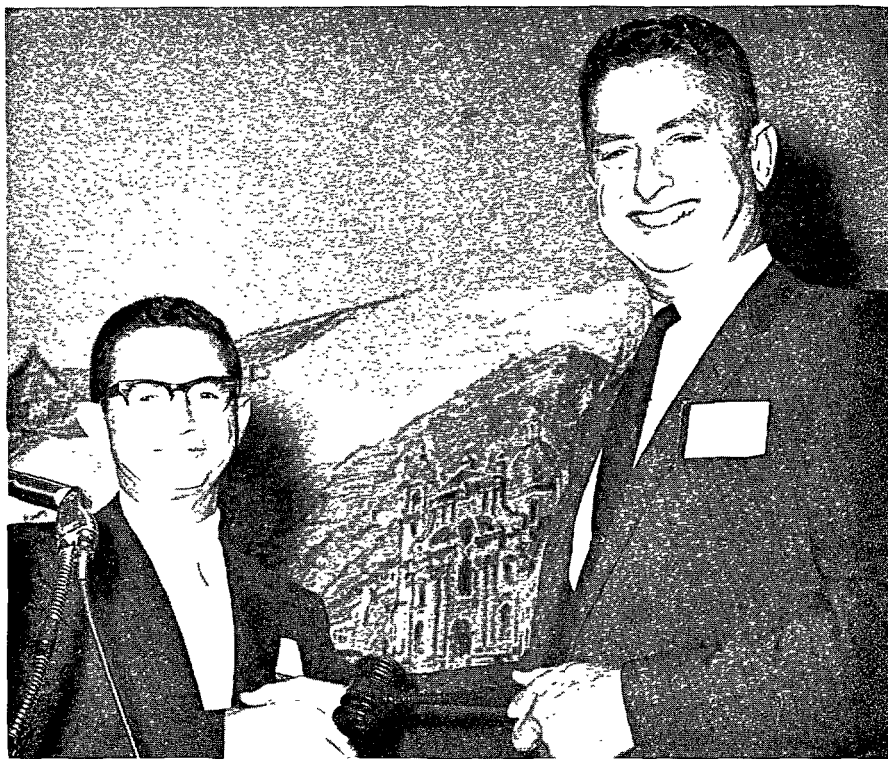
Capitol Region, *Francis Lyle*, assistant director, OPSS.

Northeastern Region, *Howard C. Cohen*, Boston Regional Office.

Southern Region, *Zane Geier*, Atlanta Regional Office.

Southwestern Region, *Dayle W. Booher*, Dallas Regional Office.

Central Region, *David P. Sorando*, Cincinnati Regional Office.



**E. H. Morse, Jr., national president of FGAA, accepts gavel from outgoing president, Bernard B. Lynn, at national symposium, Miami Beach, Fla., June 20, 1970.**

## From GAO Speeches

*Elmer B. Staats*, Comptroller General, speaking about priorities for the 1970's before the 10th Reunion, 38th Advanced Management Program, Harvard Business School, Colorado Springs, Colo., June 17, 1970:

It seems to me that the first general priority comes under the heading of environment. What qualities of life shall we seek? During the 1960's the five senses of human beings—what we see, hear, touch, taste, and smell—have been increasingly assaulted. In each of these senses, where human lives are directly affected, vast amounts of work need to be done by private initiative supported, by and large, with Government financing and administration.

It is appropriate to recall the story of Pogo, who, when sent on reconnaissance, returned and reported: "I have found the enemy, and he is us!"

By environment, I refer of course to air, land, water, growth and preparation of food, means of travel and communication, cities, suburbs, the houses we live in, those areas of our country which are still open spaces awaiting appropriate development, use of chemicals, methods of disposing of waste, standards of design and construction, and one increasingly important one—attitude toward noise, and location of nuclear-electric power plants.

Again, our problem is one of gaining public attention and support, fixing priorities, planning, money, and a lot of hard work. Here in this picturesque area it is especially pertinent that we think of the need for the preservation of our environment. Only a few years ago few people even registered to the meaning of the phrase "environmental quality" and many poked fun at Lady Bird Johnson when she initiated her beautification effort. In the few short years since then, we have estab-

lished a new Council on Environmental Quality and a new Citizens' Advisory Committee on Environmental Quality. The House of Representatives has voted to establish a joint House-Senate Committee on the Environment. And there are strong indications that President Nixon may soon propose a new superagency to spearhead major new drives in this area. Next to Vietnam there is perhaps no more sensitive political nerve in the body politic today than environment.

\* \* \* \* \*

Perhaps it would be relevant to terminate these remarks with a few points with respect to national decisionmaking machinery. The generally accepted view is that national problems have increased in scope and number beyond the capability of traditional mechanisms to respond. There is little doubt that institutions change more slowly than the problems which these institutions are designed to solve.

The Congress has been doing more and more soul searching on this subject. The House has shown new signs of interest in modernizing its machinery through the Legislative Reorganization Act recently reported from the House Rules Committee. A notable step proposed would be to provide for take-off hearings on the annual budget by the full Appropriations Committee with the Secretary of the Treasury, the Director of the Bureau of the Budget, and the Chairman of the Council of Economic Advisers as witnesses. The hope would be that the budget could be viewed in its totality—in relation to revenues, balance of payments, and economic issues which now tend to get lost when broken into a multiplicity of budget considerations.

There are pending proposals to establish a Commission on Legislative Evaluation, a Congressional Research Service, a congressional Office of Technology Assessment, a

Joint Committee on Environmental Quality, to strengthen the General Accounting Office, and others—all designed to equip the Congress to more effectively discharge its policy and oversight responsibilities. What will come of this debate and these proposals is, of course, problematical, but it is encouraging that the focus is on major issues with a lessened emphasis on details of administration which can more properly be left to the executive branch.

*E. H. Morse, Jr.*, director, Office of Policy and Special Studies, at the Post-Audit Workshop, National Legislative Conference, Salt Lake City, Utah, August 28, 1970:

We, as auditors, like to consider the auditing function to be a vital part of the total management process. However, we cannot take it for granted that the auditing function is always understood or even wanted in all quarters. We have to demonstrate that what we do is useful to managers and legislators by providing information that will help them do a better job.

And it is incumbent on us to strive to develop the most workable, efficient, and effective audit system possible. With agreement on these almost basic truths and with attitudes of constructiveness and willingness to cooperate fully with each other, we can do much to improve our function in the grant programs.

*Charles M. Bailey*, director, Defense Division, speaking on "Profits and Prophets on Government Contracts" at

the annual symposium of the Federal Government Accountants Association, Miami Beach, Fla., June 18, 1970:

There have been repeated charges of excessive profits on defense sales and counter charges of inadequate defense profits compared with the return on commercial business. We firmly believe that it is in the best interests of both industry and Government to have a meaningful profit study completed and I am glad to say that on the whole we are receiving excellent cooperation from industry in our study.

It is, of course, very difficult to forecast what the future holds in regard to profits on defense work and I don't intend to guess at exactly what the profit rates will be. However, over the long run, profits will have to be sufficient to maintain a healthy defense industry and to encourage contractors to undertake Government work. Profits will have to be high enough for contractors to take the risks involved and to attract the necessary capital investment. In relation to commercial profits, I believe defense profits will generally be somewhat lower due to the benefits, in addition to profits, which accrue from defense work in many instances. These include Government-financed research and development work which may offer substantial benefits to a company in its commercial field, and the availability of progress payments and Government-owned facilities which reduce the requirement for private capital. In addition, we believe that the amount of profit to be paid for defense work should be determined, at least in part, by the amount of contractor investment required to perform that work.

## NEWS and NOTES

### *50th Anniversary of GAO*

June 10, 1971, will mark the 50th anniversary of the signing of the Budget and Accounting Act, 1921, which created the General Accounting Office. The Office began operations on July 1, 1921.

To commemorate its 50th year, a program of special events and publications is being arranged. A series of five lectures by prominent speakers in various fields will be made to GAO employees and these lectures will later be published in book form. The Summer 1971 issue of the *GAO Review* will be devoted almost entirely to the history, evolution, and personalities of GAO over its first half century. Articles concerning various aspects of GAO's role and services will appear in professional journals.

In announcing plans for the anniversary, the Comptroller General, *Elmer B. Staats*, stated:

Special recognition for GAO's 50th anniversary is very much in order. The GAO has contributed immeasurably over half a century to economy and effective management in the Federal Government, and has increasingly provided assistance to the Congress in carrying out its legislative duties. It is a suitable time to reassess how the GAO can become even more effective in the years ahead. The GAO—like any other organization—cannot rest on its laurels.

### *Control of Federal Spending*

During the debate in the House on Departments of Labor, HEW, and related agencies appropriations for 1971, the chairman of the House Appropria-

tions Committee, George Mahon of Texas, discussed this subject at some length. On waste and responsibility for spending, he stated:

#### *Waste in Government*

No President, Democrat or Republican, seems to do a sufficient job in promoting efficiency and controlling spending. Always, it seems to get out of hand. Congress, the General Accounting Office, the executive branch, and the press uncover in every administration innumerable instances of gross waste of dollars and miscalculations which lead to shocking cost overruns.

There are many types of waste. Do you remember the story about the submarine *Guitarro* which, as a result of carelessness, sank at the dock while under construction last year at a cost to the taxpayer of \$30 million?

To call the roll on Government waste in defense and nondefense areas would consume far more time than is allotted to me. I think my point is clear. There is waste and mismanagement in Government, and neither Congress nor the Executive have succeeded in controlling it.

#### *Responsibility for Spending*

The executive branch administers the Government, appoints the executives, hires the employees, makes the contracts, and spends most of the money.

Congress appropriates the money and is not blameless with respect to all waste and mismanagement, but the major responsibility in the field of actual spending and the administration of programs is with the administration in power.

(Congressional Record, July 21, 1970, p. H. 7000)

### *Plain Talk on Defense Procurement*

Addressing the Armed Forces Management Association in Los Angeles, Calif., on August 20, 1970, the Deputy Secretary of Defense, David Packard,

had some choice remarks to offer on management of defense procurement and the need to improve the process.

Some examples:

We spend billions of the taxpayers' dollars; sometimes we spend it badly. Part of this is due to basic uncertainties in the Defense business. Some uncertainties will always exist. *However, most of it has been due to bad management, both in the Department of Defense and in the Defense industry.*

\* \* \* \* \*

I know Secretary Laird and I bear the responsibility for the system in the Department of Defense, and I am going to keep working at it. But you in industry bear a similar responsibility, and I expect you to do the same thing.

In my memo I told the Services to select people with the right background and education for management, give them appropriate training, give them recognition, and leave them on the job long enough to get something done.

All four Services have accepted my recommendations—and their letters say that they agree. But on at least two occasions they have taken actions exactly contrary to those suggested. The Air Force and the Navy are both involved. In one case, a small dedicated Air Force team developed the gunships which have been so successful in Vietnam. The Air Force decided to put this program into its formal system. About a month ago I asked when we would be able to get some more gunships. The answer was in 2 years. That program is now out of the Air Force system, and we will have more gunships in 6 months.

In the other case the Navy, shortly after agreeing that a good manager should be kept on the job long enough to get it done right, proceeded to promote a key manager at a critical time from an important program to another assignment. The system wins and the cause of good management loses.

\* \* \* \* \*

The most frustrating thing is that we know how we ought to manage—you, me, all of us—and we refuse to change based on what we know. Every time we want something done

in a hurry and want it done right, we have to take the project out of the system. We give a good man direction and authority and let him go—and it works.

\* \* \* \* \*

On the other hand, when we are not in a hurry to get things done right, we over-organize, over-man, over-spend and under-accomplish.

\* \* \* \* \*

The lesson that comes through loud and clear here is we should buy only what we need—not systems you or anyone else thinks they can develop to do something that doesn't need to be done. The Defense Department has been led down the garden path for years on sophisticated systems that you promised would do all kinds of things for some optimistic cost.

\* \* \* \* \*

We are not going to put things into development until we are sure we need them, and we are not going to put things into production until we are sure that they work.

**GAO Assistance to a Congressional Committee**

Senator Stennis of Mississippi, chairman of the Senate Armed Services Committee, reviewed in the Congressional Record for July 22, 1970, the activities of his committee over the past year in monitoring defense procurement. Among his references to GAO assistance to his committee were the following:

In selected instances this past year, we were assisted by the General Accounting Office by detailed analyses of several programs prior to hearings on the fiscal year 1971 budget authorization, including the Minuteman and Poseidon missiles and the P-3C and F-111 aircraft programs.

\* \* \* \* \*

In view of the controversial aspects of the contracts on the C-5A and F-111 programs, the Preparedness Subcommittee is performing analyses of the contractual aspects of

some of the newer programs authorized, including the F-14 and F-15 aircraft contracts. In this we have the able assistance of the General Accounting Office, which is providing an independent analyses of the contractual features.

\* \* \* \* \*

The GAO is rendering an outstanding service in connection with its duties and responsibilities in this field.

### ***Value of Renegotiation***

Writing on the need for renegotiation as an essential part of the Government's procurement processes, the Chairman of the Renegotiation Board, Lawrence E. Hartwig, summarizes its value (*Defense Management Journal*, Spring 1970) as follows:

Our economic system is based on the idea of the objectivity of market forces in an environment in which competition is presumed to adjust prices and costs to yield a fair profit. To the extent that the defense-space procurement process introduces—quite unavoidably—non-competitive elements, it may endanger that system. Renegotiation in all its aspects—both as a deterrent against overpricing and as an instrument for recapturing excessive profits—tends to assure that the rewards of defense-space business are comparable to those that would be obtained by contractors in a price competitive market. Thus to the extent that renegotiation ensures that no one profits unduly from such business, it is a valuable tool.

### ***Questions About Accrual Accounting***

The accrual method of accounting and discussions about it seldom rank very high on the list of popular conversation, or even reading, topics. The subject is important, however, in Federal Government operations because of decisions made at the highest levels of Government that this method should be

adopted in accounting for Federal agency resources and operations.

In 1956 the Congress specifically directed each executive agency to maintain its accounts on the accrual basis (Public Law 863). Before that the Budget and Accounting Procedures Act of 1950 specified basic objectives of Federal agency accounting that could only be achieved through the application of accrual accounting methods.

In 1967 the President's Commission on Budget Concepts recommended stating the national budget results on the basis of accrued revenues and expenditures rather than on the traditional cash basis. This recommendation was adopted by President Johnson and reaffirmed by President Nixon.

Despite the high level endorsements of the method, conversion of the accounting methods of the Federal agencies has been a slow process and there is still a long way to go. A lack of appreciation or understanding of the merits of the method exists in many quarters.

To provide a simplified explanation of the accrual method of accounting and provide answers to many of the questions that have been raised about it, the GAO published in August 1970 a booklet entitled "Frequently Asked Questions About Accrual Accounting in the Federal Government."

The information in the booklet is organized around 36 specific questions. It will not be the last word on the subject but it does represent a reasonable effort to provide understandable answers to questions that have been raised not only by laymen in accounting matters but by others who are



knowledgeable in financial management concepts.

### ***Endorsement of Project Prime***

Congressman Lucien N. Nedzi of Michigan, a member of the House Armed Services Committee, writing in the *Armed Forces Journal* for May 2, 1970, stated:

The Defense Department accounting system known as "Project Prime" should be fully implemented. It calls for the application of a number of modern management techniques to military units and would vastly improve the quality of resource management information available to those responsible for managing resources, from installation level up to Deputy Secretary Packard. At present, individual installations have ceilings on civilian manpower, supplies, and military manpower, but budgets are required only for the first two. Project Prime would provide a commander with a budget for his military manpower.

Such budgetary controls, however, should not be implemented in such a way as to deny a commander the flexibility necessary in combat or in an emergency situation. Present budgetary controls over military supplies might be taken as a model for the controls which should be created for manpower.

Incentives for the efficient management of manpower at the installation level must be created—and the incentives must be strong. Post commanders should have to budget for troops, and military salaries should be paid from the commander's budget. Should he have more men assigned to his command than his budget calls for, reassignments should be requested. Such awareness of dollar costs would contribute substantially to more efficient management and utilization of manpower.

### ***State Auditing Concepts***

New concepts of auditing and their relationship with modern concepts of budgeting were among the subjects discussed at the 25th annual meeting of

the National Association of State Budget Officers in Albany, N.Y., in August 1969. Of interest to Federal auditors are the indications of significant widening of the scope and objectives of auditing in some States, reflected in the following excerpts from the published summary of the proceedings.

The traditional concept of the public audit as an instrument of financial control has been replaced generally by the idea of a performance post-audit. This type of post-audit is directed to the basic programs of the organizations audited and is an examination of the effectiveness of a program as a whole. Whereas the traditional or legal post-audit was limited to the verification of documents supporting a financial transaction and the ascertainment that expenditures conform with all relevant accounting and statutory requirements, the current concept of the post-audit embraces an evaluation of not only managerial efficiency but of administrative performance.

\* \* \* \* \*

Mr. Ernest Ellison, the Auditor General of the State of Florida, described the performance post-audit as an examination of the effectiveness of administration, its efficiency and adequacy in terms of the program of the State agency as authorized by law to be performed. He pointed out that the traditional financial audit relates actual revenues and expenditures to budgets, highlighting variances, especially where appropriations have been over-expended or over-encumbered. In performance evaluation, however, audits must be addressed toward matters broader than a mere comparison of planned to actual production and budgeted to actual cost. The auditor must be concerned with such matters as administrative efficiency and the adequacy of program policies and procedures. Mr. Ellison outlined the prerequisites for the performance post-audit to be beneficial to both State administration and program budgeting. These include the following:

1. All State plans must be expressed formally, written and compiled in one document rather than simply implied in a complex procurement-oriented budget.

2. Program objectives should be defined clearly. If they are not, responsibility for accomplishment cannot be fixed with any degree of certainty.

3. Definitive and measurable performance standards are necessary. If they are not adopted, the performance audit must highlight their absence as a contributing cause of deficient program administration.

4. Monetary authorizations should parallel closely the program or production units planned. This is needed to evaluate compliance with legislative intent.

5. Program plans and budgets should be designed in such a way that choice can be made from several alternatives relative to specific program objectives and levels of operations.

Mr. Martin Ives, Deputy Comptroller for the State of New York, explained that New York State has developed a post-audit system which effectively integrates the traditional financial accountability type audit with an examination of performance efficiency and program results. He stressed the need for adequate performance standards and program objectives upon which the auditor can measure accomplishments. New York State tests agency standards and staffing ratios for reasonableness by comparing these not only to standards developed by other State agencies but to those used by other public jurisdictions and selected industries in the private sector.

Mr. Ives added that although the scope and techniques of a post-audit vary in accordance with the requirements of a particular agency, a simultaneous audit of similar functions in separate departments can provide an efficient comparative analysis of costs and performance.

The viewpoint of the executive branch of State government was expressed by Mr. Homer E. Still, the Planning Director for the State of Florida. Mr. Still described the performance post-audit as a valuable tool to the executive in evaluating control techniques. He pointed out that although the agency manager has the primary responsibility for program evaluation and the selection of effectiveness measures, the performance audit, as an independent review of executive programs and goals, serves to protect the

system of checks and balances. Mr. Still concluded that the clarification of objectives and the evaluation of agency operations are both essential parts of a planning, programming, and budgeting system.

### ***Revenue Sharing***

A convenient summary of the proposal to share a portion of Federal revenues with State and local governments is provided in a Presidential memorandum on the subject dated June 24, 1970. The document sets forth the arguments in favor of revenue sharing and is accompanied by a brief description of the proposal and a series of 15 questions and answers concerning it. (See Congressional Record, June 30, 1970, p. H. 6283.)

### ***Control Over Federal Grant Fund Expenditures***

An example of a GAO examination into weaknesses in control of expenditures of Federal grant funds by a high school district was reported in the Congressional Record for August 14, 1970. The item was inserted by Representative Louis C. Wyman of New Hampshire, with the following introductory remarks.

I want to commend Mr. Staats and the General Accounting Office for this constructive report and recommendations. This is an outstanding example of how the different levels of our Federal, State, and local governments can work together with success and harmony to achieve reform when it becomes apparent that reform is needed.

### ***One Way To Extend Limited Audit Resources***

*The Internal Auditor* for July/August 1970 contains some suggestions by

Larry A. Jobe, Assistant Secretary of Commerce for Administration, that are of interest to auditors concerned with trying to extend their efforts with limited resources. The suggestions were made in a speech in September 1969 before the Washington Chapter of The Institute of Internal Auditors.

The essence of Mr. Jobe's suggestions is contained in the following excerpts from his speech:

My suggestion is to combine internal auditing, based on traditional auditing concepts, with a management consulting approach \* \* \*.

\* \* \* \* \*

Before we audit an activity, the normal procedure is to perform a survey. The purpose of a survey, as you know, is not merely to develop background information on an activity but also to identify the problem areas which require attention and corrective action. It is common to place audit emphasis on problem areas.

I feel that those problem areas—once identified—should be brought immediately to the attention of management to solicit acceptance of the finding. If management concurs, the necessity to extend the examination would be eliminated. We could then assume the role of management consultant, providing recommendations to correct the condition. In the event management does not agree with our findings, further audit examinations would seek to (1) verify that our findings are relevant and significant; and (2) evaluate the objections raised by management.

### ***Effectiveness of Rural Loan Program***

Under the broad heading of "Anti-poverty Setback," *The Wall Street Journal* for July 28, 1970, carried a lengthy story by Burt Schorr about some of the difficulties in effectively helping low-income rural residents

through Federal loan operations. Of special interest in the story was the use of information drawn from the GAO report on its review of the administration and effectiveness of the economic opportunity loan program for low-income rural families administered by the Farmers Home Administration of the Department of Agriculture. This report (B-130515, Aug. 21, 1969) was one of a series of reports issued by the Comptroller General in 1969 pursuant to the directive in the Economic Opportunity Amendments of 1967 to review the administration and accomplishments of programs authorized by the Economic Opportunity Act of 1964.

The *Journal* story stated:

Last year Congress' spending watchdog, the General Accounting Office, issued a report that scored the FHA for failing to provide the low-income borrowers with adequate counseling and supervision—giving them less, in fact, than the better-off recipients of other FHA loans. (The GAO conclusions were based on a one-year investigation that ended in early 1968, but FHA staffers acknowledge that the findings are still valid.)

To try to measure the effect on recipients' incomes, the congressional agency selected 180 borrowers with loans outstanding for at least 1 year. Significantly, it had to eliminate 52 of this sampling because the borrowers "were no longer in the . . . enterprise for which the loan was made" or simply couldn't come up with income and expense data. In the remaining 128 cases, the GAO concluded that about half the borrowers were no better off financially than before.

Another GAO finding: Many loan recipients weren't really poor at all. Reviewing 265 loan approvals, it found 115 borrowers with above-poverty incomes or assets exceeding liabilities by \$5,000 or more. Ten of these even had a net worth exceeding \$10,000.

And the GAO concluded that the loan program has been conducted "without advanced planning and without benefit of a system of

management reports which would permit evaluation of its impact and effectiveness."

**GAO Report on Federal Meat Inspection**

The GAO report on its review of this activity has received widespread attention. Entitled "Weak Enforcement of Federal Sanitation Standards at Meat Plants by the Consumer and Marketing Service, Department of Agriculture" (B-163450), the report was submitted to the Congress on June 24, 1970.

Based on visits to 48 meat plants receiving Federal inspection or grading service, GAO auditors found disturbing evidence of unsanitary conditions and lenience in enforcement of established sanitation standards of Federal inspectors.

Among those whose reaction to the report was not especially favorable was the publisher of the *Western States Meat Packers Association Bulletin*. The issue for July 6, 1970, described the GAO report as "totally misleading, slanted, unobjective and rigged, based on a survey by unqualified personnel." In most cases, any one of these is enough to generate a vigorous response by GAO staff members. In this case, the unconstrained characterization led to the *Bulletin* being favored with a letter signed by *Roland Sawyer*, GAO Information Officer. The *Bulletin* printed the entire letter in its July 27 issue. Some highlights:

... I am in a position to assure you that the report is fully informative being based upon facts, and as objective in its statements as is humanly possible; that it not only was not "rigged" but was based on evidence that came from Consumer and Marketing Service

records; and that the survey was conducted by senior, experienced GAO auditors who, though not sanitary engineers, nevertheless know a rat when they see one, and similar indications of visible unsanitary conditions.

The Bulletin alleges that, in these words:

Last year the GAO asked the Consumer and Marketing Service for a list of plants (which was) graciously supplied . . . .

The facts are that GAO selected the plants from C&MS records, after reviewing several hundred individual meat plants files.

Moreover, GAO auditors did not undertake the survey either "suddenly"—as alleged—or without reliance upon experts in the field, specifically, Consumer and Marketing Service supervisory personnel. The C&MS experts accompanied our auditors on each of their visits to the meat plants.

\* \* \* \* \*

... may I mention that individual meat plants sign an agreement with the Consumer and Marketing Service that they will abide by its rules and regulations. One of the purposes of those rules and regulations is to attain reasonable sanitary conditions in the meat plants and prevent unfair competition that results if plants fail to meet those standards. The administrator has made it clear in his letter of June 15 that a sufficient number of plants have not lived up to their written word in that regard. The GAO report documented the administrator's statement.

**GAO Review of Antipoverty Programs**

During hearings in May 1970 on 1971 appropriations for the Office of Economic Opportunity by the House Appropriations Committee (Subcommittee on Departments of Labor and Health, Education, and Welfare and Related Agencies), the subcommittee chairman, Daniel J. Flood of Pennsylvania, inquired of the OEO director, Donald Rumsfield, about allegations of waste in OEO programs and asked "what kind of solid results does OEO

have to show for its \$9.7 billion in Federal appropriations since 1965?"

In providing information for the hearing record (pt. 6, p. 536 *et seq.*), OEO drew heavily on the GAO summary report submitted to the Congress March 18, 1969, on its review of the OEO programs, as shown by the following excerpts:

You recall that the 1967 amendments to the Economic Opportunity Act authorized and directed the Comptroller General of the United States to make an investigation of programs and activities financed in whole or in part by the funds authorized under the Act. This investigation dealt with questions of efficiency and program achievement. It was submitted to the Congress on March 18, 1969, shortly before I was appointed Director of the Office. The GAO findings cover comprehensively the Agency's efforts and achievements during its first 5 years. Included in the report is an OEO response to GAO's summary findings. Any assessment of the report must draw judgements based on a careful comparison of the GAO findings and the OEO response.

Generally, GAO found that OEO's own efforts to evaluate agency achievements between 1965 and 1968 had been too unrelated to one another to provide useful national assessments. Against the background of this limitation, GAO did conclude that most of the manpower programs had experienced high and early dropout rates. From this GAO further concluded that many enrollees had received little actual help. In the case of health programs, GAO found that the scale of activity had fallen short of original plans, but that many poor persons had for the first time been provided with readily accessible medical care on a comprehensive basis. On education programs, GAO's conclusions were tentative in the case of Head Start because of the major evaluation then in progress. This study subsequently indicated that Head Start children, particularly those in the summer component, had made relatively modest gains compared with their non-Head Start counterparts. The Upward Bound Program, since transferred to the Office of Education, was

cited as having shown some results in helping poor students to overcome academic handicaps and motivational difficulties in order to prepare for college entrance. The Legal Services Program, according to GAO, had improved the plight of the poor by affording them legal information and educating them to their legal rights and responsibilities. VISTA proved difficult to evaluate in summary fashion because of the variety of functions performed by volunteers who often work alongside other OEO program personnel. Migrant programs were rated beneficial in helping migrant adults to improve their employment prospects and in preparing migrant children to enter elementary school. GAO observed that the Economic Opportunity Loan Program, administered by the Small Business Administration, could be improved by offering more assistance to borrowers and improving their managerial skills. The Economic Opportunity Loan Program for rural areas, administered by the Department of Agriculture, was found to have made only a limited contribution to bettering the income of most loan recipients.

GAO found a variety of problems in OEO administration prior to 1969. These dealt with the processes for selecting and counseling program participants, for supervising program staff, for job development and placement in employment programs, for following-up on the progress of program participants, and for doing the record keeping and reporting needed to measure program performance.

Criticism of the Community Action Program prior to 1969 centered on the need to improve the staffing, management and planning capabilities of the local grantees. A good many OEO and grantee irregularities in the handling of funds were noted. GAO's recommendations for improvement endorsed President Nixon's transfer of a number of programs to other Federal agencies, and called for the clarification of program objectives and criteria, and for substantial improvements in program coordination, agency organization, and management procedures.

In its response to the 1969 GAO report, OEO found that many of the criticisms and recommendations had merit, and concurred that remedies were in order. It was noted

that the report largely omitted OEO program accomplishments and thus lacked balance for the objective reader. Questions were raised also about the validity of the conclusions reached by GAO from the relatively small sample of the OEO programs studied in depth. Of particular concern to OEO was the need to make clearer the relationship between performance problems and the delays and uncertainties in the Congressional authorization and appropriation processes. To provide balance to the report, OEO submitted data concerning the actual number of new services established, the participants served, and the involvement of the poor in the direction or administration of local programs.

The best statistics available on OEO program performance from fiscal year 1965 through fiscal year 1970 are contained in the table below. These constitute the best assessment of the results achieved with the appropriations provided since 1965.

Other OEO exceptions taken to the GAO report dealt with matters of degree of GAO criticisms of program management.

Both GAO and OEO agreed on the number of persons who moved out of poverty between 1964 and 1968—downward from 34 million to 22 million or a reduction of 12 million persons. Of course, not all of this was attributed to Federal programs aimed at assisting the poor. Much of the reduction was attributed to the expansion of the national economy during those years.

When I was appointed OEO Director in May 1969, the GAO report had recently been issued. I relied heavily on its findings in working with the several task forces involved first in appraising and then later in restructuring the Office of Economic Opportunity. The OEO program results of the last year are not sub-

stantially different in statistical terms than those of earlier years. This is clear in the table below. However, what we have done in response to the GAO report and other studies and criticisms of the Agency, is to make definite changes in objectives, organization, and relationships.

### ***Unsolicited Compliment***

From a recent letter from Thomas E. Dustin, executive secretary, Indiana Division of the Izaak Walton League of America:

I would like to add general praise for the work of the GAO, which almost alone among the Federal agencies has taken a most serious attitude on the effectiveness—or lack of it—of Federal expenditures. I am familiar with some of your critiques of the Department of Agriculture pesticides registration program, and your outstanding document of last November regarding the effectiveness of the direct grant program of clean water restoration. Your highly constructive criticisms can have no other result than improved use of Federal funds.

It has been a source of some inspiration that GAO guards its independence and objectivity, instead of either winking at foolishly spent funds or giving up in exasperation because of the web of political tissue that sanctions such waste and expeditiousness.

### ***Conservation Note***

According to *Better Homes and Gardens* (August 1970), "every ton of paper reprocessed means 17 fewer trees cut down for new paper."

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# HEARINGS *and* LEGISLATION



By Margaret L. Macfarlane

*Chief, Legal Reference Services, Office of the General Counsel*

## **New Laws**

As the 91st Congress nears the end of its deliberations with a considerable number of bills affecting the jurisdiction of the Office still on the active calendars, several new laws having a substantial impact on the GAO have already been enacted.

The signing by the President on August 15, 1970, of enrolled bill S. 3302—which became Public Law 91-379—authorizes the establishment of a Cost Accounting Standards Board with the Comptroller General designated as chairman with authority to appoint the four other members. A résumé of the provisions of the law is on page 80 of this issue of the *Review*.

Another new law assigning new duties to GAO was the Airport and Airway Development Act of 1970, Public Law 91-258, approved May 21, 1970 (84 Stat. 219). Under section 26 of the law, the Secretary of Transportation and the Comptroller General are given access to the records of recipients of airport grants. The act requires the Comptroller General to report on or before January 3 of each year to the Congress on the results of each audit conducted or reviewed under the act. The section

further proscribes the withholding of information from congressional committees by the Secretary of Transportation and the Comptroller General.

The Emergency Home Finance Act of 1970, Public Law 91-351, approved July 24, 1970 (84 Stat. 450), provides for the creation of a new Government corporation designated as the Federal Home Loan Mortgage Corporation. The Corporation's financial transactions are made subject to audit by GAO. Included also is a specific GAO access-to-records provision. The act requires a report on each audit to be made to the Congress but does not specify a reporting date. The purpose of the law is to stimulate financing of residential housing.

The Postal Reorganization Act, Public Law 91-375, approved August 12, 1970 (84 Stat. 719), contains several provisions relating to GAO. Under the financing provisions the Comptroller General is required to approve guidelines for determination of the assets and liabilities of funds transferred to the Postal Service. The new Postal Service's accounts and operations are to be audited by the Comptroller General and reports thereon made to the Congress to the extent and at such times as the

Comptroller General determines. Another section permits referral of uncollectible debts to GAO for collection.

### **Hearings**

#### **Architect-Engineer Services**

On June 4, 1970, the Comptroller General testified before the Subcommittee on Government Activities of the House Committee on Government Operations. The subcommittee had before it for consideration H.R. 16443, dealing with the Government's procurement of architect-engineer services. *Mr. Staats* summarized the background of the legislation including GAO's initial report on June 16, 1965, in which it was concluded that the fee payable under a National Aeronautics and Space Administration architect-engineer contract exceeded the statutory 6-percent limitation. *Mr. Staats* went on to detail subsequent recommendations and the position of the Office on the present bill. On September 10, the bill was reported by the committee with amendments. (Other participants: Messrs. *Keller*, *Dembling*, and *Welch*.)

#### **Automatic Data Processing Equipment**

The Comptroller General testified before the Subcommittee on Economy in Government of the Joint Economic Committee on July 1, 1970, on automatic data processing equipment used by the Government. *Mr. Staats* furnished the subcommittee with Government-wide cost figures, the thrust of GAO recommendations on ADP inventories, and a résumé of GAO's current and planned audit work in the area. (Other participants: Messrs. *Mahoney*, *Mason*, and *Kane*.)

#### **International Organizations Audit**

At the request of the House Banking and Currency Committee, *Oye V. Stovall*, director, International Division, presented the views of GAO concerning the role of the U.S. Government in auditing international organizations in which the United States is a participant. The review plans of GAO and its work with the Treasury Department were detailed by *Mr. Stovall*. (Other participants: Messrs. *Milgate* and *Okey R. Thompson*.)

#### **District of Columbia Accounting Procedure**

On August 6, 1970, *John W. Moore*, assistant general counsel, presented the views of the Office on H.R. 13769, a bill to allow the District of Columbia government to transfer funds between appropriations similar to the authority of executive agencies under Public Law 89-473, before the Special Studies Subcommittee of the House Committee on Government Operations. Subsequently, this bill was favorably reported by the committee and passed by the House of Representatives. (Other participants: Messrs. *Ross* and *Fred Thompson*.)

#### **Smithsonian Institution**

On July 23, 1970, *Allen Voss*, associate director, Civil Division, presented a statement before the Subcommittee on Libraries and Memorials, House Administration Committee. The statement concerned the work of GAO at the Smithsonian Institution and detailed improvements needed in financial management activities to provide Congress with information concerning its activities, amounts of revenue accruing from

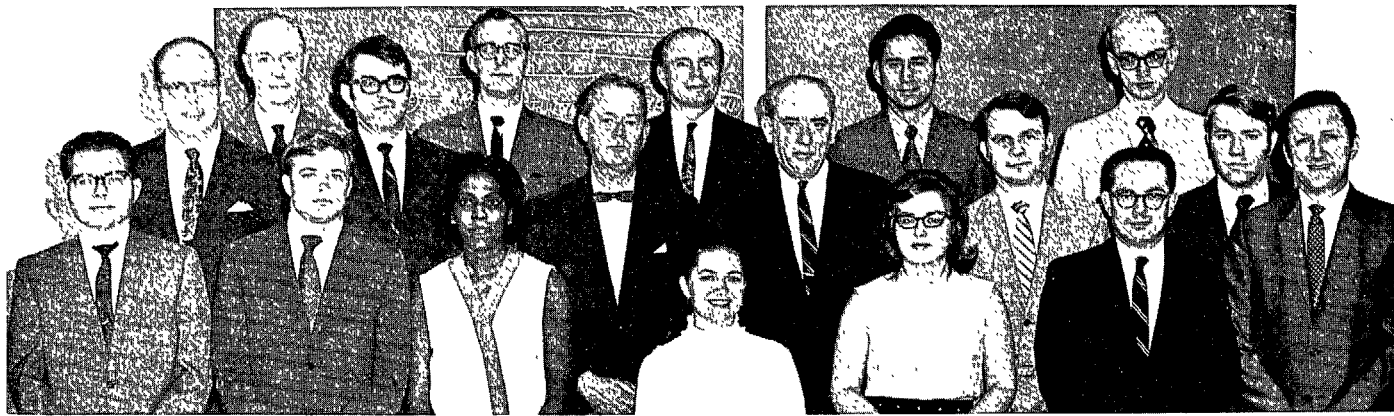


such activities, and the extent the Smithsonian applies its own funds to public service activities. (Other participants: Messrs. *Pahl*, *Scantlebury*, and *Kane*.)

**New Jersey Graduated Work Incentive Experiment**

As part of its consideration of H.R. 16311, Family Assistance Act of 1970,

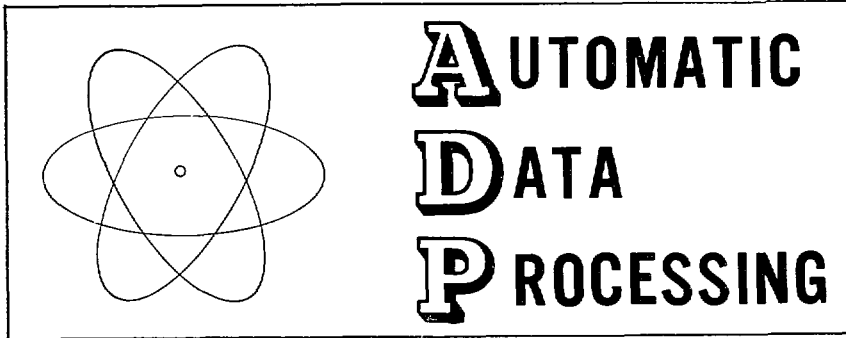
the Senate Finance Committee invited GAO to present a summary of its experimental review of the New Jersey Graduated Work Incentive Experiment. *Keith E. Marvin*, associate director, Office of Policy and Special Studies, presented a statement (see page 108). (Other participants: Messrs. *Jones*, *Caldwell*, *Sady*, and *Fred Thompson*.)



GAO Watchdog Photo

The second course in Information, Processing, and Computer Concepts developed by the Office of Policy and Special Studies, was conducted on June 22-26, 1970. This course establishes the foundation for GAO personnel to study, train, and work in areas of systems design and audit. *Charles R. Shimkus*. OPSS (front row, right) was the principal instructor.

From left to right: First Row: Paul R. Goodin, Defense Division; Benjamin E. Worrell, Office of Policy and Special Studies; Bettye H. Wilkinson, Civil Division; Donita L. Myers, Office of Policy and Special Studies; Joanne E. Weaver, Civil Division; Jerry D. McPike, Civil Division; Charles R. Shimkus (Instructor). Second Row: Ernest R. Porter, Office of Policy and Special Studies; Lawrence G. Zenker, Civil Division; Charles B. Rogers, Office of Policy and Special Studies; James R. Darlington, International Division; Patrick S. Donahue, Defense Division; Peter H. Banse, Office of Policy and Special Studies. Third Row: Thomas B. Hobson, Office of Policy and Special Studies; Fred J. Rauscher, Office of Policy and Special Studies; Edward J. Petrovitch, Office of Policy and Special Studies; Peter N. Stathis, Defense Division; and Gerald J. Thompson, Defense Division.



### ***Discussion of Guides for Auditing Computer Systems***

The Federal Audit Executives Council is an informal organization of the heads of Federal agency audit organizations. It was formed 2 years ago at the urging of the Federal Government Accountants Association. It meets bi-monthly to discuss topics of mutual interest.

At its meeting on June 29, 1970, *Edward J. Mahoney*, deputy director, Office of Policy and Special Studies, discussed the development of GAO guides for auditing computer systems. The following notes of this discussion are drawn from the written minutes of the meeting.

1. GAO is preparing a report on the subject which will be distributed to all departments and agencies. The report is expected to identify the important considerations for audit of automatic data processing equipped activities. The report will cover the control, documentation and examination aspects of auditing ADP systems. The great importance of documentation to the audit of ADP systems will be stressed.

2. The GAO has been involved in examinations of ADP equipped activities for several years. An important trend noticed during these examinations was that increasingly what has been contained in manuals and the minds of employees has been transferred to computers with the result that procedures are in many cases embodied in the computer pro-

grams. This makes it imperative that auditors review the system as contained in the computer operation.

3. Following is a sketch of the history of a number of GAO efforts in this area:

—Early in the game GAO visited Defense bases and depots and looked at applications on the computers. At first it was found that the systems were not too different from predecessor manual and punched card systems. They were just faster versions of the old systems.

—GAO's examination of the Veterans Insurance System represented a more advanced ADP audit problem where a very significant portion of the processing procedures of the agency are contained in ADP logic. GAO looked over audit techniques used by private insurance companies to penetrate these systems. Then GAO tried to transfer use of these techniques to Government activities. Some worked and some did not. Also there were a variety of audit arrangements among the commercial concerns. In one life insurance company, the internal audit process was built in with the systems development and maintenance work. Auditors examined the system's logic and approved it before it was placed in use.

—Then GAO looked at what the CPAs were doing. A wide variety of approaches were found to be in use; e.g., Haskins & Sells' Auditape, Leidesdorf's Complete Logic Review and Automated Testing Package, and the Alexander Grant & Co. Audassist. In GAO's pilot reviews of the Federal Housing Administration system, the Haskins & Sells Auditape and the Leidesdorf approach were used.

—This year GAO has undertaken an exam-

ination of the Social Security Administration in which an attempt will be made to put all of these audit approaches together.

—In 1968 GAO published a pamphlet describing controls in ADP systems.

4. *Questions and Answers*

*Question:* What is the recommended organization placement of groups charged with examination and approval of ADP systems changes? *Answer:* In business, they generally report to the president, but frequently to a lower level in the Government.

*Question:* Should auditors report to an official responsible for ADP program development? *Answer:* No.

*Question:* What can be done when overall audit work shows inadequate systems documentation, lack of controls in systems, lack of systems tests, etc., pointing to inadequate overall management of ADP? *Answer:* It is often true that a proliferation of ADP problems stems from bad system planning and management of development processes. Internal audit should be closely associated with ADP systems development, and should be in a position to incorporate audit logic into the system. Mr. Mahoney cited the example of the American Telephone and Telegraph Co., which has a central systems development activity and a small internal audit group working with it.

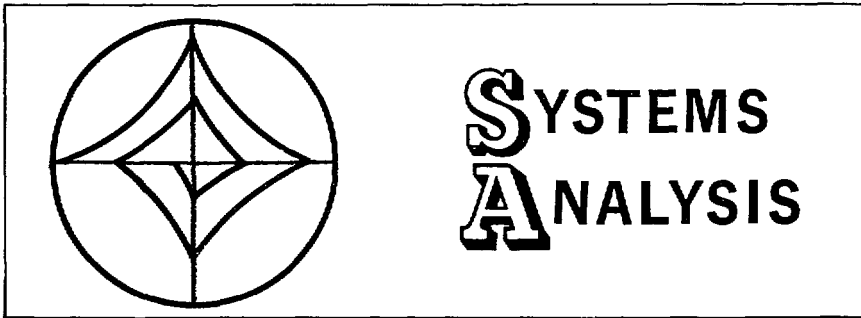
The Veterans Administration representative commented on earlier references to audit of VA systems. He said that at one time there was an internal audit group and a fiscal audit group. These were combined. There was also a separate systems audit group re-

sponsible to systems development personnel. This latter group probably should not be called auditors; they might be better described as systems verifiers and testers.

*Question:* Has there been any study of an appropriate return to expect from dollars invested in internal auditors' examination of systems logic? *Answer:* How can you set a value on the prevention of an occurrence? Another member of the group commented that he had asked the same question of audit executives in one of the military departments. This department was spending 70 man-years annually on examination of systems logic. They had responded that "you can't afford not to."

5. *Conclusion*

The general thrust of the comments and the questions was that there was a considerable practical problem for the various audit agencies to determine the existence and effectiveness of controls incorporated in the logic of ADP systems. Those who have attempted reviews and tests of such logic found that it required larger commitments of auditor resources than audit managers could live with, if all new systems were to be examined across-the-board. Also, the presentation mentioned various methods which had been tried on parts of the audit problem both during the development and operating stages of new ADP systems. The group seemed to feel that these should be evaluated for usefulness in a synthesized policy statement for audit of ADP systems. Hope was expressed that the forthcoming GAO guides would constitute a practical policy rather than a miscellaneous collection of tools for consideration.



### ***New Jersey Graduated Work Incentive Experiment***

The Office of Economic Opportunity initiated this experiment in 1968. In the experiment, payments are made to a sample of families whose incomes for the year prior to entry into the experiment placed them in the poor or near poor categories. The experiment has been designed primarily to determine what effect such payments have on the work incentive of the recipients.

The amount of payment in each case is dependent upon the family's income and the payment plan to which the family has been assigned. There are eight different payment plans in the experiment. The payment plans are a combination of a "guarantee" and a "benefit reduction" rate. The guarantee is the amount of money a family will receive if it has no other income. It is expressed as a percentage of the poverty income level, which varies according to family size.

The benefit reduction rate is the rate or percentage of earned income by which the payments are reduced. For example, if the benefit reduction rate is 30 percent, the payments will be reduced by 30 cents for each dollar of earned income.

The first payments were made to a

group of families in Trenton, N.J., in August 1968. First payments were made in 1969 to families in Paterson and Passaic, N.J., and in Scranton, Pa. Control families from the same cities are included in the experiment. These families receive no payments other than small fees for cooperating in periodic interviews.

The experiment is scheduled to run for 3 years in each of the cities. Total costs of the experiment, including benefits, payments, administration, and analysis are expected to be about \$6.5 million.

### **GAO Monitoring of Experiment**

The systems analysis group of the Office of Policy and Special Studies undertook to monitor this experiment while in process. The purpose of this work was to gain familiarity with an important executive agency experimental program while it was being carried out and to be in a position to provide independent information to the Congress on the experiment, as needed. Monitoring work was carried out directly by the Philadelphia Regional Office, working at the office of the agency's subcontractor, Mathematica, Inc., at Princeton, N.J. The overall design and analysis of the experiment is the responsibility of the prime contrac-

tor, The Institute for Research on Poverty, located at the University of Wisconsin.

**Senate Finance Committee Interest**

The Senate Finance Committee, considering the House-passed bill H.R. 16311, the Family Assistance Act of 1970, became aware of GAO's work in this area and invited representatives of the Office to testify.

On August 18, 1970, *Keith E. Marvin*, associate director, Office of Policy and Special Studies, testified before the committee on the GAO monitoring work. Also present were *Robert D. Jones* of the OPSS systems analysis group and *Maurice Sady* and *James Caldwell* of the Philadelphia Regional Office.

Excerpts from Mr. Marvin's statement follow.

Our review of this social experiment which does not as yet represent an operating Federal program has been an experimental review designed to test ways in which the General Accounting Office can provide improved information of use to the Congress in its consideration of new program proposals. This role for the GAO was discussed at length by the Comptroller General in his testimony before the Subcommittee on Executive Reorganization of the Senate Committee on Government Operations on September 16, 1969.

Briefly, we believe we can assist the Congress in its consideration of new programs by helping to determine whether adequate analyses were made of the alternatives. Demonstration programs are designed to test alternatives to existing programs.

\* \* \* \* \*

We chose the New Jersey experiment as a high priority study as a result of the President's address on domestic programs in August 1969 in which he proposed to abolish the program of Aid to Families with Dependent

Children and establish a family assistance plan . . . . When a report on the preliminary results of the experiment was published on February 18, 1970, by the Office of Economic Opportunity it appeared to us that in order to be of most assistance to the Committee at this time we should concentrate our efforts on assessing the support for the conclusions which were contained in the OEO report.

\* \* \* \* \*

In its report OEO stated that preliminary data from the experiment suggest that there is no evidence that work effort declined among those receiving income support payments. We believe this conclusion is premature because the data on which it is based represents less than 1 year's activity in a 3-year experiment and because we were not able to determine that this limited data had been subjected to a complete or to sufficient analysis to support such conclusions from it. For example, in the analysis to date it is not possible to draw any conclusions as to the difference in effects on work effort of the eight different payment plans to which the families are assigned in the experiment.

\* \* \* \* \*

The OEO report also concluded that the preliminary data suggest that there is an indication that the work effort of participants receiving payments increased relative to the work effort of those not receiving payments. We believe it is wrong to draw this conclusion at this time on the basis of the data available on earnings from work effort to the date of the OEO report.

The conclusions of the OEO report are based on a comparison of the control group and the experimental families (those families receiving benefit payments) in terms of the percent whose earnings increased, did not change, or declined during the first 10 to 12 months of the experiment. The data reported by OEO show that a higher percent of the experimental families' earnings increased. However, in our review we found that due to errors in data collection or attrition of families from the experiment this comparison could be made with valid data for only about 60 percent of the experimental families. On the basis of the valid data available for comparison we

do not believe that the reported differences to date can be considered significant. That is, there is a high probability that the reported differences to date are random and could come out in the opposite direction in another similar experiment. As the experiment continues it is possible that greater differences between control and experimental families will be observed and become significant in spite of reductions in valid observations.

\* \* \* \* \*

Subsequent to furnishing our preliminary paper to the committee in June, we have reviewed more carefully the extent of attrition from the experiment. One of the primary reasons for selecting New Jersey as the site for the experiment was the fact that this State does not have an unemployed father provision in its Aid to Families with Dependent Children (AFDC) program. Since only male-headed families were to be chosen for the experiment, the selected families would not be eligible for AFDC payments. This enabled consideration of experimental treatments that would have been too low if these families were eligible for substantial State benefits. However, the New Jersey law was amended on July 10, 1968.

\* \* \* \* \*

We found that the State welfare payments for which male-headed families may be eligible under the amended law are more liberal

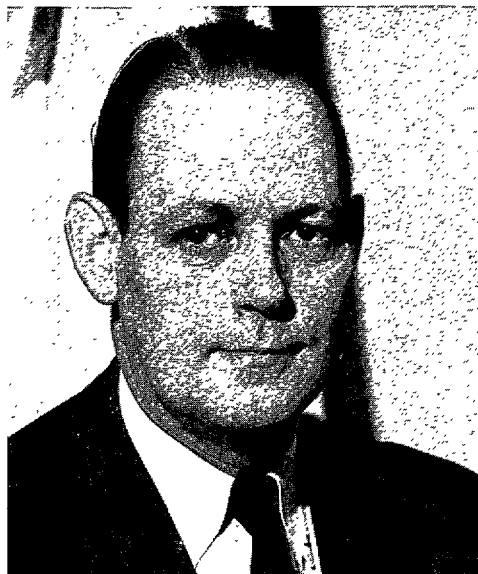
than the payments under most of the eight payment plans included in the experiment. This had caused an attrition of families from the experiment, particularly from the plans paying the lowest benefits.

The families covered by the OEO report include those who have elected to apply for State benefits and who have continued to file reports with the study contractor. We believe these families must be excluded from consideration in any of the original eight payment plans, perhaps to be treated as though enrolled in a ninth plan.

\* \* \* \* \*

We have not made any attempt to contact any of the experimental or control families to verify the information reported on their earnings and work effort. We have avoided making such contacts because we believe this might affect the attitudes of these families and thus create unknown aberrations in the experimental data. The cost and the importance of such an experiment are such that we believe the agency and its contractors should be given every opportunity to administer the experiment to the families selected without interference. However, we do believe that the contractors should be alert to the possibility that errors or undesirable bias could creep into the experimental data. We are planning further review work to assess additional aspects of the New Jersey experiment, including the design itself.

## GAO Staff Changes



**Thomas D. Morris**

Thomas D. Morris was appointed Special Assistant to the Comptroller General, effective October 5, 1970.

Mr. Morris has had extensive experience in Government and private industry, most recently serving as corporate vice president of Dart Industries, in Los Angeles. His governmental experience has been primarily in the Tennessee Valley Authority, the Bureau of the Budget, and the Department of Defense. During World War II, he served in the Navy from 1942 to 1945 as a member of the Navy Management Engineering Staff.

Following World War II, Mr. Morris joined the consulting firm of Cresap, McCormick & Paget as a partner and participated in studies by both Hoover Commissions.

In 1956-57, he served in the Office of the Secretary of Defense in several capacities, including the position of Deputy Assistant Secretary for Supply and Logistics.

In 1958-59, Mr. Morris was director of management planning and assistant to the president of the Champion Paper & Fibre Co., following which he was appointed Assistant Director for Management and Organization in the Bureau of the Budget. Beginning in 1961, Mr. Morris served for more than 5 years as Assistant Secretary of Defense for Installations and Logistics and for more than 2 years as Assistant Secretary of Defense for Manpower.





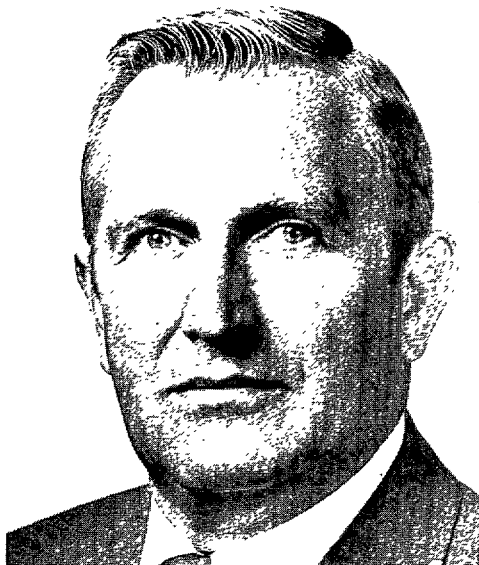
**Melvin F. Bergartt**

Melvin F. Bergartt was designated as assistant manager of the New Delhi Office, European Branch, International Division, effective June 28, 1970.

Mr. Bergartt is a CPA (Maryland) and is a member of the American Institute of Certified Public Accountants and the Maryland Society of Certified Public Accountants. He graduated from Johns Hopkins University in 1949 with a bachelor of science degree.

Mr. Bergartt joined the General Accounting Office in 1957 and was assigned to the Civil Division until 1963 when he transferred to the International Division. He served with the European Branch in Frankfurt, Germany, from 1968 to 1969, and since then has been assigned to the New Delhi Office. In 1968 he was the recipient of the GAO Meritorious Service Award.

Mr. Bergartt had prior experience with a national firm of certified public accountants and in private industry. He served in the U.S. Army from 1943 to 1946.



**Wilbur D. Campbell**

Wilbur D. Campbell was designated as an assistant director in the Civil Division, effective June 28, 1970. In this position he is responsible for GAO audit and investigative work relating to the Corps of Engineers (Civil Functions) and the water and power agencies of the Department of the Interior.

Mr. Campbell served in the U.S. Army from 1954 to 1956. He received a bachelor of arts degree with a major in accounting from the College of William and Mary in 1959. He is a CPA (Virginia) and a member of the American Institute of CPAs.



**George L. Egan, Jr.**

George L. Egan, Jr., was designated as assistant regional manager of the Washington Regional Office, effective June 28, 1970.

From 1952 to 1954, Mr. Egan served in the U.S. Army—Finance Corps. In 1957 he received a B.S. degree in business administration with a major in accounting, from Duquesne University. He served on the staffs of the Cleveland Suboffice and the Philadelphia Regional Office before being assigned to the Washington Regional Office in August 1965.

Mr. Egan received the GAO Meritorious Service Award in 1967. He is a member of the Federal Government Accountants Association.

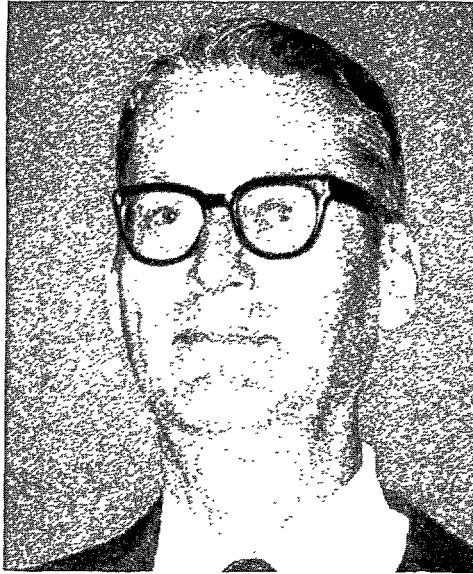


**George H. Foster, Jr.**

George H. Foster, Jr., was designated assistant director of the Defense Division, effective June 28, 1970.

Mr. Foster is currently assigned to the Senate Armed Services Preparedness Investigating Subcommittee where he is responsible for the establishment of an effective reporting system for monitoring the status of weapon systems programs.

Mr. Foster graduated from the University of Arizona in June 1960 with a bachelor of science degree in accounting. He joined the Los Angeles Regional Office of the General Accounting Office upon graduation. In November 1967, he transferred to the International Division and in May 1968 to the Defense Division. Mr. Foster is a CPA in the State of California. He served in the U.S. Marine Corps from January 1951 through March 1957.



Owen A. Kane, Jr.

Owen A. Kane, Jr., legislative attorney, Office of the Comptroller General (Office of Legislative Liaison), retired from active service on July 31, 1970, after 35 years of Government service.

Mr. Kane was born in Chicago, Ill. He attended Brophy College in Phoenix, Ariz., and, after coming to the Washington area, earned his bachelor of laws degree from National University Law School in 1938. Later, Mr. Kane studied accounting at Benjamin Franklin University in Washington, D.C.

He began his Federal service in 1934 as secretary to the late Senator Henry Ashurst of Arizona. After intervening positions with the U.S. Constitution Sesqui-centennial Commission and the Public Works Administration, Mr. Kane was appointed as assistant auditor in the General Accounting Office in 1940. Since that time, except for a period of about 6 years in the Office of the General Counsel of the Housing and Home Finance Agency, Mr. Kane served in legal positions of increasing responsibilities in the General Accounting Office in the Audit Division, the Accounting and Bookkeeping Division, the Office of the General Counsel, and the Office of the Comptroller General.

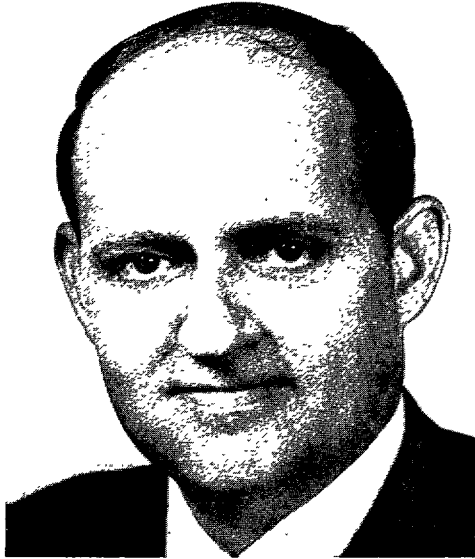


**Louis Lucas**

Louis Lucas was designated as assistant regional manager of the Boston Regional Office, effective June 28, 1970.

From 1953 to 1954, Mr. Lucas served in the U.S. Army. In 1957 he received a bachelor of science degree in business administration, with a major in accounting, from Boston University. In 1969 he attended the Executive Development Program at Cornell University. He is a CPA (Massachusetts) and a member of the American Institute of CPAs and the Federal Government Accountants Association. In 1959, he received the GAO Meritorious Service Award.

Mr. Lucas joined the Boston Regional Office in August 1957, and has been assigned there since that time, except for a temporary overseas assignment.



**John D. Redell**

John D. Redell was designated as an assistant director in the International Division, effective June 28, 1970. In that capacity he will be responsible for directing reviews of foreign assistance programs in South Asia, including India and Pakistan.

Mr. Redell served in the U.S. Army from 1951 to 1953. He was graduated *magna cum laude* from Spring Hill College, Mobile, Ala., in 1957 where he majored in accounting.

Mr. Redell began his career in 1957 with the Dallas Regional Office. In 1962 he was assigned to the Far East Branch in Tokyo and in 1965 moved with the branch to Honolulu. In 1966, Mr. Redell was reassigned to the International Division in Washington, D.C.

In 1962, Mr. Redell received the GAO Meritorious Service Award. He is a CPA (Texas) and a member of the American Institute of CPAs and the Federal Government Accountants Association.



**John R. Ritchie**

John R. Ritchie was designated as assistant director for program direction and evaluation in the Defense Division, effective June 28, 1970. In this position, his principal responsibility will be the overall planning and programming of the division's auditing and investigative work within the Department of Defense.

Mr. Ritchie holds a bachelor of science degree from the University of Missouri. He did graduate work in accounting at Denver University, 1953 to 1955, where he was elected to membership in Beta Alpha Psi, national honorary accounting fraternity. He is a member of the Federal Government Accountants Association.

Mr. Ritchie has been with the General Accounting Office since August 1941 and has been on the staff of the Defense Division in Washington, D.C., since August 1956. He received the GAO Meritorious Service Award in 1967.





**Daniel F. Stanton**

Daniel F. Stanton was designated as an assistant director in the Civil Division, effective June 28, 1970. In this position Mr. Stanton will be responsible for the audit and investigative work related to the procurement and production of source and special nuclear materials for the Atomic Energy Commission.

Mr. Stanton served in the U.S. Army from 1954 to 1956. He attended the University of South Carolina from 1956 to 1959 and received a bachelor of science degree with a major in accounting. Mr. Stanton is a certified public accountant in the State of Virginia, and he received the GAO Meritorious Service Award in 1967 for his work at the Atomic Energy Commission.

## Professional Activities

### ***Office of the Comptroller General***

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

The 10th Reunion and First Refresher Course, 38th Advanced Management Program, Harvard Business School, Colorado Springs, Colo., on "What are the Priorities for the 1970's," June 17.

Executive Committee of the National Security Industrial Association, White Sulphur Springs, W. Va., July 17.

Federal Management Improvement Conference of the Office of Management and Budget on "Potentials for Management Improvement," September 21.

Annual conference of the National Security Industrial Association on "Changing Times in Defense Procurement," September 24.

National Institute of Government Purchasing, Inc., on "The Role of the GAO in Improving Procurement Operations," September 28.

Mr. Staats was the author of the Guest Column in the July 1970 issue of the *American Institute of Architects Government Affairs Review*. He wrote on obtaining architect-engineer services by competitive negotiation.

The Assistant Comptroller General, *Robert F. Keller*, attended the National

Institute of Public Affairs Fifth Industry-Government Seminar on "Housing American People," Washington, D.C., June 3. He served as Program and Convention Committee Chairman, Section of Public Contract Law, American Bar Association, St. Louis, Mo., August 10-12. During this meeting he moderated the symposium on "Cost Accounting Standards for Negotiated Contracts. A Blessing or a Curse?"

*William A. Newman, Jr.*, Special Assistant to the Comptroller General, was one of four panel members participating in the discussion moderated by Mr. Keller. Mr. Newman spoke on "The Comptroller General's Report on the Feasibility of Cost Accounting Standards."

### ***Office of the General Counsel***

*Paul G. Dembling*, general counsel:

Spoke to participants in the Brookings Institution Program for Executives on "The Role of GAO," Washington, D.C., September 14.

Spoke before the Convention of the Federal Bar Association on "Effect on the Court of Claims of the 'Scanwell' Case," Washington, D.C., September 17.

Spoke to participants in the Washington Semester program, American University, on "The Role of the GAO," Washington, D.C., September 18.

*J. Edward Welch*, deputy general counsel:

Spoke at the National Contract Management Association Workshop on "The Proper Role of Formal Advertising in Securing Competition," Washington, D.C., September 16.

*Paul Shnitzer*, deputy assistant general counsel:

Spoke at the National Contract Management Association on "Bid Protests" at Boston, Mass., June 10.

Participated as a panelist on Government contracting and subcontracting techniques before the Concentrated Course in Government Contracts presented under the co-sponsorship of the California Institute of Technology and Federal Publications, Inc., Los Angeles, Calif., July 21.

Spoke before the Western Electronic Manufacturers Association on "Pitfalls in Bidding" at Denver, Colo., September 21.

Spoke before the Defense Advanced Procurement Management Course of the U.S. Army Management Logistics Center at Los Angeles, Calif., on "Problems in Formal Advertising," September 23.

*Robert H. Rumizen*, deputy assistant general counsel:

Spoke before the Defense Advanced Procurement Management Course on "Problems in Formal Advertising" at Fort Lee, Va., August 13.

### ***Office of Policy and Special Studies***

*E. H. Morse, Jr.*, director, addressed the following groups in recent months:

Post-Audit Workshop, National Legislative Conference, at Salt Lake City, Utah, on August 28. He spoke on "Auditing Standards for Federal Assistance Programs."

Montgomery-Prince Georges Chapter of the Federal Government Accountants Association at Langley Park, Md., on September 9. His topic was "Some Challenges for the Federal Government Accountants Association."

Virginia Peninsula Chapter of the Federal Government Accountants Association at Newport News, Va., on September 16. His subject was "Federal Accountants in the 1970s."

Mr. Morse has been appointed to the Committee on Concepts of Accounting Applicable to the Public Sector of the American Accounting Association.

Mr. Morse has also been appointed to the Advisory Council for the Institute of Professional Accounting of the Graduate School of Business of the University of Chicago.

*William L. Campfield*, associate director, has been elected to the Council of the American Institute of Certified Public Accountants for a 3-year term. He is also a member of the American Accounting Association Committee on Measures of Effectiveness For Social Programs. Currently, he is serving as Visiting Professor of Business at Columbia University (fall trimester 1970).

Mr. Campfield has published articles recently in the following journals:

*The Journal of Accountancy*, April 1970, "Increasing Accountants' Participation in Government."

*The Internal Auditor*, May/June 1970, "More Insights on Education

and Development for Internal Auditors.”

*Footnote*<sup>2</sup>, Summer 1970, “Problems and Opportunities for Public Managers in the 1970s.”

On May 5, Mr. Campfield addressed the plenary session, American Accounting Association Western Regional Conference on “New Directions for Accounting Education.”

*M. A. Dittenhofer*, assistant director, addressed the following groups:

Post Audit Seminar sponsored by the Council of State Governments and the University of Tennessee at Gatlinburg, Tenn., on June 16, 1970. This talk was “Uniform Grant Audit Standards by the General Accounting Office.”

Federal Government Accountants Association Symposium Workshop on State and Local Government Financial Management and Audit, Miami Beach, Fla., on June 19, 1970. His address was “Development of Audit Standards for State and Local Governments for Audits of Federal Assistance Programs.”

Post-Audit Workshop, National Legislative Conference, at Salt Lake City, Utah, on August 28. He spoke on “The Status At The End of Six Months of the Audit Standards Work Group.”

Eastern Tennessee Chapter, Institute of Internal Auditors, in Knoxville, Tenn., on September 3, 1970. His subject was “The Status of the Audit Standards Work Group.”

The following articles by Mr. Dittenhofer have been recently published:

*The Internal Auditor*, July/August

1970, “The Case for Standards and Guidelines for State Audits.”

*State Government*, Fall 1970, “Is Auditing a Fourth Power in State Government?”

Mr. Dittenhofer has been appointed to chair the National Committee on Research of the Federal Government Accountants Association.

During the fall semester of 1970 *Ted M. Rabun* is teaching a graduate course in accounting at American University entitled “Use of Accounting Information” and is assisting other graduate students in research into contemporary accounting problems.

*Herbert L. Feay*, assistant director and actuary, had the following article published in the *Proceedings of the Conference of Actuaries in Public Practice*, 1969–70: “A Critical Analysis of the Gain and Loss Exhibit.”

### **Civil Division**

*A. T. Samuelson*, director, and a past president of the Washington Chapter of the National Association of Accountants, wrote the first message to NAA members from chapter past presidents in the August issue of the chapter’s newsletter, *Kapitol Dome*. The title of Mr. Samuelson’s article was “Professional Obsolescence.”

*Vernon L. Hill*, assistant director, attended the Executive Development Program conducted by the Graduate School of Business and Public Administration, Cornell University, during June 21–August 1, 1970.

*John J. Cronin*, supervisory auditor, attended the Institute of Public Executives at the University of Wisconsin, during August 9–22, 1970.



A. T. Samuelson, director, Civil Division, congratulates Civil Division staff members on their being elected to serve as officers and directors of the Washington Chapter of the National Association of Accountants for the 1970-71 term. From left to right are Jack L. Merz, Max A. Newirth, Mr. Samuelson, Donald M. Muzabangh, Harold L. Stugart, and Stephen J. Varholy.

*Richard L. Fogel*, supervisory management analyst, had an article entitled "Conditions For the Use of PPB" published in the Summer 1970 issue of the *Journal of Research and Development in Education*.

### **Defense Division**

*Felix E. Asby*, assistant director, addressed the "Logistics Executive Development Course" on August 25, at the Army Logistics Management Center on the mission of the GAO with emphasis on how its external audit function can be used in the improvement of logistics management.

*Mathew Gradet*, assistant director, is serving on the Membership Promotion Committee of the American Institute of CPAs for the 1970-71 fiscal year.

*Sam Pines*, assistant director, attended the University of Wisconsin Center for Advanced Study in Organization Science during July 1970 and completed a course on Planning and Managing Organized Change.

### **International Division**

*Frank M. Zappacosta*, assistant director, spoke on August 4, at the Budget and Fiscal Officers Course given by the Foreign Service Institute for State Department personnel. He described the responsibilities and activities of the General Accounting Office.

*Joseph P. Normile*, director of the European Branch, is a member of the organizing committee formed by German and American accountants in Frankfurt, Germany, for the purpose of establishing an international chapter of the National Association of Accountants.

### **Field Operations Division**

*Mitchell E. McLaughlin, Jr.*, audit manager, Atlanta, received an M.P.A. degree from the University of Georgia on August 21, 1970.

*Daniel L. McCafferty*, supervisory auditor, Cincinnati, received a master of business administration degree from Xavier University.

Dallas staff members will hold the following FGAA offices during the 1971 fiscal year: *Dayle W. Booher*, supervisory auditor, regional vice president; *William R. Stoffels*, supervisory auditor, director, Houston Chapter; *Patrick T. Stelzer* and *Daniel C. White*, supervisory auditors, directors, Dallas Chapter; *Joe D. Quicksall* and *Rolland G. Ball*, supervisory auditors, chairman, Meetings Committee, and treasurer, respectively, San Antonio Chapter.

*Cleamont D. Palmer*, supervisory auditor, Denver, has been appointed to serve on the Tax Information Committee of the Utah Association of Certified Public Accountants.

*David R. Miller*, supervisory auditor, Cleveland, was elected president of the Cleveland Chapter, FGAA, for fiscal year 1971. *William F. Laurie* and *Melvin G. McCombs*, supervisory auditors, were elected directors.

The article on "Human Resource Accounting" by *Earl J. Ogolin*, audit manager, Kansas City Regional Office, in the Fall 1969 issue of the *Review* was reprinted in the Spring 1970 issue of *The U.S. Army Audit Agency Bulletin*. Gen. H. L. Jones, Chief of the Army Audit Agency, informed Mr. Ogolin that his "fine article" helped materially in making the bulletin an excellent

medium for disseminating technical information to his audit staff.

*William J. McCormick, Jr.*, supervisory auditor, Los Angeles, was elected president of the East Whittier Junior Chamber of Commerce and also selected as the outstanding member of his chapter for 1970.

*Victor Ell*, supervisory auditor, Los Angeles, was recently elected a member of the Board of Directors of the California State College Business Association, representing the Business and Economics Department of California State College at Los Angeles.

*H. L. Krieger*, regional manager, Los Angeles, spoke before the San Diego Chapter of the National Contract Management Association. His topic, which was presented on September 17, 1970, was on the "Should Cost" concept.

*L. Neil Rutherford*, audit manager, and *Dale A. Wolden*, supervisory auditor, Seattle, addressed the Puget Sound Federal ADP Council of the Seattle Federal Executive Board on June 3. Mr. Rutherford discussed management audits and Mr. Wolden discussed the use of ADP in conducting such audits.

*Robert A. Higgins*, supervisory auditor, Portland Suboffice, was appointed for fiscal year 1971 to the board of directors of the Oregon Chapter of the American Society for Public Administration.

*Alvin S. Finegold* and *Redmond R. Everard*, supervisory auditors, Seattle, were elected as president and director, respectively, of the FGAA Seattle Chapter for fiscal year 1971.

*John F. McNamara* and *Walter Ratzlaf*, supervisory auditors, Portland Suboffice, were elected as directors of

the FGAA Portland Chapter for fiscal year 1971.

An article entitled "The Essential Ingredient of Auditing," by *D. L. Scantlebury*, regional manager, Washington, appears in the July/August 1970 issue of *The Internal Auditor*.

### **Office of Personnel Management**

During the FGAA annual symposium in Miami Beach, Fla., June 16-20, *Leo Herbert*, director, and chairman of the association's National Education Committee, monitored the taping of four different workshops to be used in educational programs next year.

### **Transportation Division**

*T. E. Sullivan*, director, attended the meeting of the National Committee on International Trade Documentation held in Washington, D.C., on July 9.

*Arthur E. Parry*, supervisory transportation specialist, attended the Minority Group Employees Seminar at the University of Michigan in Ann Arbor, Mich., July 22-24.

*E. B. Eberhart* and *William F. McDade, Jr.*, supervisory transportation specialists, attended the semi-annual meeting of the Cargo and Passenger Revenue Accounting Committee of the Airline Finance and Accounting Conference in Denver, Colo., September 21-23. They discussed the use of Government transportation documentation, the Airport and Airway Development Act of 1970 (Public Law 91-258), and various billing problems encountered by the carriers on Government traffic.

## Successful Candidates—May 1970 CPA Examination

Listed below are the employees who passed the May 1970 CPA examination:

### REGIONAL OFFICE

<i>Name</i>	<i>Regional Office</i>	<i>State</i>
Rose E. Ash (Mrs.) . . . . .	Detroit . . . . .	Ohio.
William W. Brinton . . . . .	Denver . . . . .	Utah.
Burdell O. Buerger . . . . .	Denver . . . . .	Colorado.
H. Donald Campbell . . . . .	Washington . . . . .	Virginia.
Herve Guerette . . . . .	Boston . . . . .	Massachusetts.
Henry C. Hanssen . . . . .	Dallas . . . . .	Texas.
Ralph W. Lamoreaux . . . . .	Denver . . . . .	Utah.
Dale E. Ledman . . . . .	Cincinnati . . . . .	Ohio.
William F. McGee . . . . .	New York . . . . .	New York.
Kirtley O. Madsen . . . . .	Denver . . . . .	Colorado.
Lawrence L. Moore . . . . .	Washington . . . . .	Maryland.
D. Robert Murphy . . . . .	Seattle . . . . .	Montana.
Warren G. Nogle . . . . .	San Francisco . . . . .	California.
James A. Przedzial . . . . .	Philadelphia . . . . .	Pennsylvania.
William Reis . . . . .	Boston . . . . .	Massachusetts.
Samuel H. Scrutchins . . . . .	Dallas . . . . .	Texas.
Rebecca J. Sperry (Miss) . . . . .	Kansas City . . . . .	Iowa.
John A. Stanley . . . . .	Norfolk . . . . .	Virginia.
Joe B. Stevens . . . . .	Washington . . . . .	Virginia.
Daniel C. White . . . . .	Dallas . . . . .	Texas.
Thomas M. Yamashita . . . . .	San Francisco . . . . .	California.



WASHINGTON

<i>Name</i>	<i>Division</i>	<i>State</i>
Robert E. L. Allen, Jr.	Civil	Virginia.
Lee S. Beaty	Civil	Virginia.
Donald O. Benedict	Defense	Maryland.
Donald Cortright	International	Washington.
John K. Donohue	Civil	Washington, D.C.
Larry H. Endy	Civil	Virginia.
Gene N. Fredriksen	Civil	Virginia.
Martin A. Gailliot	Civil	Virginia.
Robert C. Gorman	Civil	Texas.
Robert W. Gramling	Civil	Virginia.
Bernard G. Grindel	International	Washington, D.C.
Ronald J. Johnson	International	Washington, D.C.
Robert R. Lindemuth	Defense	Maryland.
David Lowe	Defense	Maryland.
Herbert R. McLure	Office of Personnel Management.	Washington, D.C.
Wayne K. Meyers	Defense	Iowa.
Roland O. Pepin	Civil	Virginia.
Raymond Schmitt (November 1969)	Civil	Maryland.
Jennie L. Sexton (Miss)	Defense	Tennessee.
Albert R. Shanefelter, Jr	Office of Personnel Management.	Washington, D.C.
James K. Spencer	Civil	Washington, D.C.
Peter N. Stathis	Defense	Virginia.
Edward R. Tasca	Civil	Virginia.
George J. Wooditch	Defense	Virginia.
Louis H. Zanardi	International	Washington, D.C.

## New Staff Members

The following new professional staff members reported for work during the period June 16 through September 15, 1970.

<i>Civil Division</i>	Adams, Charles M.	Point Park College
	Averman, Edmund J., III	University of Florida
	Barrick, William G.	St. Vincent College
	Baughner, Jerry G.	Columbia Union College
	Bonds, Janet P. (Miss)	Concord College
	Brown, Michael S.	New Haven College
	Browning, James D.	West Liberty State College
	Busen, Raymond G.	University of Baltimore
	Butcher, John A.	Clarion State College
	Coleman, Robert L.	Bryant College
	Cook, John J.	Fairmont State College
	Cooper, Lionel C., Jr.	San Jose State College
	Copeland, Harold K.	Gannon College
	Culkin, Charles W., Jr.	Benjamin Franklin University
	Davies, Dawn A. (Mrs.)	Shippensburg State College
	Donner, Darrell H.	Thiel College
	Dorpfeld, David C.	Tri-State College
	Eckenroth, Robert M.	Grove City College
	Gailliot, Martin A.	Benjamin Franklin University
	Gill, David G.	West Liberty State College
	Gross, Timothy C.	Delaware Valley College
	Guinan, Michele M. (Miss)	Duquesne University
	Gunner, John B.	University of Scranton
	Harr, John R.	St. Vincent College
	Hoffman, Alan J.	Allentown College of St. Francis de Sales
	Jones, Ruth A. (Miss)	Dickinson College
	Kight, Gene H.	University of Baltimore
	Kovalak, Francis J.	Indiana University of Pennsylvania
	Kruszewski, Donald H.	Gannon College
	Laird, Wilbert G.	Point Park College
	Lauderback, Allen L.	Virginia Polytechnic Institute
	Long, Daniel E.	Glenville State College
	McClure, Thomas N.	University of South Carolina
	McGinley, Daisy E. (Miss)	University of Missouri
	MacDonald, Charles R., Jr.	University of Rhode Island
	Melberger, Alan H.	Wilkes College
	Mellody, Joseph P.	University of Scranton
	Oswald, Peter J.	University of Scranton
	Parker, Dennis J.	University of Baltimore
	Pisarczyk, Walter V.	Concord College

NEW STAFF MEMBERS

<b>Civil Division— Continued</b>	Ponko, Duane A.M.	St. Vincent College
	Rosensteel, Robert T.	Mount Saint Mary's College
	Sammons, Watt P., Jr.	Concord College
	Schoettker, Edward W.	West Virginia State College
	Staab, William J.	Pennsylvania State University
	Stanco, William R.	Quinnipiac College
	Stouffer, Ronald E.	Virginia Polytechnic Institute
	Swanlek, Rebecca J. (Miss)	Indiana University of Pennsylvania
	Swanson, John R.	Thiel College
	Thompson, Ralph D.	Concord College
	Tvelia, John A.	Benjamin Franklin University
	Walker, Harry S.	Concord College
	Williams, Donald A.	Virginia Commonwealth University
	Worrell, Iris J. (Miss)	Concord College
	Yeager, James R.	Tri-State College
Yost, Gregory C.	West Virginia University	
<b>Defense Division</b>	Bohn, George L.	University of Wisconsin
	Bushman, Barbara A. (Miss)	University of California
	Cormier, Ronald J.	McNeese State College
	Crowder, Jonathan D.	Carson-Newman College
	Day, Frederick G.	University of Maryland
	Eastin, Virginia A. (Miss)	Wake Forest University
	Finney, Robert G.	East Tennessee State University
	Fosdick, James D.	Kearney State College
	Hall, William B.	Carson-Newman College
	Kromm, Daniel B.	University of Minnesota
	Leibenguth, Sterling J.	University of Utah
	Lively, Roger L.	Tennessee Technological University
	Murley, William F.	University of Dayton
	Silveira, Richard E.	Bryant College
	Stertzbach, Kristen (Miss)	Wake Forest University
Wanska, John A.	University of Wisconsin	
Watkins, Mollie A. (Miss)	East Tennessee State University	
<b>International Division— Washington</b>	Argiros, Jo-An M. (Miss)	Hunter College of the City University of New York
	Badwey, Frederick J.	Bryant College
	Berry, Lynn F. (Miss)	Marietta College
	Carpenter, Paul S.	Brigham Young University
	Cleaves, Steven V.	Miami University
	Dunahay, William J.	Nichols College
	Ellis, Theodore J.	Bryant College
	Goulet, Philip A.	New Hampshire College of Accounting and Commerce
	Jones, Donald F., Jr.	Providence College
	Marquette, Robert L.	Bloomsburg State College
	Soderberg, Richard L.	University of Washington
Thomassy, Robert M.	St. Vincent College	

NEW STAFF MEMBERS

*Office of Policy and Special Studies* Schlender, Frankie L. (Mrs.) University of Puget Sound

*Transportation Division* Anderson, Suzanne W. (Mrs.) University of Wisconsin  
Case, Barry S. University of Tennessee  
Donnellon, Gregory R. Tri-State College  
Roscoe, Richard P. University of Scranton

**REGIONAL OFFICES**

*Atlanta* Barnes, James D. Troy State University  
Burt, Theodore M. Florida State University  
Capps, John A. Western Carolina University  
Howell, Larry D. Milligan College  
Hubbard, Jerry D. University of Alabama  
McCombs, James J. University of Mississippi  
Moore, Gary S. Phillips University  
Pennington, Ralph C. American International College  
Sager, Arthur W. Florence State University  
Smith, Arthur R. Auburn University  
Webb, Allen D. University of Iowa  
Wrape, Charles W. University of South Carolina

*Boston* Doherty, Philip E. Northeastern University  
Donovan, Robert W. Salem State College  
Evans, Joseph G. Babson Institute of Business Administration  
Frazier, Charlotte D. Husson College  
(Miss)  
Healy, Timothy Southeastern Massachusetts University  
McDonald, Daniel P. Southeastern Massachusetts University  
Murphy, Kevin F. Suffolk University  
Nathan, Mark A. Husson College  
Norman, Dana R. Southeastern Massachusetts University  
Rodrigues, Louis J. Southeastern Massachusetts University  
Veiga, Joseph F., III Southeastern Massachusetts University  
Vieira, Alfred R. Southeastern Massachusetts University

*Chicago* Curtin, Neal P. Bradley University  
Fritz, Jerome J. Loyola University  
Hilmer, James R. Marquette University  
Leonard, Jimmie D. Aurora College  
Pelofske, Gerald W. University of Minnesota  
Perlowski, James L. Loyola University  
Smolen, Robert S. University of Illinois  
Wilson, James L., Jr. St. Mary's University

NEW STAFF MEMBERS

<i>Cincinnati</i>	Bednar, John T.	Ohio State University
	Benson, Leonard L.	Ohio State University
	Brown, John S.	Morehead State University
	McGuire, Michael F.	Indiana State University
	Marken, John D.	Union College
	Muehlenbein, Wayne C.	University of Evansville
	Parker, Terry R. Valerio, Eugene R.	University of Dayton Ball State University
<i>Dallas</i>	Boog-Scott, John E.	University of Texas at Arlington
	Bynum, James W.	University of West Florida
	Caccioppi, Joseph L.	Southeastern Louisiana College
	Clough, Richard H.	Washington State University
	Fuller, Richard A., II	University of Southern Mississippi
	Leggett, Robert W.	East Texas State University
	Lott, Larry H.	Stephen F. Austin State University
	Marks, David P.	University of Texas at Arlington
	Ortego, John R.	University of Southwestern Louisiana
	Seeburger, James M.	University of Texas at Arlington
	Smith, Errol R.	Southern University
	VanSickle, Larry D. Vasquez, Charles J. Wesner, John G.	Texas Christian University Northwestern State College Southwestern State College
<i>Denver</i>	Brew, Thomas J.	Montana State University
	Reliford, William T.	Southern Colorado State College
	Schaff, John M.	University of Utah
	Tucker, Douglas G.	Western State College
	Vossler, Mark M.	University of North Dakota
	Wilson, Sammy G.	Colorado State College
<i>Detroit</i>	Correll, Robert A.	Villanova University
	Harter, Oliver G.	Bowling Green State University
	Kanya, George M.	Cleveland State University
	Malone, Henry L.	Mississippi Valley State College
<i>Kansas City</i>	Birkman, Donald W.	Phillips University
	Burkett, David N.	East Central State College
	Ficklin, Donald L.	Central Missouri State College
	Hammond, Timothy J.	Humboldt State College
	Harding, Dennis W.	Oklahoma State College
	Isenberg, Mark E.	University of Colorado
	Phillips, Thomas L.	Southeast Missouri State College
	Schramm, James L.	Wichita State University
	Shope, William M.	East Central State College
	Sperry, Rebecca J. (Miss)	University of Iowa
	Tarwater, Dewey F. VanDyk, Eugene J.	Washburn University Humboldt State College
<i>Los Angeles</i>	Blaylock, Craig H.	California State College—Long Beach
	Bridges, Larry J.	California State College
	Hall, Richard G.	California State Polytechnic College
	Ransdell, David M.	San Diego State College
	Stock, Raymond R.	University of Southern California

NEW STAFF MEMBERS

<b><i>New York</i></b>	Bursch, Richard B.	Lehigh University
	Cerrato, Robert C.	Manhattan College
	Cullen, George P.	Manhattan College
	Degen, George F.	St. Francis University
	Fekete, Ronald C.	Southampton College
	Gendler, Allen W.	New York Institute of Technology
	Koblick, Barry	Manhattan College
	Lopes, Donald F.	Bloomfield College
	Lowe, George M., Jr.	Hofstra University
	Moscato, Leonard F.	Manhattan College
	Oldis, Thomas G.	St. Francis College
	Thompson, John E.	St. Francis University
	Ueland, Lawrence R.	Manhattan College
Wheeler, Donald	Long Island University	
Whittaker, Bonnie L. (Miss)	Alfred University	
<b><i>Norfolk</i></b>	Dixon, Lawrence E.	Old Dominion University
	Ellis, James E.	Old Dominion University
	Fox, Steve J.	Lenoir Rhyne College
	Greyard, William H.	Old Dominion University
	Johnson, Lynn C.	Lenoir Rhyne College
	Kay, Merle A. (Miss)	Old Dominion University
	Patton, Donald L.	Old Dominion University
	Riddick, Hubert M.	Atlantic Christian College
	Strickland, Charles E.	East Carolina University
Warren, Richard D.	University of Richmond	
<b><i>Philadelphia</i></b>	Wiley, James J.	LaSalle College
<b><i>San Francisco</i></b>	Albritton, Joe F.	Sonoma State College
	Arn, John W., Jr.	Sacramento State College
	Chinn, Eugene L.	San Francisco State College
	Lincoln, George R.	Humboldt State College
	Senn, George R.	Humboldt State College
	Zimmerling, William M.	California State College
<b><i>Seattle</i></b>	Bellerby, Linda J. (Miss)	Oregon State University
	Burr, Dennis W.	University of Idaho
	Davis, Robert E., Jr.	University of Washington
	Jacobsen, Daniel C.	University of Washington
	McKinney, Evan M.	Montana State University
	O'Brien, Thomas P.	University of Washington
	Pasquier, Frank C.	Seattle University
	Pederson, Clem J., Jr.	University of Idaho
	Percell, Alan L.	Portland State University
	Rubin, David C.	Oregon State University
Sparks, Michael R.	Oregon State University	
Thompson, Ronald E.	Southern Oregon College	

NEW STAFF MEMBERS

*Washington  
(Falls Church)*

Betts, Allan R.	Delaware State College
Boone, David E.	George Mason College
Bulger, Gary A.	West Virginia Institute of Technology
Cooksey, Raymond C.	University of Maryland
Fender, William E., Jr.	Ohio University
Flanagan, Walter P., Jr.	Virginia Commonwealth University
Furr, Reginald L., Jr.	Virginia Commonwealth University
Hinton, Henry L., Jr.	University of Richmond
Jarman, Toby L.	Old Dominion University
Leake, Wayne F.	University of Richmond
Myers, Donald L.	George Mason College
Overman, Roberta A. (Mrs.)	George Mason College
Patton, Charles L., Jr.	Virginia Commonwealth University
Sargen, Robert C.	George Mason College
Schmitt, Barbara A. (Miss)	College of New Rochelle
Semenuk, Catherine V. (Miss)	George Mason College
Timney, George N.	University of Maryland
Wilson, Robert W.	Virginia Commonwealth University
Wood, William J.	Delaware State College

## 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 June in Washington.

One award of \$250 is available to contributing staff members 35 years of age or under at the date of publication. Another award of \$250 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:

Originality of concepts.

Quality and effectiveness of written expression.

Evidence of individual research performed.

Relevancy to GAO operations and performance.

## STATEMENT OF EDITORIAL POLICIES

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



# THE GAO REVIEW

## LIAISON STAFF

Office of Policy and Special Studies.....	<i>E. H. Morse, Jr.,</i> Coordinator
Office of the Comptroller General.....	<i>Anthony Gabriel</i>
Office of the General Counsel.....	<i>Milton J. Socolar</i>
Civil Division.....	<i>Jack L. Mertz</i>
Defense Division.....	<i>Frank M. Kimmel</i>
International Division.....	<i>Charles E. Hughes</i>
European Branch.....	<i>Frank M. Mikus</i>
Far East Branch.....	<i>Clifford I. Gould</i>
Transportation Division.....	<i>Fred J. Shajer</i>
Field Operations Division.....	<i>Clyde E. Merrill</i>
Office of Personnel Management.....	<i>N. B. Cheatham</i>
Atlanta.....	<i>Andrew F. McCall</i>
Boston.....	<i>Charles F. Carr</i>
Chicago.....	<i>Clement K. Preiwisch</i>
Cincinnati.....	<i>Daniel L. McCafferty</i>
Dallas.....	<i>Harold C. Barton</i>
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Kansas City.....	<i>Arnett E. Burrow</i>
Los Angeles.....	<i>Eugene T. Cooper, Jr.</i>
New York.....	<i>William F. Paller</i>
Norfolk.....	<i>Paul Gaskill</i>
Philadelphia.....	<i>Horace Y. Rogers</i>
San Francisco.....	<i>Kenneth A. Pollock</i>
Seattle.....	<i>Richard O. Long</i>
Washington.....	<i>John R. Pennington, Jr.</i>

U.S. GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

**OFFICIAL BUSINESS**



POSTAGE AND FEES PAID  
U.S. GENERAL ACCOUNTING OFFICE

