REPORT TO THE CONGRESS

Status Of The Acquisition Of Selected Major Weapon Systems

B-163058

Department of Defense

BY THE COMPTROLLER ***GENERAL*** *OF THE UNITED STATES*

FEB. 6, 1970

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This is our report on the status of the acquisition of selected major weapon systems of the Department of Defense. Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Bureau of the Budget; the Secretary of Defense; and the Secretaries of the Army, Navy, and Air Force.

Comptroller General
of the United States

Of the 57 systems, GAO obtained sufficient detail on only 38 to permit a comparison of cost estimates at different points in time. GAO found that, on those **38,** the current estimates through program completion were about 50 percent higher ,than the original planning estimates. GAO points out that **DOD** has recently approved a number of major weapon systems for production and that their initial cost estimates could prove to be greatly understated, should the same rate of cost growth be experienced on these newer systems.

GAO believes that one of the most important causes for cost growth is starting the acquisition of a weapon system before it has been adequately demonstrated that there is reasonable expectation of successful development. Because of the substantial number of cases found, GAO concluded that DOD had not been effectively administering this process.

GAO believes also that another significant cause for cost growth can be traced to the initial definition of system mission requirements and technical performance specifications, including the estimates of costs to achieve them. Improvements in the quality and completeness of such preliminary planning will , in GAO's opinion, provide the knowledge which could contribute substantially to the accuracy of initial cost estimates.

GAO points out that cost growth cannot always be anticipated, particularly where a weapon system is in development and production over a long period of time. Furthermore, it is important to recognize in any analysis or discussion of cost growth that not all cost growth can be reasonably prevented and that some cost growth , even though preventable, may be desirable. (See p. 14.)

GAO concluded that **DOD's** Selected Acquisition Reporting system, in concept, represented a meaningful management tool for measuring and tracking the progress of major acquisitions. It was initiated in February 1968 and, as with most new management systems, has certain shortcomings. DOD has recognized the need for improvement, and GAO has made specific suggestions to **DOD** for its consideration in refining the system.

The status of the **57** individual programs as of June 30, 1969, is contained in 10 separate classified volumes designated as parts 7 through 10, which are included as appendix V to this report by reference.

RECOMMENDATIONS OR SUGGESTIONS

During this review the GAO made many recommendations to **DOD** concerning the improvement of acquisition management. Subsequently, **DOD** initiated actions to correct, or otherwise deal with, the matters discussed in this report. Therefore, the GAO report contains no specific recommendations. (See chs. 2 and 4.)

COMPTROLLER GENERAL'S REPORT TO THE ***CONGRESS***

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Department of Defense B-163058

D I G E S T

WHY THE REVIEW VAS MADE

The General Accounting Office (GAO) examined into the status of selected major weapon systems because of the large acquisition costs involved, and the interest of the Congress in the acquisition of major defense weapon systems.

GAO advised the Chairmen of the Senate and tiouse Armed Services Committees of its plans to give increased attention to the procurement of major weapons systems by letters dated August l, 1969. (See p. 31.)

GAO plans to continue to monitor the acquisition of major weapon systems. In addition, GAO is considering extending this type of review to other executive agencies.

FINDINGS AND ***CONCLUSIONS***

The Department of Defense **(DOD)** did not maintain a central file on the total number of systems being acquired or their costs. At GAO's request the DOD attempted to identify this information. Data furnished to GAO as of June 30, 1969, showed that a total of 131 major programs were in various phases of the acquisition process'and their total costs were estimated to aggregate about $141 billion. Of this amount, funds proximating $55 billion had been funded to the programs by the DOD through June **30,** 1969.

On the basis of a review of the status of 57 major weapon systems, as of June **30,** 1969, GAO concluded:

--That considerable cost growth had been and was continuing to occur on many current development programs and that numerous reasons were advanced **by** the military services to explain then;. *(See* ch. **3.)**

--That significant variances either existed or were anticipated between the performance originally expected and that currently estimated for a large number of the systems reviewed. (See ch. 3.)

--That slippage in the originally established program schedules of from 6 months to more than **3** years either had been experienced or were anticipated to be experienced on many of the systems. (See ch. **3.)**

Tear ***Sheet***

AGENCY ACTIONS AND UNRESOLVED ISSUES

Officials of the Office of the Secretary of Defense were generally aware of the matters discussed in this report, and a great deal of attention has been and is continuing to be given to their resolution. A new instruction on the preparation of the SARs was issued by the Secretary of Defense on December 19, 1969. This instruction significantly improves upon the data required to be reported and should greatly enhance the usefulness of the Selected Acquisition Report.

Further experience in the report preparation, together with the clarification provided in the new instructions, should result in the reports being prepared on a more consistent basis.

With regard to the cost growth being experienced, the Deputy Secretary of Defense has acknowledged the need for DOD to focus more attention on identifying the risks associated with major programs and the thorough completion of the established prerequisites to contract definition. A Defense Systems Acquisition Review Council has been recently established to ensure that these prerequisites have been met before programs progress into subsequent phases of the acquisition cycle.

GAO plans to continue to monitor the DOD's acquisition of major weapon systems.

MATTERS FOR CONSIDERATION BY THE CONGRESS

Several committees, subcommittees, and individual members of the Congress have had a long-standing and keen interest in the acquisition of major systems by DOD. (See ch. 5.) This report is being furnished to the Congress to apprise it of GAO's findings and conclusions and for such action as it or its committees may deem appropriate.

Tear Sheet

APPENDIX

V Individual Reports on the Status of the Acquisition of Selected **Major** Weapon Systems (bound separately)

PART

1 Department of the Army--Aircraft
CH-47 Helicopter
CHEYENNE Helicopter
UH-1H Helicopter
AH-1G COBRA Helicopter

2 Department of the Army--Missiles
SHILLELAGH
SAFEGUARD
DRAGON
SAM-D
LANCE
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3 Department of the Army--Vehicles
SHERIDAN Tank
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4 Department of the Navy--Aircraft
S-3A Aircraft
F-14 Aircraft
EA-6 Aircraft
F-4J Aircraft
P-3C Aircraft
CH-46 Helicopter
A-7E Aircraft

5 Department of the Navy—AN Systems
AN/SQQ-23 Sonar
AN/SQS-26 Sonar
AN/BQQ-2 Sonar

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ABBREVIATIONS

ASW	Antisubmarine Warfare
DOD	Department of Defense
GAO	General Accounting Office
RDT&E	research, development, test, and evaluation
SAR	Selected Acquisition Report

PART

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GAO advised the Chairmen of the Senate and House Armed Services Committees of its plans to give increased attention to the procurement of major weapons systems by letters dated August 1, 1969. (See p. 31.)

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--That slippage in the originally established program schedules *of* from 6 months to more than 3 years either had been experienced or were anticipated to be experienced on many of the systems. (See ch. 3.)

CHAPTER 1

INTRODUCTION

In a letter to the Chairman, Senate Committee on Armed Services, dated August 1, 1969 (see app. I), and in similar letters to other congressional committees, we outlined our plans for giving greater attention to the procurement of major weapon systems and for periodically reporting our findings to the Congress. As our initial effort, we decided to examine into the selected acquisition reporting system established by the Department of Defense to monitor and control the acquisition of major weapon systems.

During this examination, we examined into the completeness and accuracy of cost, schedule, and performance information contained in the Selected Acquisition Reports (SARs) as of June 30, 1969, involving 57 major weapon systems. We obtained the most current cost, schedule, and performance information available and made certain comparisons of this information with the initial estimates for each of the systems reviewed.

In undertaking this review in August 1969, we decided to examine the SARs and underlying documentation on a relatively large number of major weapon systems. We, however, confined our examination sufficiently to be able to provide the Congress with this report early in 1970. Therefore our work intentionally was limited in scope. Consequently, this report, for the most part, deals with the apparent problems we identified; it does not include any definite conclusions as to the precise causes or possible alternative remedies.

Additional work is continuing to more fully develop underlying causes of the problems identified and the future improvements that may be needed to ensure the timeliness, accuracy, and adequacy of the data reported under the SAR system. Additional detailed reviews of the problems involved in the acquisition of major weapon systems are also planned.

AGENCY ACTIONS AND UNRESOLVED ISSUES

Officials of the Office of the Secretary of Defense were generally aware of the matters discussed in this report, and a great deal of attention has been and is continuing to be given to their resolution. A new instruction on the preparation of tiie SARs was issued by the Secretary of Defense on December 19, 1969. This instruction significantly improves upon the data required to be reported and should greatly enhance the usefulness of the Selected Acquisition Report.

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GAO plans to continue to monitor the DOD's acquisition of major weapon systems.

MATTERS FOR CONSIDERATION BY THE CONGRESS

Several committees, subcommittees, and individual members of the Congress have had a long-standing and keen interest in the acquisition of major systems by DOD. (See ch. 5.) This report is being furnished to the Congress to apprise it of GAO's findings and conclusions and for such action as it or its committees may deem appropriate.

	Army	Navy	Air Force	Total
Total number of selected acquisition reports reviewed	13	29	15	57
Status in the acquisition cycle:				
Conceptual phase	-	-	-	-
Development phase	3	9	6	18
Production phase	10	20	9	39
Analysis by commodity category:				
Aircraft	4	7	10	21
Missiles	6	8	5	19
AN Systems (electronics)	-	3	-	3
Ships	-	8	-	8
Vehicles/Ordnance	3	3	-	6
Total estimated cost through completion (millions)	$14,553.5	$47,376.7	$51,750.8	$113,681.0
RDT&E	3,746.4	5,140.8	11,670.8	20,558.0
Production	10,311.7	42,201.3	39,435.6	91,948.6
Military construction	495.4	34.6	644.4	1,174.4

The systems reviewed in our exaninations are listed in appendix II.

At the outset of our examination, a complete list of all the major acquisitions was not readily available since a central file was not maintained in DOD. GAO therefore attempted, with the cooperation of DOD, to assemble such a list. We established criteria for our use in defining a major weapon system acquisition to be included in the inventory, which was in general conformance with certain DOD criteria., These were defined as systems expected to require cumulative research, development, test, and evaluation (RDT&E) financing in excess of $25 million, or which were estimated to require cumulative production investment in excess of $100 million. The initial inventory summarized by service and displaying the estimated costs through completion and funds programmed through June 30, 1969, is shown as appendix IV.

Also using the above monetary criteria, we selected systems for our review from systems being procured by each of the military departments that were in various phases of the acquisition cycle (conceptual, developmental, production) and that encompassed a wide range of commodities. Our examination was performed principally at the program/project offices of the military services having responsibility for the system acquisition. Some limited work was performed also at selected prime contractor locations.

The following table indicates, by military department, the resources allocated to the programs reviewed (amounts shown are based on projected service approved programs), their status at the time of our review, and a breakout by commodity class.

identify actual or potential problems in acquiring these major defense systems according to plans and authorizations.

SCOPE AND PROCEDURES

By DOD Instruction *7000.3,* the SAR is directed to those systems estimated to require a total cumulative financing for research, development, test, and evaluation in excess of $25 million or cumulative production investment in excess of $100 million. All the defense systems which meet either of these criteria are not necessarily designated for reporting under the SAR system. Designating the programs to be under the SAR is the responsibility of the Assistant Secretary of Defense (Comptroller), in coordination with the Director of Defense Research and Engineering and the Assistant Secretaries of Defense (Installations and Logistics) and (System Analysis).

These same offices also are required to coordinate and approve the specific schedule milestone events, performance characteristics, and cost data to be included in the SARs. These data are selected and submitted to the Assistant Secretary of Defense by the responsible military department upon designation of a system for SAR reporting.

SARs are prepared as of the end of each calendar quarter and are to be submitted to the Assistant Secretary of Defense (Comptroller) within *45* days.

EVALUATION OF THE SAR SYSTEM

The SAR system, in concept, represents a meaningful management tool for measuring and tracking the progress of major acquisitions. At the time of its establishment, the SAR system was intended as an internal DOD information system. Prior to April **1969** the system encompassed only eight acquisition programs and was, for all practical purposes, an experimental effort. In April **1969** the system was chosen by DOD to play an important role in the monitoring of systernacquisitions and also as the mechanism for developing program status information requested by the Senate Preparedness Investigating Subcommittee. Consequently the number of programs designated for the SAR system increased from eight to more than 50 programs as of June 30, **1969.**

CHAPTER 2

THE SELECTED ACQUISITION REPORTING SYSTEM

ORIGIN AND PURPOSE

The SAR was established by DOD Instruction 7000.3 of February 23, 1968. Prior to the introduction of the SAR system, there were no summary recurring reports on major system acquisitions which retained consistent cost, schedule, and performance data for comparison with subsequent estimates.

The initial purpose of the SAR system was to keep its sponsor, the Assistant Secretary of Defense (Comptroller), apprised as to the progress of selected acquisition programs and to compare this progress with the planned technical, schedule, and cost performance. In 1969, application of the SAR was broadened and strengthened considerably.

In a memorandum to the Secretaries of the Military Departments dated August 13, 1969, the Deputy Secretary of Defense defined the purpose of the SAR more specifically as being:

> "*** the key recurring summary report from project managers and the Military Departments to inform the Secretary of Defense on the progress of their major acquisition programs."

The Deputy Secretary also emphasized the need for personal involvement of all managers concerned with the major acquisition process to ensure that the SARs fairly and accurately reflect the status of the programs being reported.

Further, the Director, Defense Research and Engineering, in recent congressional testimony, stated that the SARs form the basis for Program Status Reports which are provided to the Senate Armed Services Committee and others on selected major system acquisitions. The Director stated also that the reports should, in part, help DOD improve its monitoring of the progress of development programs and to

existing system to accommodate a new subsystem. In addition, many reports were very voluminous and in such detail that sheer volume of paper rendered a ready analysis of the status and progress of the system an extremely difficult task.

DOD is aware of many of these problems and shortcomings, and a great deal of attention has been and is continuing to be given to their resolution. A new instruction on the preparation of the SARs was issued by the Secretary of Defense on December 19, 1969. This instruction significantly improves upon the data required to be reported and should greatly enhance the usefulness of the SAR. For example, the instruction specifically deals with many of the shortcomings discussed above. Further experience in report preparation, together with the clarification of the new instructions, should result in the reports' being prepared on a more consistent basis,

With regard to the costs attributed to inflation, DOD advised us that a Government policy had not yet been determined on the treatment of estimations of costs attributed to inflationary trends in the economy and that efforts were under way to study the issue.

As with any new reporting system, the SAR system had serious shortcomings and there are several areas where improvements are essential.

At the time of our examination, the SAR was not sufficiently encompassing, and therefore failed to disclose, significant matters concerning the progress of major acquisitions. For instance:

1. Although appraisals of certain specified technical features of the systems are required (weight, range, speed, accuracy, etc.), the results of a comparison of the technical performance actually demonstrated with that specified in the contract were not required to be reported.

2. In certain reports the status of certain key subsystems was not required to be reported. Most frequently these concern schedule and technical information on Government-furnished equipment. Additionally, it was noted that in certain instances end-items were delivered without critical components and no mention was made in the reports.

3. Cost incurred in relationship to the cost that should have been incurred for the physical progress of the work attained at a particular point in time was not reported.

4. Significant pending decisions that may have a major impact on the program, such as changes in quantities or deliveries, were not reported.

5. A comparison of quantities delivered with those scheduled to be delivered at the same point in time was not made.

We also noted inconsistencies in the data reported in the SARs. For example, there was a lack of consistency in (1) the reporting of early developmental costs, (2) treatment of costs attributed to inflationary trends in the economy, (3) treatment of costs involving contract incentive/penalty provisions and claims for equitable adjustments, and (4) the reporting of costs involved in modifying an

Item 3 above is shown as planned costs at current quantities on the SAR. We have changed this column heading to show that costs have been adjusted for quantity changes. If there is not a change in quantity, this column would be the same as either the planning estimate or the contract definition estimate column depending on the acquisition phase of the system.

The current estimate through program completion is intended to be a current, objective estimate of the costs expected to be incurred to accomplish the entire program and is adjusted for such items as changes in quantity as well as current estimates of cost due to inflation, changes in scope, capability increases, and program stretch-outs.

Of the SARs we reviewed, only 38 of the systems that had advanced to engineering or operational systems development provided sufficient cost detail to permit a meaningful evaluation of estimated cost performance. The results of this evaluation are shown in the following tabulation.

SAR Cost Estimates as of June 30, 1969

Number of systems	Planning estimate	Contract definition estimate	Earlier estimates adjusted for quantity changes (note a)	Current estimate through program completion
	(millions)			
Army (8)	$ 5,914.2	$ 6,087.7	$ 7,679.9	$ 8,654.5
Navy (22)	18,042.4	21,444.0	23,220.9	28,758.9
Air Force (8)	18,009.9	22,309.6	18,166.8	25,475.9
Total (38)	$41,966.5	$49,841.3	$49,067.6	$62,889.3

[a]The SAR heading for this column is Planned Costs at Current Quantity.

CHAPTER 3

COST, SCHEDULE, AND PERFORMANCE

Numerous reasons for changes to original program plans were contained in the SARs. Additional insight as to reasons for changes was gained by us as a result of evaluation of individual reports and discussions with the persons responsible for the programs. The data we collected during our review were analyzed by the three basic performance indicators--cost, schedule, and technical performance.

Each of these indicators is discussed separately in this chapter. Our findings regarding the adequacy of the variance analysis shown in the SAR are also included in this chapter.

EXPERIENCE WITH SYSTEM COST ESTIMATES

DOD instructions require that estimated program cost data be displayed in columnar form on the SAR to show:

1. Planning estimate.
2. Contract definition cost estimate,
3. Earlier estimates adjusted for quantity changes.
4. Current estimate through program completion.

The planning estimate appearing on the SAR is the formal estimate prepared by the military department, and approved by the Secretary of Defense, of cost anticipated to acquire the system in the quantities needed. It is prepared prior to the initiation of the formal acquisition cycle, i.e., prior to contract definition, and usually serves as a basis for initial appropriation requests.

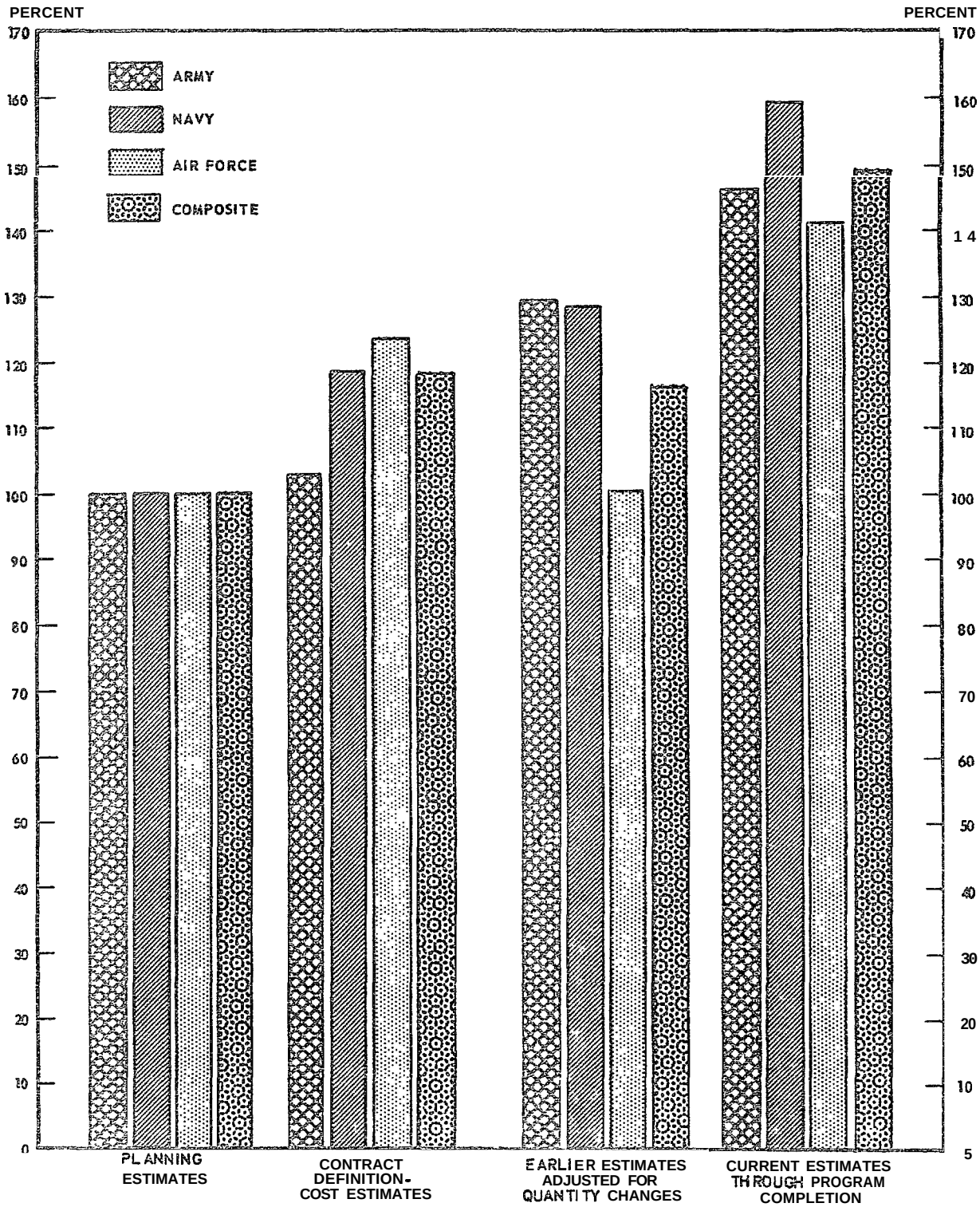
Contract definition cost estimates are refinements of the initial planning estimates and are established during the contract definition phase in which preliminary design and engineering are verified or accomplished and contract and system management planning are performed. This cycle frequently extends over a period of a year.

This chart shows that current estimates through program completion have grown about 50 percent when compared with planning cost estimates for these programs. It shows also that, although cost estimates improve and increase as a result of contract definition, they still, when measured from earlier estimates adjusted for quantity changes, do not approximate the current estimates to complete total programs.

Furthermore, it is important to recognize in any analysis or discussion of cost growth that not all cost growth can reasonably be prevented and that some cost growth, even though preventable, may be desirable. Unusual periods of inflation, for instance, may result in cost growth. Changes in technology may make it possible to incorporate modifications that result in an overall increase in the cost effectiveness of the system.

Such cost growth cannot always be anticipated, particularly where a weapon system is in development and production over a long period of time. However, cost growth may also result from such things as faulty planning, poor management, bad estimating, or deliberate underestimating. At the time of our review, the SAR system did not require any specific identification of the program cost variance in explicit terms. We were therefore unable to segregate cost growth by its various causes.

COMPARISON OF PROGRAM COST ESTIMATES



POTENTIAL FOR COST GROWTH

Estimates of cost growth addressed in this report excluded a number of major systems which were too early in the acquisition process to show, or realistically forecast, cost growth. For instance, the B-1, **DD-963**, DXGN, **F-15**, and AWACS systems, with a current estimate through program completion of about $27.3 billion at June 30, 1969, had not gone through contract definition, and cost estimates resulting from this process were not available at the time of our review. Additionally, the June 30, **1969**, SARs show that a number of other major systems--including SAFEGUARD, S-3A, F-14, and **MINUTEMAN** III, with a current estimate through program completion of about $17.7 billion--have recently been approved for production,

Should the cost growth experienced on the older programs be approximated on the newer ones, the estimates shown above could prove to be greatly understated.

SUFFICIENCY OF COST VARIANCE ANALYSES

Making a meaningful analysis of the systems costs from the information shown on the SARs has been a most troublesome task, The instructions for preparation of the SAR require a written analysis o€ any significant variance between program estimates at specified periods of time or milestones, The reason stated for the analysis is to provide persons unfamiliar with these basic data with the reasons for the variances.

The variance analyses of cost growth were often vague, and less than half of these analyses attached monetaryvalue to the variances. Many SARs failed to give the causes for cost growth and provided reasons that were more symptomatic than informative. Explanations were brief and seldom provided an insight into the effect of these problems on the total program in relation to cost or in relation to subsystems or components scheduled to be a part of the overall system. More importantly, the impact on the timeliness and suitability of the system in relation to mission objectives was not explained. As a result, the variance analyses did not, in our opinion, adequately serve their intended purpose.

The following examples are illustrative of the incompleteness of variance analyses €or cost growth which, we believe, restricts the usefulness of the *SAR.*

A Navy system in our review is currently estimated to experience a 192-percent cost growth beyond original planning estimates, Although many reasons were cited for this cost growth, it appears that a basic reason not fully disclosed on the SAR is that the Navy and the contractor did not initially have an adequate basis for projecting costs because requirements were not properly defined and, in some instances, represented technological unknowns.

In another instance, the SAR showed a cost growth for an Army vehicle as a result of a capability increase. Our review revealed that in this instance the capability increase was a by-product resulting from a correction of the system to overcome shortcomings which were not resolved prior to entering the production phase of the contract.

Specific reasons for failures to meet schedules were provided in some SARs which we examined. Some also showed how slippage in other programs affected scheduled events in the subject programs. For example, in the schedule variance analysis section of one SAR, the extent of slippage was identified with the following reasons.

--4 months' slippage due to specific modification to original contract plans by the Government.

--5 months' slippage due to late availability of another major system.

--7 months' slippage due to late receipt of working drawings.

--8 months' slippage due to late contractor material deliveries.

The disclosure of causes and indication of the amount of slippage attributable to a specific cause, as shown above, provide a basis for more meaningful analysis of the SAR reports. We found, however, that the SARs usually were not that explicit. For example, in one SAR we examined, a funding problem was cited as a reason for schedule slippage. In our opinion, this type of information without an accompanying explanation of why funding is a problem is not very meaningful. The SAR did not disclose whether the service failed to request sufficient funds or reprogrammed funds, whether development problems may have led DOD or the Congress to withhold funds, or whether higher priorities may have been involved.

We find that the SARs often do not indicate the relative significance of the reasons cited. For instance, in the above example, in addition to funding as a problem, the SAR cites design and technical difficulties and delays in an associated program as the reasons for slippage of about 3 years. Each appears to carry equal weight. However, our review of records, other than the SAR, showed that the lack of funding had a very significant impact in that it was cited as the cause of a 2-year delay in the start of operational testing.

SYSTEM SCHEDULE EXPERIENCE

Our examination of the system milestones schedules as reported on the SARs at June 30, 1969, showed that 34 of the 57 systems we reviewed either had experienced or were expected to experience slippage in the originally established program schedules of from 6 months to more than 3 years. Eleven other systems we reviewed were in the early phases of the acquisition process and therefore no schedule slippages were reported on the SARs for those systems. An additional 12 SARs reported either no slippage or slippage of less than 6 months.,

The following schedule shows the extent of actual or anticipated slippage as reported on the SARs by the military services. We selected the scheduled date of deployment or a comparable milestone as a base of measurement.

Slippage	Number of systems
6 months to 1 year	8
1 to 2 years	10
2 to 3 "	8
Over 3 "	8

Our analysis of the SARs showed that over 20 different reasons were cited as explanations for the slippages. Those most frequently cited were problems related to development, funding, production, system design and contract changes, and overly optimistic original schedule estimates. Among the other reasons cited were delays in associated programs, strikes at contractor plants, problems arising from the Southeast Asia conflict, program stretch-outs, and late availability of Government- or contractor-furnished equipment.

Generally, explanations provided on the SARs for failure to meet schedule milestones were brief and seldom gave any indication as to the basic cause or indicated whether the Government or contractor was primarily responsible. Further, the SAR explanation seldom indicated the significance of delays in relation to the impact on the total program costs or effects on other related ongoing programs.

SYSTEM PERFORMANCE

In our analysis of the system Performance data being reported in the SARs and their related supporting documents and in discussions with responsible project office officials, we found that significant variances either existed or were anticipated between the performance originally expected and that currently estimated for a large number of the systems.

The variances represented improvements and/or degradation in system performance. In some instances improvements in one capability resulted in a degradation of other expected capabilities. The 57 SARs in our review can be generally placed in the following categories.

Variances from original plan	Number of systems
Improvement in system performance	3
Degradation in system performance	12
Both improvement and degradation in system performance	17
No significant variances cited on SARs	25

Reasons cited for the variances were many and varied and usually did not provide explanations that would be meaningful to one who lacked the expertise to visualize the impact of the variance in relation to total system performance and mission objectives. Some reasons were common among several systems; others were unique to a particular system. We have attempted to identify the reasons for the significant performance variances, and we find that they fall under three principal categories; namely (1) desire to upgrade performance and reliability as technological advancements are recognized, (2) inaccurate or overly optimistic estimates of performance, and (3) changed design to increase capability and/or correct deficiencies.

Three of the systems we looked at experienced significant improvements in performance beyond original expectations. These improvements were attributed to breakthroughs in technology during the acquisition process. As these technological advancements were recognized, they were built into the systems. For example, one SAR indicated that the

We believe the SARs, particularly those for systems in early phases of the acquisition process, should show:

--basic causes of any slippage,

--whether the Government or contractor was responsible, and

--the significance of the cause in terms of time, money, or effect on other programs.

CHAPTER 4

1ARY OBSERVATIONS AND I(

Although this review has been concerned primarily with an evaluation of the SAR system concepts and the adequacy and accuracy of individual system reports, our examination also included some consideration of underlying documentation relating to the causes for cost increases, schedule slippages, and changes in systems performance. Our desire to review as many programs as we could within the time available did not afford us the opportunity to fully interpret these factors, However, a considerable amount of data was compiled from which certain conclusions are obvious and should, appropriately, be included in this report for consideration and positive action by DOD,

Our review showed that considerable cost growth had occurred, and is continuing, on many current development programs and that numerous explanatory reasons were advanced. The scope of our review did not permit a complete identification of fundamental causes of cost growth, The work we did accomplish, however, convinced us that the data brought to light through the SAR we reviewed were insufficient to provide DOD with precise causes for this cost growth. On the basis of these same explanations, we believe that increased attention must be given to the problem of identifying separately:

1. Those cost growth items which, in fact, are not entirely controllable by DOD, such as inflation, or those items which may even be desirable and which' may be expected to continue, such as upgrading system performances.

2. Those items which are stated to be major causes for cost growth and which are, in fact, explanations of symptoms of cost growth, such as corrections of erroneous estimates or assumptions.

3. Those items which are basic causes for cost growth and which could be eliminated or reduced considerably by appropriate and effective DOD action, such

range of a sonar used in submarine detection was improved as increased knowledge of sonar performance evolved during development.

We also found that 12 of the systems included in our review had experienced or expected a degradation of system performance from that originally estimated. However, this information was not always properly identified on the SAR reports. For instance, we found in one case that some of the original objectives of an aircraft system were beyond the state of the art and that subsequent changes to the system to overcome the associated problems did not bring the capabilities up to the original expected performance. In this instance the SAR showed that the variances were primarily attributed to fuel consumption and weight growth.

We found that, in the improvement and degradation category, 17 systems realized improvements to some performance characteristics and at the same time experienced degradation to other characteristics. Our analyses of the SAR data indicated that these performance changes in capabilities generally were made to increase the overall capability of the system over that initially planned or to correct recognized deficiencies to keep the system from falling below desirable performance capabilities. As an example of the latter, the gun/launcher system of a vehicle was modified at considerable cost and delay *so* that it could fire the ammunition developed.

No significant performance variances were reported on the SARs for 25 systems, nor did we identify any variances in our review.

our examination that the Deputy Secretary of Defense, in July 1969, recognized the need for DOD to focus more attention on identifying the risks associated with major programs and the thorough completion of the prerequisites to contract definition that had been established. The Secretary of Defense also is aware of the need to eliminate overoptimism in cost estimates for major systems. Action taken and attention directed toward these problems should result in their resolution and therefore are supported by the Secretary of Defense. Additionally, a Defense Systems Acquisition Review Council has been recently established to ensure that the necessary prerequisites have been met before programs progress into subsequent phases in the acquisition cycle.

Although a formal directive governing its preparation has not been issued, we understand that the Development Concept Paper system is to be used extensively by DOD to achieve an optimum definition of a program (including cost) consistent with its stage of development,

With regard to the SAR system itself, we feel that many of the shortcomings we identified in our examination will be overcome by the additional guidance that DOD issued in December *1969.* (See ch. 2.) Because of the significance of the SARs, we feel also that some real effort on the part of DOD, and at all levels in the military services, is needed to shape the content of the SARs *so* that the reports will focus attention on the overall status of a system, including the interrelationships among all aspects of the programs, existing or potential problems affecting it, and actions required to cope with them,

GAO plans to continue to monitor the DOD's acquisition of major weapon systems.

as commencing full development of a new system even though substantial additional work is required, in the prior conceptual phase.

We have listed below several items which should be considered seriously by DOD as potential areas for immediate remedial action in order to improve the acquisition process. Most of the significant causes for cost growth in a system appear to be caused by events and decisions during the early phases of contract definition and its follow-on engineering development. Decisions then are most influential, since they affect the program throughout the acquisition cycle and therefore contribute to, or preclude, later substantialcost growth.

One of the most important causes for cost growth is that decisions are made to begin the process of initiating a program before it has been demonstrated adequately that the prerequisites for advancing into the contract definition phase have been satisfied. A substantial number of examples of cost growth indicate that DOD has not been administering this process effectively. A substantial number of reasons for cost growth would not exist on current programs if the prerequisites had been met prior to initiation of contract definition and the subsequent phase of engineering development.

Another significant cause for cost growth can be traced to the initial documents which define system mission requirements and technical performance specifications, including the estimates of costs to achieve them. Although it is recognized that there are practical limitations in defining precisely requirements and specifications for new weapon systems, the technical performance and related system and subsystem specifications are a part of the fundamental basis for program approvals, estimates, and contracts and even for later developmental progress evaluations. Improvements in the quality and completeness of such documents will, in our opinion, provide the knowledge which could contribute substantially to a reduction in subsequent program cost growth.

We found that DOD was aware of these problems and was endeavoring to solve them, For example, we learned during

entitled "Review of Army Tank Program" took note of the delays in deploying equipment funded through the Army's tank improvement program as follows:

> "The Army has requested and received funds for its tank improvement program ever since 1961, However, in recent annual reviews of this program, the Armed Services Committee noted that the Army still has not deployed this equipment to the field. Slippages in deployment plans, as high as five years, had occurred."

In addition, it was added that:

> "Despite continuing development failures, production decisions on almost every one of the items covered by this report were made so that appearance of satisfactory program progress would lessen the chance of searching and critical reviews by 'those who control funds' in the Office of the Secretary of Defense and the Bureau of the Budget."

The Senate Committee on Armed Services in its Report 290, on the Defense Authorization Act (91st Cong., 1st sess.) of July 3, 1969, stated:

> "The committee is greatly concerned over the increased cost of new weapon systems generally, and the fact that certain weapon systems now in procurement or development have greatly exceeded their original cost estimates.
>
> "The Committee on Armed Services wishes to make it clear that it considers it has the responsibility and duty to extend beyond the passage of the authorization legislation to closely oversee the military expenditures as these funds are spent on the various weapons systems."

The House Committee on Appropriations, in its Report 1735 (90th Cong., 2d sess.) of July 18, 1968, found that:

CHAPTER 5

CONGRESSIONAL CONCERN OVER ACQUISITION OF MAJOR SYSTEMS

In recent months a number of committees and subcommittees of the Congress, including many of its individual members, have expressed concern over problems involved in the acquisition of major weapon systems by DOD. A number of hearings have been held in which problems being experienced with the individual systems have been given special attention.

A number of amendments were introduced to the fiscal year 1970 Defense Authorization Bill in which concern over the acquisition of weapon systems was expressed and proposals were made to enable the Congress to discharge better its responsibility in connection with funds used to acquire such systems by the military departments.

Although we are unable to include all expressions of congressional concern, we believe that the following statement conveys the general congressional feeling.

The Subcommittee on Economy in Government in its report (91st Cong., 1st sess.) of May 22, 1969, stated:

> "The Federal Government has not been adequately controlling military spending. As a result, substantial unnecessary funds have been spent for the acquisition of weapons systems and other military hardware. Mismanagement and laxity of control over this expensive program are creating heavy burdens for every taxpayer. *** Presently we do not have sufficient information about much of the procurement process including profitability, status of program costs, overruns, subcontracting, military prices, cost allocation, performance, ***."

The Armed Services Investigating Subcommittee, House Committee on Armed Services, in its report of June 24, 1969,

CHAPTER 6

AVAILABILITY OF INFORMATION REQUESTED BY THE GENERAL ACCOUNTING OFFICE

The expressed congressional desire for GAO to furnish it with data on the status of weapon systems timely made it absolutely essential that delays in obtaining access to needed information be minimized to the greatest possible extent.

At the outset of this review a series of meetings were held between senior officials of GAO, the Secretary of Defense, and other top Defense officials to apprise them of the nature of the assignment and the time constraints on their performance. Defense officials recognized the significance of the assignment as well as our need for timely access to data and assured us of their full cooperation in making needed data readily available,

After the fieldwork on this assignment started, a series of problems with access to data began to develop. Another series of meetings were held with departmental officials, culminating in the issuance of a special memorandum by the Deputy Secretary of Defense specifically granting our Office access to the documentation underlying the SARs. For the most part, this substantially alleviated the problem. As the fieldwork progressed, however, the provisions of an Air Force regulation, governing relationships between GAO and the Air Force, proved to be subject to varying interpretations, and as a result substantial delays in obtaining data from that service were experienced.

When the full impact of these delays was made known to the Headquarters, Air Force, the Chief of Staff promptly issued a new instruction clarifying the types of data that should be made immediately available to our Office and promised a review and revision of the Air Force regulation on this subject. The action taken by the Air Force Chief of Staff has resulted subsequently in full and timely availability of the required data to us. The planned revision of the Air Force regulation should materially reduce the incidences of these kinds of difficulties.

"*** examples of waste and mismanagement continue to persist in the operations of the Department of Defense. It is inevitable that in an operation so vast and far flung waste and mismanagement will occur ***"

"It is true that many examples of waste which have come to the attention of the Committee do not loom large in terms of a $77 billion Defense budget, but taken in the aggregate, they are significant, and the fiscal situation demands--even more so than in previous years--that greater efforts be exerted toward streamlining and improving Defense operations."

Most recently, the House Committee on Appropriations in its Report 698 (91st Cong., 1st sess.) of December 3, 1969, observed:

"While the Committee has consistently inquired into cost overruns from year to year, no single year stands out in which inordinate escalations in costs for Defense weapon system developments and procurements have been surfaced to the extent they have been this year during the hearings. ** This situation has greatly disturbed the Committee and it most certainly has an unfavorable impact upon the American taxpayer. Although general inflationary trends in recent years have been a factor in contributing to the problem of cost increases, economic changes accounted for only 11.4 percent of the total cost increases identified. It can be said that cost overruns in fact have contributed to inflation."

The military procurement authorization for fiscal year 1970 was scrutinized by members of the Congress, and a number of amendments were proposed in an effort to institute improved reporting of major acquisitions. Among the amendments that were adopted was one which requires the Comptroller General to audit, independently, major contracts and report his findings to the Congress.

APPENDIXES

as might be useful during the period when authorizations and appropriations are under consideration, status reports on major weapon systems, excluding those systems which are substantially completed. To the extent practicable, the GAO hopes to come into agreement with the Department of Defense on cost definitions. The General Accounting Office will advise the Department of Defense of the weapon systems to be included in the report for this purpose at an early date. It will also be necessary to reach agreement between the Department of Defense and the General Accounting Office on access to records. In addition, there should be discussions on the classification of data and the handling of such data in GAO reports which is classified in nature.

Detailed reviews of the problems involved in acquisition of weapon systems will give first priority to the requests of authorizing and appropriating committees. For example, the GAO has been requested by the Senate Armed Services Committee to provide information for the Committee with respect to the CHEYENNE Helicopter, the CONDOR, and the SRAM. The GAO will advise the Department of Defense of future similar requests when received or of additional reviews initiated within the discretion of the GAO.

Preliminary plans of the GAO contemplate that its reports on major weapon systems will include the following:

1. Currently estimated costs compared with the prior estimates separately for (a) research, development, and engineering, and (b) production.

2. The reasons for any significant increase or decrease from cost estimates at the time of the original authorization and the original contract.

3. Options available under the contract for additional procurement and whether the agency intends to exercise any options, and the projected cost of exercising options.

4. Changes in the performance specifications or estimates made by the contractor or by the agency and the reasons for any major change in actual or estimated differences from that called for under the original contract specifications.

5. Significant slippages in time schedules and the reasons therefor.

We are aware that several legislative proposals have been advanced to provide for differing types of reports and reviews by the General Accounting Office relating to the Defense procurement, with particular

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON. D.C. 20548

B-163058

August 1, 1969

Dear Mr. Chairman:

As you know from our recent discussions, the General Accounting Office is planning to give increased attention to Defense procurement, with particular reference to the procurement of major weapon systems. This area has long been an important one for the General Accounting Office, but I believe that it deserves increased attention in view of the fact that more than one-third of the Defense budget is devoted to procurement.

Assuming the Congress acts favorably upon the 1970 budget request for the General Accounting Office, we anticipate increasing the staff devoted to Defense procurement from an average of 250 to 425 employees. This increase will be allocated principally to the acquisition of major weapon systems by the Department of Defense where we will give particular attention to the following:

1. Possible improvements in cost estimates at the time the authorization request is presented to the Congress.

2. Providing greater assistance to the Armed Services and Appropriations Committees in the timeliness and completeness of information on the status of major weapon systems.

3. Reviewing and presenting to the Congress on a selective basis major problems identified which may be of assistance to the Congress in acting on future appropriations and authorizations for major weapon systems.

As you know, the Department of Defense is improving its information reporting on major weapon systems through its Selected Acquisition Reporting System. We understand this information will contribute to and supplement the action of the Senate Armed Services Committee, already underway, to develop a reporting system to keep the Committee advised on the status of weapon system acquisitions. The GAO proposes to work with the Armed Services Committees, the Appropriations Committees, and the Department of Defense in developing a system which will assist in meeting the needs of the Congress. Subsequently, the GAO proposes to review from time to tine the operation of the reporting system from the standpoint of improvements which may be needed to assure its timeliness, accuracy, and adequacy.

Tentatively, the GAO proposes to submit to the Congress at the beginning of the congressional session and at such later points in time

LIST OF WEAPON SYSTEMS SELECTED FOR GAO STUDY

System	Mission	Status
DEPARTMENT OF THE ARMY:		
Aircraft:		
CH-47	Cargo helicopter	Production
Cheyenne helicopter	Close in ground support/troop transport convoy escort	Production-canceled
UH-1H helicopter	Tactical transport helicopter	Production
AH-1G Cobra helicopter	Attack helicopter	Production
Missiles:		
Shillelagh	Surface-to-surface antitank missile-main armament of the Sheridan tank	Production
Safeguard	Antiballistic missile	Operational system development
Dragon	Surface-to-surface missile destruction of armored vehicles and other hard targets	Development
SAM-D	Surface-to-air missile--field army air defense system	Advanced development
Lance	Artillery support	Engineering development
Tow	Destruction of armored and field fortifications--surface-to-surface air-to-surface guided missile	Production
Vehicles—Ordance:		
M-551 Sheridan tank	Armored reconnaissancelairborne assault vehicle	Production
M-561 Gama Goat	Vehicle to provide mobility for troops and equipment	Production
DEPARTMENT OF THE NAVY:		
Aircraft:		
S-3A	Carrier-based ASW aircraft	Development
F-14	All-weather fighter	Development
EA-6	ECM attack aircraft	Production
F-4.J	All-weather fighter	Production
P-3c	Patrol ASW aircraft	Operational
CH-46	Assault/transport helicopter	Operational
A-7E	Light attack aircraft	Operational
AN systems:		
AN/SQS-23	Sonar for surface ship detection and tracking of submarines	Preproduction contract awarded
AN/SQS-26	Sonar for surface ship detection and tracking of submarines	Production
AN/BQQ-2	Sonar for nuclear submarines	Preproduction contract awarded
Missiles:		
Phoenix	Long-range air-to-air missile	Prototype production
Poseidon	Nuclear-guided missile	Production
Walleye	Air-to-surface missile	Development
Condor	Air-to-surface missile	Development
Standard Arm	Air-to-surface missile	Production
Subroc	Underwater-to-air-to-underwater nuclear depth missile	Production
Sparrow E	Air-to-air all-weather missiles	Operational
Sparrow F	Air-to-air all-weather missiles	Development
Ordnance:		
Mark 46 torpedo	Antisubmarine warfare	Production
Mark 48 model 0 torpedo	Antisubmarine warfare	Development

reference to weapon systems. Before legislation of this type is enacted, it would be our recommendation that the most careful consideration be given to it by the Congress. The type of reviews made by this Office and the needs of the interested committees of the Congress need further development and exploration. For these reasons, we believe that legislation prescribing a particular form of reporting at this time would be unwise. In general, we believe that the basic authority of the General Accounting Office is adequate to carry out the program which we have outlined.

I am sending a similar letter to the Chairman of the House Armed Services Committee.

I have previously advised in testimony before the House and Senate Appropriations Committees of our general plans to increase our effort in the Defense procurement area.

Best wishes.

Sincerely,

(Signed) ELMER B. STAATS

Elmer B. Staats

The Honorable John C. Stennis
Chairman, Committee on Armed Services
United States Senate

Note: A similar letter was also sent to the Chairman, Committee on Armed Services, House of Representatives.

SCHEDULE OF PROGRAM COST DATA APPEARING

ON JUNE 30, 1969, SARs (note a) AND ARRANGED BY

ACQUISITION PHASE AND MILITARY SERVICE

	Planning estimates	Contract definition cost estimates	Earlier estimates adjusted for quantity changes	Current estimates through program completion
	(millions)			
CONCEPT FORMULATION:				
None of the 57 systems are in this phase as of 12-23-69				
CONTRACT DEFINITION (7):				
Army				
Navy:				
DD963	$1,396.55		$1,737.55	$3,350.3
CVAN 69	519.0		519.0	-
DXGN	726.6		-	4,750.09
Air Force:				
B-1	8,800.0		8,800.0	8,800.0
F-15	6,039.0		6,039.0	7,700.0
AWACS	2,652.7		2,652.7	2,652.7
RF-111D	579.4		542.1	895.7
ENGINEERING AND/OR OPERATIONAL SYSTEMS DEVELOPMENT (50):				
Army:				
Dragon (note b)	381.3	$ 425.5	464.4	832.8
Shillelagh	373.1	373.1	380.3	573.2
AH-1G	49.8	70.7	466.2	561.0
Safeguard	4,185.0	4,185.0	4,185.0	4,185.0
Gama Goat	69.1	168.1	369.2	373.6
Sheridan tank	388.7	398.1	548.0	689.6
Cheyenne	125.9	125.9	125.9	203.9[c]
UH-1H	341.3	341.3	1,140.9	1,235.4
TOW (notes d and e)	410.4	-	366.8	944.7
Sheridan Ammo (notes d and f)	370.1	-	-	489.0
CH-47 helicopter (note d)	-	-	-	1,323.7
Lance (note d)	543.8	-	421.9	472.3
SAM-D (notes d and g)	4,816.5	3,910.0	-	3,372.1
Navy:				
P-3c	1,294.2	1,294.2	2,265.3	2,261.7
AN/BQQ-2	126.9	179.0	178.5	269.9
Sparrow E.	687.2	740.7	265.6	258.1
Sparrow F.	139.8	393.0	246.3	425.9
Phoenix	370.8	469.0	529.5	1,022.3
Mark 46-Mod 1	347.0	1,033.6	1,021.6	1,039.9
Mark 48-Mod 0	682.4	700.3	715.3	3,890.7
EA 6B	689.7	817.7	793.7	1,034.9
Walleye II	345.3	345.0	123.9	134.6
F-14	6,166.0	6,166.0	6,166.0	6,373.0
Standard Arm	180.3	241.6	220.0	250.7
S-3A	1,763.8	2,891.1	2,891.1	2,891.1
AN/SQQ-23	160.2	175.6	116.6	321.7
A-7E	1,465.6	1,465.6	1,421.5	1,919.1
Mark 48-Mod 1	70.7	71.6	71.6	111.1
Condor	117.2	126.0	126.0	167.0
F-4J	770.0	770.0	2,509.6	2,743.7
AN/SQS-26CX	95.7	88.8	95.6	119.6
CH46 E/F helicopter	323.6	589.0	577.1	550.6

LIST OF WEAPON SYSTEMS SELECTED FOR GAO STUDY (continued)

System	Mission	Status
DEPARTMENT OF THE NAVY (continued):		
Ordnance (continued):		
Mark 48 model 1 torpedo	Antisubmarine warfare	Development
Ships:		
LHA amphibious assault ship	Deployment of marine expeditionary forces in amphibious assaults	Construction
CVA-67 aircraft carrier	Attack carrier	Completed
CVAN-68 aircraft carrier (nuclear)	Attack carrier	Under construction
CVAN-69 aircraft carrier (nuclear)	Attack carrier	Partially funded (long lead-time items)
DE-1052 class, escort ship	Locate and destroy hostile submarines	Under construction or completed (46 ships)
DD 963	Fleet escort destroyer	Contract definition
DXGN, new guided missile frigate	Fleet escort destroyer	Contract definition
SSN attack submarine (nuclear)	Tracking and destroying enemy submarines	Completed or under construction (37 ships)
DEPARTMENT OF THE AIR FORCE:		
Aircraft:		
AMSA (advanced manned strategic aircraft)	Destruction of strategic targets with nuclear conventional ordnance; replaces B-52 bomber	Concept formulation
F-15	Air superiority fighter	Contract definition
C-5A	Designed to carry large payloads and outsized cargo over long ranges for MAC	Early production and flight testing
F-111, FB-111, and RF-111	Tactical support, strategic bombing, fleet air defense, air superiority, reconnaissance	Production
A-7D	Fixed wing, subsonic, light attack	Production
AWACS	Provide airborne early warning of a bomber threat and command/control of tactical interceptor force	Engineering development
F-4E	All-weather fighter	Production
RF-4c	All-weather reconnaissance aircraft	Production
Missiles:		
Maverick	Destruction of tactical ground targets	Development
Titan III	Space launch vehicles	Development essentially complete, 3 versions in production
SRAM	Air-to-surface missile to strike primary targets and suppress antibomber defenses	Advanced engineering development
Minuteman II and III	Destruction of strategic ground targets at intercontinental range	Production

SUMMARY OF MAJOR ACQUISITIONS

OF

THE DEPARTMENT OF DEFENSE

AS OF JUNE 30, 1969

Service	Estimated cost through completion			
	RDT&E	PROC	MCA	Total
	(millions)			
Army	$ 4,269.2	$ 18,203.7	$ 508.7	$ 22,981.6
Navy	7,627.5	56,791.7	62.2	64,481.4
Air Force	11,924.6	41,125.3	674.1	53,724.0
Total	$23,821.3	$116,120.7	$1,245.0	$141,187.0

Note: RDT&E--Research, development, test, and evaluation appropriations

PROC--Procurement appropriations

MCA--Military construction appropriatfons

SCHEDULE OF PROGRAM COST DATA APPEARING

ON JUNE 30, 1969, SARs (note a) AND ARRANGED BY

ACQUISITION PHASE AND MILITARY SERVICE (continued)

	Planning estimates	Contract definition cost estimates	Earlier estimates adjusted for quantity changes	Current estimates through program completion
	(millions)			
ENGINEERING AND/OR OPERATIONAL SYSTEMS DEVELOPMENT (50) (continued):				
Navy (continued):				
LHA	$ 651.0	$1,346.5	$1,346.5	$1,379.4
DE-1052	1,285.0	1,259.7	1,259.7	1,286.1
CVA-67	310.0	280.0	280.0	307.8
CVAN 68 (note d)	427.5	427.5	427.5	-
Poseidon (note d)	-	4,384.0	-	5,602.0
Subroc (note d)	-	438.8	455.3	591.4
SSN 637 (note d)	-	-	2,515.8	2,838.9
Air Force:				
Minuteman II	2,872.5	4,164.2	4,168.2	4,280.7
Minuteman III	2,678.1	4,339.0	4,060.3	4,226.0
C-5A	3,423.0	3,370.0	3,370.0	4,032.0
Maverick	257.9	391.8	213.1	374.7
A-7D	1,378.1	2,012.1	2,012.1	2,012.2
Titan III	932.2	745.5	745.5	1,130.5
F-111 A/C/D/E	4,686.6	5,505.5	2,941.9	7,401.3
FB-111A	1,781.5	1,781.5	655.7	1,218.5
SRAM (note d)	-	261.1	-	1,470.1
F-4E (note d)	-	-	-	2,630.8
RF-4C (note d)	-	-	-	1,571.0

[a]Cost data presented in this schedule recognizes DOD's and services' adjustments through January 9, 1970.

[b]The cost estimates are from the SAR prepared by the Army Materiel Command since the Department of the Army had not approved the June 30, 1969, Dragon *SAR* as of January 16, 1970.

[c]While this is the estimate appearing on the June 30, 1969, *SAR* it should be noted that, due to litigation, the Army's current liability is unknown.

[d]Systems in engineering and/or operational systems development and one or more of the program cost elements were omitted on the June 30, 1969, SAR.

[e]The TOW did not go through contract definition.

[f]The DOD considers this as an annex to the Sheridan vehicle and not a weapon system itself.

[g]Army officials advised us that, while the SAM-D has gone through contract definition, contract award has been limited to advance development.

Funds programmed through June 30, 1969			
RDT&E	PROC	MCA	Total
(millions)			
$ 1,782.2	$ 7,435.9	$240.1	$ 5 458.2
4,337.8	20,884.8	103.1	25 325.7
6,735.4	13,037.2	80.4	19,853.0
$12,855.4	$41,357.9	$423.6	$54,636.9

U.S. GAO. Wash., D.C.