

QUARTERLY SAR REVIEW

A REVIEW OF THE DEPARTMENT OF DEFENSE  
SEPTEMBER 30, 1982,  
SELECTED ACQUISITION REPORT

Special Study  
December 1982

Congress of the United States  
Congressional Budget Office

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## PREFACE

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This study presents the results of a Congressional Budget Office (CBO) review of the Department of Defense's Selected Acquisition Report (SAR) dated September 30, 1982. It provides in a few pages facts and data culled from about 900 pages of SAR information. The study is designed to be used by Congressional staff members working in the area of defense weapons system acquisition. It examines cost and other changes in all SAR programs for the period from June 30, 1982, to September 30, 1982.

This study was requested by the House and Senate Committees on Appropriations and Armed Services. William Myers, Patrick Haar, and Edward Swoboda of CBO's Budget Analysis Division prepared the paper under the general supervision of James Blum and C.G. Nuckols. Francis Pierce edited the manuscript. Suzanne Fominaya typed the several drafts.

December 1982

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NOTE

Unless otherwise noted, all dollar amounts are in current (or then-year) dollars.

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## SUMMARY

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The Selected Acquisition Report (SAR) is a quarterly status report from the Department of Defense (DoD) to the Congress on major defense acquisition programs. The current report covers 46 programs. It is one of the most comprehensive and consistent sources of data on defense weapons systems costs. The report is submitted 45 days after the end of the calendar quarter. The SAR presents each system program manager's current "best estimate" of key performance, schedule, and cost goals for the total program. This information provides the best basis for a periodic measurement of the progress achieved in each of these major weapons acquisition programs.

### COST CHANGES

The September SAR reports a relatively small net increase of \$1.2 billion that brings the total cost of all SAR programs to \$455.6 billion. Usually March, June, and September SARs reflect only small dollar changes. The major program decisions that result in dramatic cost changes usually are made in the budget development cycle and are reflected in the December SAR (published in February) that corresponds to the President's annual budget request.

The largest category of cost growth is about \$1.3 billion for estimating changes. The cost growth is about equally distributed among the three services. The Navy and Air Force HARM missiles and the CH-47 helicopter are the systems with the largest amount of growth. This amount is partially offset by about \$60 million in net reductions for quantity, engineering, schedule, and support changes. The programs with the most significant cost changes are listed in Table 1.

The current SAR includes only part of the costs of the systems covered--for example, the SAR cost estimates for 16 systems exclude at least \$11.8 billion in program costs. Most often these costs are for modifications and military construction but, in the case of the B-1B aircraft, the excluded amounts fund such items as simulators, military construction, the component improvement program, and facility improvements. Similar costs for other aircraft programs are typically treated as part of the total program estimate. CBO believes that these costs should be included in the estimates because they directly relate to the system being procured. In addition, the exclusion of such program costs hampers Congressional oversight of annual requests for funds, as well as of total program costs.

TABLE 1. SAR PROGRAMS WITH SIGNIFICANT COST CHANGES AS OF SEPTEMBER 30, 1982 (In millions of dollars)

System	Total Amount Of Cost Change
Army	
CH-47 Helicopter	279.2
Navy	
HARM Missile	555.6
Air Force	
HARM Missile	498.8
GLCM Missile	-114.9

SOURCE: Compiled by CBO from the September 30, 1982, SAR.

#### SCHEDULE PERFORMANCE

Twenty-eight programs remain on or ahead of planned schedules for delivery of equipment, while 18, or more than one-third of the SAR programs, are behind schedule (see Table 2). Nine of the 46 SAR programs reported delayed deliveries for at least the fourth consecutive SAR reporting period. Two others have reported delivery delays in three of the last four SARs. Thirty-five programs continue to meet previously planned milestone schedules. Only 11 programs reported delays in meeting planned major milestones. Two of these programs experienced milestone delays for four consecutive quarters.

Among the many reasons for delivery problems are technical difficulties, material shortages, and strikes. Although these can entail significant costs, they may also have more critical consequences in delaying force modernization and hindering readiness.

Major milestone delays are important for what they suggest about program execution. If initial flight testing of a missile is delayed three months, later testing will probably not of itself involve additional costs. But a delay may be caused by technical, material, or manpower problems that will require additional funds to resolve. Milestone delays may also serve as leading indicators of future delivery delays.

TABLE 2. SAR PROGRAMS WITH SCHEDULE CHANGES AS OF  
SEPTEMBER 30, 1982

System	Number of Schedule Milestones Delayed	System On Delivery Schedule
Army		
Patriot Missile	2	No*
Pershing II Missile	--	No*
CH-47D Helicopter	1	Yes
Fighting Vehicle	--	No*
M-1 Tank	--	No**
Copperhead Projectile	--	No*
Multiple Launch Rocket System	--	No
Navy		
F-14 Aircraft	--	No**
F/A-18 Aircraft	1	Yes
LAMPS MK III System	1	Yes
CAPTOR Torpedo System	--	No
HARM Missile	2	Yes
Phoenix Missile	--	No*
Sparrow Missile	3	No*
Tomahawk Missile	8	No*
Trident I Missile	--	No*
Air Force		
EF-111A Aircraft	--	No
B-1B Aircraft	1	Yes
DSCS III Satellite	1	Yes
NAVSTAR Global Positioning System	--	No
ALCM Missile	--	No**
GLCM Missile	1	No
Sidewinder Missile	--	No
Sparrow Missile	--	No*

SOURCE: Compiled by CBO from the September 30, 1982, SAR.

\* The program is further behind schedule than it was in the June SAR.

\*\* The program was either on schedule or ahead of schedule in June, but is now behind schedule.

## COST PERFORMANCE

While many programs do not show evidence of overall serious cost problems, several have unit cost problems, some have contract overruns, and others indicate that the December SAR will contain cost growth.

Large Unit Cost Increases. Two missile programs--the Navy and Air Force version of the HARM missile--incurred cost growth that increased their total program acquisition unit cost by more than 15 percent over that of March 1981, thereby breaching a reporting threshold established in the fiscal year 1982 Defense Authorization Act, Public Law 97-86. In addition, the Air Launched Cruise Missile program and the CH-47 helicopter program are very close to exceeding that threshold.

Contract Overruns. Program office data show contracts that are expected to overrun their target prices (see Table 3). Twenty-three programs, or one-half of the SAR systems, now report expected contract overruns totaling more than \$3 billion. This represents an average growth of 15 percent for each contract. Relative to the total number of contracts and dollars required for SAR programs, these are small amounts. Each of the contracts in Table 3 is, however, among the six largest for its respective program; many of them are development or early production contracts. While the dollar amount of the cost growth is generally small, cost growth in such contracts could be a warning of potential major cost growth in future production contracts.

### Indications of Future Cost Growth

The next section of this report presents notes on individual SAR weapons systems, indicating program changes or technical difficulties that may lead to future cost growth. Where possible, the dollar impact and the reason for the changes are shown. The notes cover such items as delayed delivery of equipment, contract overruns, delays in meeting major milestone schedules, potential performance problems, and costs excluded from the SAR estimates. It is important to note the degree to which the programs and issues mentioned here are the same as those appearing in CBO's reviews of SARs submitted in the last year. The systems are presented by military department.

TABLE 3. CONTRACTS THAT ARE EXPECTED TO OVERRUN THEIR TARGET PRICE

Program	Number of Contracts	Percent Over Target Price	Total Amount of Overrun (millions of dollars)
<b>Army</b>			
Patriot Missile	2	*	*
Pershing II Missile	1	*	*
AH-64 Helicopter	2	*	*
AHIP Helicopter	1	*	*
Fighting Vehicle	3	*	*
M-1 Tank	1	*	*
DIVAD GUN	2	*	*
Multiple Launch Rocket System	4	*	*
<b>Navy</b>			
F/A-18 Aircraft	4	11-37	759
AV-8B Aircraft	1	2	11
LAMPS MK III System	5	2-25	33
HARM Missile	1	3	3
Sparrow Missile	2	3-22	11
Tomahawk Missile	4	1-30	53
Trident Submarine	3	*	*
TACTAS Sonar	2	4-10	5
SSN-688 Submarine	2	16-178	1,640
CG-47 Cruiser	4	1-2	33
<b>Air Force</b>			
IR Maverick Missile	2	5-13	21
DSCS III Satellite	1	17	22
NAVSTAR Global Positioning System	4	2-10	21
ALCM Missile	3	2-9	35
GLCM Missile	5	8-47	86

SOURCE: Compiled by CBO from the September 30, 1982, SAR.

\* The amount and percent of the overrun are not included in the SAR because public disclosure of the estimates could jeopardize future contract negotiations.

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## ARMY PROGRAMS

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### PATRIOT

Three schedule milestones have been changed. The Full Production Decision previously slated for September 1983, has been moved forward to April 1982. The basis for this change was a memorandum by the Undersecretary of Defense for Research and Engineering, which deleted the requirement for Milestone III review by the Office of the Secretary of Defense (OSD) and delegated review authority to the Army. Citing first-time-through problems, DoD has also delayed by one month Component System Design confirmation and completion of one test unit. These same problems were cited in the June SAR when the Component System Design was also slipped by one month.

Delivery of production hardware continues to fall further behind schedule. As in the June and March 1982 SARs, delays are blamed on "late availability of production hardware which resulted from first-time-through problems with vendors, materials and special tool/test equipment." The program is now behind the current delivery schedule by 49 missiles (53 percent), 3 fire control sections (60 percent), and 9 launchers (60 percent). Projected missile deliveries for the next three quarters have been reduced with no recovery projected. Relative to the schedule in the President's 1983 budget, this program is behind schedule by 65 missiles and 13 launchers.

Failure to achieve production rates sufficient to return to the contract delivery schedule could result in higher future contract costs. In fact, the contractor and government estimates for the 1980 contract have increased three times since the December SAR. Although the percent of growth is small, current estimates indicate that the contract will overrun its target price. The amount and percent of the expected overrun are excluded from this review because public disclosure of the estimates could jeopardize future contract negotiations. An overrun in the 1980 contract could affect future contracts as well. The unfavorable cost trends experienced in the execution of the 1980 contract suggest that current cost estimates for later years may be too low.

Although the engineering services contract is projected by DoD to underrun its target, an estimated overrun on the initial production facilities contract could offset the resulting savings.

The SAR total cost estimate excludes \$293 million, of which \$287 million covers military construction for deployment of Patriot to U.S. Army Europe and U.S. Forces Command.

## PERSHING II

A second development test flight was attempted on November 4, following an in-flight failure in July 1982. The second test was halted before missile launch because of unknown system problems. No new flight test date has been set nor have the problems that led to failure of the initial flights been determined or corrected. These failures are all the more critical given that production of the Pershing II is to run concurrent with missile development. Deployment of the missile is scheduled for December 1983.

The Washington Post (November 24, 1982) reported that a flight test on November 19 resulted in the rebuilt two-stage engines working properly. The article further reported, however, that the warhead failed to land near the target because of a loss of hydraulic pressure that prevented the warhead flaps from working properly.

Delivery of development hardware continues to fall further behind schedule. The program is now behind by 11 propulsion sections and 15 reentry vehicles. Projected deliveries for the next three quarters have been adjusted upward to put development deliveries on schedule by June 30, 1983. Technical problems and manufacturing start-up problems have caused these delivery delays. There is no explanation about how the development hardware deliveries will be brought back on schedule and test flight failures corrected without either program cost increases or schedule delays or both.

The March and June 1982 SARs noted that the "current estimate is based upon an analysis of prime contractor proposals for fiscal year 1982 and fiscal year 1983 production buys. This estimate will be updated upon completion of a Baseline Cost Estimate, Should Cost Analysis, and contract negotiations." This remark has been excluded from the September SAR without reference to the results of these activities.

A correction of the contract value to include buffer stock spares increased the production contract target cost by \$21.3 million. The government's estimated price at completion for the development contract indicates that it will overrun the target price. The actual percent and amount of the estimated overrun are not included in this review because public disclosure of the estimates could jeopardize future contract negotiations.

## HELLFIRE

A funding shortfall of \$10.6 million reported in the December 1981 and March 1982 SARs was excluded from the June or September 1982 SARs without explanation. The total program cost estimate is unchanged from the December SAR, and there is no indication that the shortfall has been funded.

A deicing kit will be needed to meet operational requirements. These kits are to be installed in the field, but the cost of the kits is not included in the SAR.

#### CH-47 MODERNIZATION

The second production helicopter was accepted July 16, one and a half months ahead of contract schedule.

The SAR indicates that a multiyear procurement (MYP) agreement through fiscal year 1985 is still possible. Because MYP has not yet been approved by the Congress, potential dollar savings are not reflected in the current estimate.

Expansion of Development and Operational Test III has caused the scheduled milestone date to shift by two months.

Total program costs have risen by \$279 million, primarily as a result of an increased estimate for recurring and production costs. The total program acquisition unit cost of \$7.8 million is 13 percent greater than the cost included in the March 1981 SAR. Therefore this program is within 2 percent of breaching the threshold established by the fiscal year 1982 Defense Authorization Act, Public Law 97-86 (the so-called Nunn Amendment).

#### BLACK HAWK (UH-60)

On July 9, 1982, a contractor's proposal for four external fuel tanks was accepted and the fiscal year 1981 contract modified accordingly. This modification will allow the helicopter to meet self-deployment range requirements. Program costs in future years could be affected by this change.

The program is 30 helicopters ahead of the procurement delivery schedule as compared with 24 ahead of schedule in the June SAR.

#### APACHE (AH-64)

A \$528 million contingency fund, added to the program in the December 1981 SAR as a "budget to most likely cost" margin, may now be diverted to buy 60-70 additional helicopters. Favorable contract negotiations of early production contracts are cited as the basis for this change, which could lower unit costs by 12 percent. However, the September SAR also notes that an additional but undefined inflation adjustment will be needed to fully fund these new aircraft. In the June SAR, only 40-50 helicopters were to be bought with the same funds. Such use of the contingency funds leaves the program open to a fund shortage if the "most likely cost" case occurs. The actual

program adjustment will not be made until the December 1982 SAR in order to be concurrent with the President's budget. These quantity adjustments would still leave the program short of the original inventory objective of 545 aircraft.

The government and contractor estimates for one development contract and one procurement contract indicate that they will overrun their target prices. The amount and percent of overrun are not included in this review because public disclosure of the estimates could jeopardize future contract negotiations.

For fiscal year 1983, \$8.7 million has been added for military construction (MILCON) related to deployment of the AH-64. The SAR notes that a study is being made to determine AH-64-related MILCON that will be necessary in future years. Presumably, this study will include the \$122 million for MILCON and research and development that was included in the February 1982 Congressional Data Sheets for the AH-64 program.

#### ARMY HELICOPTER IMPROVEMENT PROGRAM (AHIP)

This is the first AHIP SAR to be submitted to the Congress.

The AHIP is a major modification of the existing OH-58A scout helicopter. The primary AHIP mission is target acquisition and laser designation for the AH-64 helicopter and its accompanying Hellfire missile. A full-scale engineering development (FSED) contract was awarded to Bell Helicopter Textron in September 1981. Altogether, 583 helicopters are to be procured by 1990 at a cost of \$2.5 billion.

The government's estimate for the full-scale engineering development contract indicates that it will overrun its target price. The amount and percent of the expected overrun are excluded from this review because public disclosure of the estimates could jeopardize future contract negotiations.

#### FIGHTING VEHICLE SYSTEM (FVS)

A second source will not be pursued for production of the fighting vehicle system.

Approval has been given to begin work on the TOW 2 missile and to put a tenth seat in the fighting vehicle once funds are available. Presumably this activity relates to the concept of preplanned product improvement (P<sup>3</sup>I). The total program cost estimate excludes \$508 million for training devices and preplanned product improvement that is contained in the Five-Year Defense Plan (FYDP). It is not

clear how much more funding will be required for these items in the years beyond the FYDP.

Delivery of production hardware continues to fall further behind schedule.

The program is now behind the current schedule by a total of 19 infantry fighting vehicles and 12 cavalry fighting vehicles. No recovery schedule has been provided. The latest delivery slip is still attributed to an earlier contractor strike that also led to revised delivery schedules in three of the last four SARs. Weapon and ammunition deliveries remain behind schedule. Relative to the schedule in the President's budget, the program is behind schedule by 34 IFVs, 69 CFVs, and 184 25mm weapons.

The government and contractor estimates of prices at completion indicate that one development and two production contracts will overrun their target prices. Overruns on these early contracts could affect future contract costs. The amount and percent of the overrun are not included in this review because public disclosure of the estimates could jeopardize future contract negotiations.

The total estimate excludes \$166 million for military construction, which was included in the February 1982 Congressional Data Sheets. The Army Times (November 8, 1982) reported that \$70 million will be expended to upgrade 13 training ranges in West Germany over the next three years in order to accommodate the FVS and the M-1 tank.

The inflation component of the current estimate for 1983-1989 was increased by about \$151 million without any increase in current dollars. The SAR states that the change was made to update historical inflation factors, although a similar change was not made in other tracked vehicle programs such as the M-1 tank. In addition, the SAR inflation assumptions have not been changed since January. The cost to complete the program now appears to contain about \$350 million more for inflation than would be expected from the application of the January OSD indexes.

### M-1 TANK

Three battalions of M-1 tanks have been delivered to U.S. Army Europe.

Development/Operational Test III was completed in May 1982. The SAR indicates that all but 2 of the 13 test parameters were met. Powertrain durability and track life did not meet the required specifications. A 4 percent shortfall in powertrain durability is attributed to design and quality control problems. A follow-on powertrain test on five vehicles was initiated in July with test evaluation scheduled for October. The SAR indicates that track durability cannot be improved using current rubber technology.

Actual tank deliveries are 26 behind schedule (4 percent), as compared with being on schedule in the June SAR. Delivery delays were caused by a strike that began in September 1982 at the tank assembly plants. No mention is made in the SAR concerning either resolution of the strike or a recovery schedule.

The total cost estimate excludes \$44 million for military construction, which was included in the February 1982 Congressional Data Sheets. The Army Times (November 8, 1982) reported that \$70 million will be expended to upgrade 13 training ranges in West Germany over the next three years in order to accommodate the M-1 and the FVS. The SAR estimate also excludes all research and development costs for the 120mm gun and ammunition, although the last 3,300 M-1 tanks in the program will be armed with this weapon.

### COPPERHEAD

The fiscal year 1983 authorization bill deleted all requested funds for Copperhead. The Congress did authorize \$15 million to close out the program in the face of severe cost growth and reliability problems. However, the SAR indicates only that the fiscal year 1983 request was reduced and that program changes will be reflected in the December 1982 SAR. No reference is made to canceling the program.

Final agreement on the fiscal year 1981 contract resulted in a quantity reduction from 3,324 rounds to 2,624 rounds. For fiscal year 1983, the SAR shows that 5,200 rounds are to be procured, or 2,429 less than were planned in the June SAR. Despite the Congressional action to cancel the program, all rounds deleted from 1983 and earlier years have been shifted to the 1984-1987 period to "provide an executable profile."

Delivery of production rounds has fallen further behind schedule to a level of 522 rounds. The rate of delivery has been slowed by 150 to 200 per month through January 1983, because of failure to meet required reliability during testing in July. After January, the delivery rate is expected to return to fiscal year 1982 firm-fixed-price contract rates.

The cost portion of the September SAR does not reflect the Congressional reduction from \$185.7 million requested to \$15 million for fiscal year 1983, nor does it reflect that Copperhead was not included in the fiscal years 1984 to 1988 program objective memorandum. In fact, total costs have been increased by \$35 million for schedule adjustments.

Both the 1981 and 1982 production contracts are reported to have been "definitized" in the last quarter. The 1982 contract includes an increase from 3,500 to 3,957 rounds.

The total estimate excludes \$748,000 for procurement of Copperhead trainers. Although the dollar amount is not significant, the cost of trainers is usually treated as part of the total weapons system acquisition cost.

### DIVAD

The basic DIVAD contract for fiscal year 1981 shows cost growth in the target to ceiling projections as a result of such items as extension of tests and increased vendor tooling. Funds for cost growth were not programmed in fiscal years 1981 or 1982; therefore, if the contractor reaches the contract ceiling, reprogramming will be needed.

The government and contractor estimates indicate that one production and one development contract will overrun their target prices. While the production overrun is small, the development overrun is relatively substantial. Both overruns could affect future contract costs because they are so early in the acquisition process. The exact amount and percent of the overrun are not included in this review because public disclosure of the estimates could jeopardize future contract negotiations.

The total estimate excludes \$135 million for military construction.

### MULTIPLE LAUNCH ROCKET SYSTEM (MLRS)

The project manager was replaced on August 4, 1982, after only two and a half years with the project.

Fifty test flights were conducted from July to September 1982 for a total of 69 flights. No mention was made of the latest success rate. The June SAR stated that the first 19 tests were successful.

Review authority for the production decision (milestone III) has been delegated to the Army by the Office of the Secretary of Defense (OSD).

The program is behind the procurement delivery schedule, included in the President's budget, by one self-propelled launcher loader. Recovery is expected by December 31, 1982. The delivery schedule for M-42 production rounds has been revised to show currently planned and actual deliveries to date. With this adjustment, delivery of M-42 rounds are shown to be 60 rounds ahead of, rather than 222 behind, the schedule in the President's budget.

The government and contractor estimates of prices at completion indicate that one development and three production contracts will overrun their target prices. Although the dollar impact of the overruns is relatively small, they could increase future contract prices. The exact

amount and percent of the overrun are not included in this review because public disclosure of the estimates could jeopardize future contract negotiations.

The total estimate excludes \$142 million for military construction that was included in the February 1982 Congressional Data Sheets.

#### JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)

Procurement costs are to be funded under the Army Data Distribution System (ADDS). The current estimate of \$99.1 million does not include the ADDS development program nor procurement costs although the SAR indicates a program manager estimate was completed in July 1982. However, a change in guidance has taken place and updated cost estimates will be reflected in the December SAR.

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## NAVY PROGRAMS

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### F-14

The current estimate has been decreased by about \$16 million. The SAR states that the estimates were "refined" without further explanation.

The program is one aircraft behind the procurement delivery schedule as compared with being on schedule in the June SAR.

Aviation Week and Space Technology (August 10, 1982) reported that the Navy is moving toward a major improvement program for the F-14 fighter. The improvements encompass new engines, radar changes, and avionics changes that could be implemented as early as 1985. Such changes could significantly increase total program costs.

### F/A-18

The government and contractor estimates indicate that one development contract and three production contracts will overrun their target prices by 11-37 percent. According to the DoD estimates, the overruns for these contracts total \$759 million--a decrease of \$49 million since the March SAR.

In July 1982, the Navy approved the development of an F/A-18 reconnaissance package. The engineering testbed aircraft is scheduled to fly in September 1983, with full-scale development to commence in 1985. A total of 124 reconnaissance versions are scheduled to be produced.

The production decision milestone for the F/A-18 attack version has slipped one month to November 1982. The SAR states that the aircraft is ready for economic production with no visible unacceptable risks. However, the Wall Street Journal (November 9, 1982) reported that the attack version failed a six-month operational test because of range, weight, and safety problems. The article further reported that Navy pilots advised against approving full production for the attack version, the mission for which most of the \$40 billion fleet of 1,366 aircraft is intended. If as a result of the tests the F/A-18 purchases are reduced or cancelled, the cost of the AV-8B and F-15 aircraft could increase substantially because they share common production facilities.

## HARM

The previously reported cost growth has been quantified by a joint Navy-Air Force team at \$555.6 million. The SAR states that analyses of the initial production contract and contractor proposals for the second year of production indicated that the program estimate was too low.

The total program acquisition unit cost of \$439,000 million per missile exceeds the March 1981 baseline estimate by 29 percent. Therefore this program exceeds the threshold established by the fiscal year 1982 Defense Authorization Act, Public Law 97-86 (the so-called Nunn Amendment).

The milestone for the completion of operational testing has slipped six times since the June 1981 SAR, this time to November instead of September 1982. The current delay was caused by range priorities, equipment availability, and missile technical problems. Also, the production decision milestone has been delayed two months to December because of the delay in completing operational testing.

The government's estimate for the development contract was increased by \$8 million--a 7 percent increase since the June SAR. The increase was caused by the delay in completing operational testing from March to December 1982.

## HARPOON

Delivery of procurement units is on schedule as compared with 14 missiles behind schedule in the June SAR.

## PHOENIX

The program is 29 missiles behind the planned procurement delivery schedule as compared with 14 missiles behind schedule in the June SAR. The delays were caused by a series of problems experienced during production line start-up.

The total estimate includes only the acquisition costs of the AIM-54C missiles, but does not include the costs of the modification program to retrofit AIM-54A missiles to the AIM-54C configuration. The CBO estimates that including these costs would add about \$255 million, or 8 percent, to the current program estimate of \$3.1 billion.

## SIDEWINDER

The program is seven missiles ahead of the procurement delivery schedule.

### AV-8B

Although the SAR reports that the production contract was awarded in April 1982, it also indicates that the contract has not yet been negotiated.

The government's estimate for one contract indicates that it will overrun its target price by 2 percent, or \$11 million.

A reduction or cancellation of the F/A-18 purchases could substantially increase the cost of the AV-8B because both aircraft share common production facilities.

### LAMPS MK III

The SAR indicates that current Congressional action will probably lead to a stretchout of the program and result in significant increased costs. (The 1983 Department of Defense Authorization Act, Public Law 97-252, authorized 27 of the 48 requested SH-60B helicopters). The restructured program and associated costs will be reflected in the December SAR.

Completion of initial board of inspection and survey trials has slipped again, this time from July to September 1982, representing a total slip of eight months from the original planned completion date.

The government and contractor estimates for all four development contracts and one production contract indicate that they will overrun their target prices by 2-25 percent. According to the DoD estimates, the overruns for these contracts total \$33 million--an increase of \$11 million since the June SAR. The increase is primarily caused by tool fabrication difficulties on the production contract.

### CAPTOR

After revising the procurement delivery schedule for the fourth time since the September 1981 SAR, the program is still 23 capsules behind schedule. The SAR indicates that the contractor has failed to meet its estimate of deliveries. Failure to achieve production rates that will enable a return to the delivery schedule could result in increased costs. Relative to the schedule in the President's 1983 budget, the program is 48 capsules behind schedule.

As in previous SARs, MK 46 torpedo costs are excluded from the CAPTOR estimate even though the system has no capability without a torpedo. The CBO estimates that including these costs would add about \$840 million to the total program costs.

The total estimate excludes the cost of the Navy modification program (4,380 guidance sections) to upgrade the existing inventory. The SAR indicates, however, that a change in the modification program would affect the estimate because it is based on the total of the modification and procurement quantities. The CBO estimates that including these costs would add about \$160 million, or 35 percent, to the current program estimate of \$453 million.

### SPARROW

Delivery of procurement hardware continues to fall further behind schedule. The program is 128 missiles behind the planned procurement delivery schedule as compared with 44 missiles behind schedule in the June SAR. Early production problems are cited as the cause for the delays. Failure to achieve production rates that will enable a return to the delivery schedule could result in increased costs.

The milestones for initial operational capability, production decision, and approval for service use have slipped one to four months.

The government and contractor estimates for one development contract and one procurement contract indicate that they will overrun their target prices by 3-22 percent. According to the DoD estimates, the overruns for these contracts total about \$11 million.

### TOMAHAWK

The SAR indicates that test results have not been satisfactory.

A "major program realignment" has caused completion of eight key schedule milestones to be delayed by 2-13 months. The milestones include operational testing and evaluation, production decision, and initial operating capability for the various Tomahawk versions.

Despite the "major program realignment," the estimate has been reduced \$18 million since the June SAR. The CBO believes that the realignment could result in significant increased costs in future SARs.

The program is behind the current planned delivery schedule by 14 development missiles and 2 production missiles. Relative to the schedule in the President's budget, the program is behind schedule by 13 development missiles and 7 production missiles.

The government's estimates indicate that all four development contracts included in the SAR will overrun their target prices by 1-30 percent. One of these contracts, which was "definitized" in August 1982 and first reported in the September SAR, is already estimated by DoD to overrun its target by 30 percent. Although the total overrun for all

four contracts is only \$53 million, these overruns could increase future procurement costs.

### TRIDENT SUBMARINE

The 1983 Defense Authorization Act, Public Law 97-252, authorized one Trident II (D-5) submarine in lieu of two Trident I (C-4) submarines that were included in the 1983 budget request. The SAR states that this change will result in significant cost and hardware changes that will affect the 1983 submarine and all future submarines. The total cost change will be addressed in the December SAR.

The USS Michigan was delivered on August 28, 33 days ahead of the current contract delivery date.

Although the total estimate is unchanged from the June SAR, "cost growth estimates" totaling \$106.4 million were reduced from 1982 and added to 1984. This action implies that either the "cost growth estimate" is fixed or that no inflation is assumed between 1982 and 1984.

The government's estimates for three of the contracts indicate that they will overrun their target prices by a significant percentage. The percent and amount of the overrun are not included in this review because the estimates are classified as "non-security exempt," and public release of the information could jeopardize future contract negotiations.

The total estimate excludes over \$2 billion in construction costs for the Trident Atlantic Coast Strategic Submarine Base and \$503.5 million in advance procurement funds for shipbuilding beyond the current Five-Year Defense Plan.

### TRIDENT I MISSILE

The program is 32 missiles behind the current production delivery schedule as compared with 31 missiles behind schedule in the March SAR. Relative to the President's 1983 budget, the program is 34 missiles behind schedule.

The total estimate excludes \$3.9 billion in missile procurement and construction costs for the Trident backfit program for Poseidon submarines. The basis for this exclusion is that these costs do not pertain to the Trident submarine. However, neither program is estimated or managed independently and neither has sufficient annual missile production in all years to stand alone. The costs are estimated on the basis of a total combined Trident and Trident backfit missile production program. In addition, the SAR indicates that the cost breakout is provided for SAR purposes only and should be considered

arbitrary. Therefore, CBO believes that the costs of the backfit program should be included in the SAR total cost estimate.

In accordance with DoD instructions, the contractor cost section of the SAR identifies contract information for the six largest contracts for each program. Because the submarines cost more than the missiles, the only contracts reflected in the SAR are submarine contracts. To provide better Congressional oversight, CBO believes that the six major missile contracts should also be included in the SAR contractor cost section.

### TACTAS

The total estimate excludes \$220 million for retrofit and trainer installations.

### SSN-688

The government estimates for two of the production contracts indicate they will overrun their target prices by 16-178 percent. A total overrun of \$1.6 billion is involved. The estimates are at the ceiling prices, which are the legal limits of the government's liability.

The total estimate appears to contain nearly \$2.8 billion more inflation than would be expected from the application of OSD indexes. The estimate appears to contain an implicit inflation rate of 42 percent from 1983 to 1984.

### CG-47

The SAR indicates that the December report will contain an increase in costs because of Congressional denial of \$80 million. This amount was included in the 1982 supplemental budget request to fund partial qualification of the second shipbuilder.

The total estimate excludes the following: (a) \$318 million for the combat system engineering development program; (b) \$696 million for AEGIS weapons systems development; and (c) the balance of the funds (at least \$150 million) needed to qualify the second shipbuilder.

The current estimate for ship displacement at full load was increased from 9,200 to 9,600 long tons--a 4 percent increase that could affect operating characteristics as well as operating and support costs. 1/

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1/ A long ton contains 2,240 pounds.

The New York Times (August 17, 1982) reported that an investigation by the House Appropriations Committee found that the ship is overweight, sluggish, and in possible danger of capsizing.

#### FFG-7

Three contracts are estimated by DoD to overrun their target prices, but the estimates for three other contracts indicate significant underruns that could more than offset the overruns. The amount and percent of the net underrun is not included in this review because the estimates are "negotiation-sensitive."

The procurement cost was reduced in the June SAR by \$48.8 million to reflect Congressional action on the reprogramming request for the 1979 program year ships. The June SAR also indicated that if the adjustment could not be accommodated within the program balance, the difference would be budgeted as cost growth in subsequent budgets. This subject was not addressed in the September SAR and the estimate was increased by only \$5 million for outfitting requirements. Therefore the December SAR could contain this cost growth.

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## AIR FORCE PROGRAMS

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### F-15

The SAR indicates that the development and procurement costs of the F-15 derivative fighter aircraft are under review and will be revised as appropriate in a future SAR.

The number of derivative aircraft needed to accomplish the mission is not clear. While 400 F-15s are identified with the derivative program, there are 538 F-16s projected.

The program is shown as being two aircraft ahead of the procurement delivery schedule as compared with three ahead of schedule in the June SAR. Based on data from the June and September SARs, the program should be three aircraft ahead of schedule at the end of September.

The SAR estimate does not reflect reductions of three aircraft and \$143.4 million of advance procurement funds that were included in the 1983 Defense Authorization Act.

The Washington Post (Tuesday, November 15, 1982) reported that 500 of the 632 Air Force F-15s were grounded pending resolution of a tail assembly problem.

The planned configuration for the new derivative version includes the existing F100 engine, which has had problems in the past. The current changes do not mention a provision for an expanded engine service warranty that was included in the F-16 December 1981 SAR for the same engine. It seems likely that the F-100 engine may ultimately be replaced by a new derivative fighter engine, perhaps increasing program costs.

A reduction or cancellation of the F/A-18 purchases by the Navy could substantially increase the cost of the F-15 because both aircraft share common production facilities.

The F-15 is scheduled for a Multistage Improvement Program (MSIP). A contract for phase one of the MSIP was awarded to McDonnell-Douglas Corporation in August. Phase one is a study effort to prepare for full-scale development.

## F-16

Although the SAR reports that the program is eight aircraft ahead of schedule, a comparison of the June and September SARs indicates that the program should be only four ahead of schedule. No explanation is provided for this sudden production advance.

The F-16 is scheduled for a Multinational Stage Improvement Program (MSIP). The MSIP Air Vehicle Critical Design Review (CDR) was completed in July 1982 with no major design changes encountered.

Reference to comparison of the F-15 and F-16 derivative (modified) versions for selection of a dual-role aircraft 1/ has been deleted from the SAR. Current Congressional guidance is that only one aircraft will be selected for derivative production. The derivative aircraft is distinct from the MSIP version.

Total costs associated with the F-16 derivative aircraft are reported to be \$4,657 million for 538 aircraft or \$8.6 million per aircraft. No changes have been made in this amount since the June SAR. These are only the marginal costs associated with modifying a typical F-16 aircraft into a derivative dual-role version. Approximately \$10 billion in total program costs has been programmed to acquire present versions of F-16 aircraft for modification to derivative aircraft.

The number of derivative aircraft needed to accomplish the mission is not clear. While 538 F-16s are associated with the derivative program, only 400 F-15s are involved.

The fiscal year 1983 Defense Authorization Act (Public Law 97-252) raised F-16 long-lead dollars from a requested \$223.3 million to \$323.3 million to allow procurement of an additional 30 aircraft each in 1984 and 1985. The SAR does not reflect this program change.

## EF-111A

In June, the government and contractor estimates for one production contract exceeded the target price by 331 percent. The apparent overrun is now reported to be the result of a typographical error that has been corrected in the September SAR.

The SAR reports that the program is on schedule. Relative to the schedule in the President's 1983 budget, the program is behind schedule by one aircraft.

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1/ An aircraft with both attack and fighter capabilities

## IR MAVERICK

The program manager was replaced on August 2, after three years with the program.

Initial Operational Test and Evaluation (IOT & E) results were reported in September. While operational effectiveness was reported as satisfactory, operational suitability was reported to be deficient. No mention was made of the two IOT & E launch failures that occurred in July. The June SAR reported that an investigation of these failures was underway and the results would be reported in the September SAR.

A future SAR will reflect Congressional action included in the 1983 Defense Authorization Act (Public Law 97-252), which reduced the 1983 program by \$97.7 million and 1,205 missiles.

A future SAR will reflect a reestimate of the cost to provide a second source for Maverick production.

The program is on schedule for delivery of development missiles as compared with two missiles behind in the June SAR.

The government and contractor estimates for both development contracts indicate that they will overrun their target prices by 5-13 percent, or \$21 million.

## B-1B

OSD has directed that the OSD Program Review be rescheduled to February 1983 from September 1982, a four-month slip. No other explanation is provided for this change.

The SAR reports that the total estimate of \$20.5 billion in 1981 constant dollars excludes several directly related B-1B expenses. These costs in 1981 dollars are: \$300 million for simulators and \$81.2 million for facility improvements and an ongoing component improvement program (CIP) that was projected in June to cost \$148.2 million. No cost is identified in the September SAR for CIP nor is there an explanation for the reporting change. The SAR also identified \$41.1 million in current dollars for evaluation of the B-1A defensive avionics and "to-be-determined" construction costs not included in the estimate. If these costs were spread and adjusted for inflation using Administration economic assumptions, total program costs would increase by at least \$700 million.

In June, the current estimate was reduced by \$10 million. These funds were to be replaced in the baseline "outyears" in the September SAR. However, the September SAR states that this correction will now take place in the December SAR.

### DSCS III

The first demonstration satellite flight launch was rescheduled for October 1982, one month behind schedule.

The government and contractor estimates for the development contract indicate that it will overrun its target price by 17 percent, or \$22 million. The contractor estimate for one procurement contract indicates that it will be under its target price by 2 percent, or \$4 million.

### NAVSTAR GPS

The program is still behind schedule by one development satellite. The late delivery should be made by the December SAR.

The current estimate for program development has been reduced by \$31 million to account for funds transferred to the procurement account in the December 1981 SAR.

The government and contractor estimates indicate that four development contracts will overrun their target prices by 2-10 percent, or \$21 million.

Development and procurement costs totaling \$1.2 billion for user equipment are excluded from the total estimate.

### ALCM

An integrated weapons system (IWS) flight failed on August 10, 1982, because of mission planning/navigation problems. There is no indication that cost or schedule changes will result from this action.

The first operational test launch was successfully conducted on September 21, 1982.

The final two Development Test and Evaluation/Follow on Test and Evaluation (DT & E/FOT & E) flights were made on October 1 and October 10. Poor weather halted the first test while the second was successful.

The program is 15 missiles behind scheduled delivery as compared with 2 ahead in June. No explanation is provided for this sharp slide nor is a recovery schedule specified. Since the March SAR indicated that the program was 19 missiles behind schedule, there has been a turnaround of 38 missiles over a six-month period, or 17 percent of total planned deliveries to date.

The government estimate for three procurement contracts indicates that they will overrun their target prices by 2-9 percent, or \$35 million. For one development contract and two procurement contracts the target price exceeds the government estimate, suggesting that costs could decrease by 1-6 percent, or \$8 million.

### GLCM

A new program manager was assigned on August 27, 1982. The previous manager had been with the program since its inception five years earlier.

The second Air Force GLCM test flight was successfully launched during the period July to September but failed in flight. The Tomahawk missile was decertified for flight in September following problems with a Navy Tomahawk test flight, but it was recertified in October.

The program is behind scheduled delivery by one development missile and one procurement missile as compared with two development and four procurement missiles and two launchers behind schedule in the previous quarter. Component problems and Navy testing problems are cited as responsible for the delays.

Initial Operational Test and Evaluation (IOT & E) has been delayed three months to June 1983 because of a delay in delivery of test assets.

Total program costs were reduced by \$130.0 million between fiscal years 1984 and 1987 in response to a Memorandum of Agreement (MOA) between General Dynamics/Convair and the program office. However, the SAR contains a net reduction of only 114.9 million. The difference is a \$15.1 million increase in production costs because the Navy Tomahawk missile quantity was reduced in 1984.

The government and contractor estimates for five of six contracts shown in the SAR indicate that they will overrun their target prices by 8-47 percent, or as much as \$86 million.

### JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)

The JTIDS Class 2 Critical Design Review was completed in July. Class 2 activities are related to tactical user terminals and user-platform activities.

### HARM

A joint Navy-Air Force cost assessment team has reestimated program acquisition costs. The new assessment raises total program costs by \$498.8 million. The SAR states that analyses of the initial production

contract and contractor proposals for the second year of production indicated that the program estimate was too low.

The Air Force has reduced its procurement objective. A future SAR will contain adjustments to reflect this decision.

The total program unit cost has for the second straight quarter exceeded a threshold established by the fiscal year 1982 Defense Authorization Act (Public Law 97-86) in the so-called Nunn Amendment. Authority to obligate funds for this program will automatically terminate if the Secretary of Defense does not certify the system requirement within 60 days of the reported increase. The unit cost change is a result of reestimates by a joint Air Force/Navy cost team. The actual amount and percent of change have been classified in the SAR.

### SIDEWINDER

For the first period of planned deliveries, the program is behind schedule by 70 missiles as a result of quality manufacturing deficiencies. No recovery plan has been provided.

### SPARROW

The program is 269 missiles behind schedule as compared with 135 missiles behind schedule in the June SAR. The SAR does not include an explanation for the delay or a recovery schedule.