



Briefing Report to the Chairman,
Committee on Armed Services, House of
Representatives

August 1987

AIRCRAFT MODIFICATIONS

Overestimates of Costs Generate Excess Funds



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National Security and
International Affairs Division

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August 31, 1987

The Honorable Les Aspin
Chairman, Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

In response to your request, we examined the Air Force's use of funds appropriated for B-52, A-10, and F-111 aircraft modification programs in fiscal years 1983 through 1987. Our examination included the following:

- the amount of funds appropriated for the programs;
- the disposition of the funds by aircraft type and specific modification;
- the amount of funds unobligated, along with the plans and schedules for obligation of these funds;
- the reasons for large amounts of excess funds in some aircraft modification budgets;
- the schedule for retirement of the B-52 aircraft; and
- the plans and estimated costs for future B-52 modifications during the next 5-year defense budget period.

We briefed your office on the preliminary results of our examination on March 20, 1987. Included in that briefing was information on the B-52 retirement schedule, which is not included in this report because it is classified.

We focused our work on the two largest aircraft modification classes--class IV, which includes correction of deficiencies or extension of service life, and class V, which includes addition of new or improved operational capabilities or removal of unneeded capabilities. Our work showed that

- the Air Force's use of modification funds for a particular fiscal year differs from the basis upon which those funds are requested from and appropriated by the Congress;

- modification cancellations, scope reductions, the use of other funds, and lower-than-estimated costs generate funds that are excess to the modification budgets as approved by the Congress; and
- congressional, Department of Defense (DOD), and Air Force actions have reduced the amount of excess funds.

DOD commented that aircraft modification funds had been managed within guidelines established by the Congress. We found no instances in which the Air Force had gone beyond established funding guidelines and no evidence that funds are requested with the intent of cancelling modifications or making other changes that will produce excess funds.

The results of our work are summarized below, and further details are presented in the appendixes.

FUNDS USED DIFFERENTLY FROM BASIS
FOR REQUEST AND APPROPRIATION

The Air Force's use of modification funds for a particular fiscal year differs from anticipated use, as reflected in its budget requests for appropriations. Appropriation legislation generally specifies dollar amounts for the overall Air Force aircraft procurement program, of which the modification program is a part. Reports by the Committees on Armed Services and on Appropriations show, however, that the Congress uses the Air Force's detailed modifications budget request justification in deciding the amount to be appropriated for aircraft procurement.

Unless specific language directs otherwise, the Air Force is generally permitted, within certain limits, to use appropriated funds differently from its budget request justification. For example, funds that are excess to planned class IV modifications can be used under certain conditions to start other class IV modifications that were not specifically requested in the President's budget. The Air Force regularly updates modification cost estimates and includes updates in the annual budget requests to the Congress, showing expected use of appropriated funds.

Tables II.1 through II.5 of appendix II show funds appropriated and obligated for B-52 modifications from fiscal years 1983 through 1987. These tables show that (1) funds appropriated on the basis of the request for individual modifications were not always obligated for those modifications, (2) funds were obligated for modifications for which no funds had been requested or appropriated, and

(3) amounts requested and appropriated for some individual modifications were often more than 25 percent greater or less than amounts eventually obligated. A summary of these differences is shown in table II.7. The table shows, for example, that for fiscal year 1985 the Air Force obligated \$145.0 million less than appropriated for 8 B-52 modifications and used \$33.6 million to fund 13 other B-52 modifications for which no fiscal year 1985 funds had been specifically requested. Some of these were low-cost modifications that could have been included under "miscellaneous" in Air Force budget requests.

Summaries of funding for the A-10 and F-111 modification programs are in tables III.1 and IV.1. These tables show a similar pattern: uses of some funds are different from the uses shown in the budget justifications. For example, table III.1 shows that, for fiscal year 1984, \$124.3 million was appropriated based on the Air Force's request for 14 specific A-10 modifications. No fiscal year 1984 funds were obligated for 9 of the 14, for which \$32.5 million had been appropriated. A total of \$12 million of fiscal year 1984 funds was obligated for 23 A-10 modifications that did not specifically appear in the budget justification.

OVERESTIMATES OF MODIFICATION COSTS GENERATE EXCESS FUNDS

In fiscal years 1983 through 1987, estimated costs of individual modifications, which form the basis for the Air Force's budget request and congressional appropriation actions, were often greater than the amounts eventually obligated. Changes that eliminated or reduced the need for funds occurred in some modifications after they had been initially funded. As a result, some funds became "excess" to the modification program.

Modification cost estimates frequently exceeded obligations in the B-52 modification program. As shown in table II.7, of the 13 modifications included in the fiscal year 1983 President's budget, no fiscal year 1983 funds were obligated for 1, for which \$1 million had been appropriated, and 8 had appropriated amounts \$133.4 million greater than obligations. The remaining 4 modifications had appropriated amounts that were \$72.4 million less than obligations. Table II.8 compares the latest estimated total cost with early cost estimates for the 11 major B-52 modifications included in the fiscal years 1983, 1984, and 1985 President's budgets. This comparison shows that the latest estimates for 8 of the 11 modifications ranged from 28 to 79 percent of the early estimates. The major reason for the

decrease in 2 of the 8 was that the numbers of aircraft to receive the modifications decreased by similar percentages.

Our examination of A-10 and F-111 modifications (tables III.1, III.2, IV.1, and IV.2) shows that the modification budget estimates for these two aircraft did not vary from obligated amounts as frequently or as extensively as did B-52 budget estimates. However, as shown in table III.2, the latest estimated costs for five of the eight major A-10 modifications were significantly less than earlier estimated costs.

We were unable to determine why the budget estimates for specific modifications exceeded the amounts obligated because supporting documentation for the estimates and officials familiar with the justification for these estimates were not available. However, DOD and Air Force officials said that aircraft modifications costs are less than originally estimated for valid reasons. They described the following circumstances that can lead to budget estimates that exceed obligations:

- Most original estimates are based on contractors' "rough order of magnitude" estimates. More precise estimates are often contained in engineering change proposals, which cannot be procured before the modifications' first-year budget requests are approved.
- The procurement process involves competitive bidding, negotiations, and combination procurements, often resulting in cost decreases.
- The scope of a modification may be restricted to reduce costs, eliminate elements that are not cost effective, or comply with Air Force force structure projections or policy decisions.
- Research and development may be conducted concurrently with production to meet demands for short completion times, increasing the likelihood of engineering changes and retrofit applications. Contractors and the Air Force increase estimated modification costs by up to 30 percent to cover this risk.
- To contend with demands for short completion times, the Air Force has used "undefinitized" contracts, contracts with "not-to-exceed" amounts that must be covered with sufficient budget authority to avoid violating the Anti-Deficiency Act. Amounts for "definitized" contracts are

often 10 to 30 percent less than the not-to-exceed amounts.

- Air Force program managers and contractors tend to estimate high for budgeting purposes because of the difficulties and potential delays in requesting additional funds for an ongoing modification.

Other factors also contribute to modification funds that are excess to budgeted needs, including cancelling a funded modification, changing the number of aircraft to be modified, and accomplishing the modification with other sources of funds. Such changes, while occurring in all three programs we reviewed, were most common in the A-10 modification program.

For A-10 modifications in fiscal years 1983 and 1984 the Air Force obligated funds to fewer than half of the modifications in its budget requests and appropriations. (See table III.1.) For example, fiscal year 1984 funds were not obligated to nine A-10 modifications requested and funded in fiscal year 1984. Reasons that fiscal year 1984 funds were not obligated to these modifications are as follows:

- Two modifications funded with \$13 million (total estimated cost of \$36.2 million) were accomplished using prior year A-10 modification funds and other procurement funds.
- Two modifications funded with \$4.1 million (total estimated cost of \$48.6 million) were postponed (they were resubmitted in the fiscal year 1987 and 1988 President's budgets with new identification numbers and total estimated cost of \$15.8 million).
- Three modifications funded with \$3.9 million (total estimated cost of \$10.3 million) were cancelled after a determination that they were unneeded.
- One modification funded with \$10.9 million (total estimated cost of \$28.3 million) was changed from a modification to a preferred spares action and accomplished with spare parts funding.
- One modification funded with \$0.6 million (total estimated cost of \$10.6 million) was accomplished with aircraft procurement funds.

MOST EXCESS FUNDS ELIMINATED

The Air Force, DOD, and the Congress have reduced the excess modification funds for fiscal years 1983 through 1987. Actions taken to reduce excess funds have included funding modifications that do not appear in the President's budgets and reprogramming funds to other aircraft modifications and other aircraft procurement programs. Excess funds also have been reduced through Gramm-Rudman reductions, reductions for overestimated inflation, and congressional rescissions.

Table II.9 shows that, as of January 31, 1987, the Air Force had obligated or planned to obligate \$1,984.6 million of the \$2,307.6 million appropriated for the B-52 program in fiscal years 1983 through 1987. Of the remaining funds, \$292.2 million was no longer available to the B-52 program because of reprogrammings and rescissions. Of the \$30.8 million balance still programmed for B-52 modifications for which the program manager had no obligation plans, \$8.3 million of fiscal year 1984 funds is no longer available for obligation because its 3-year obligation period has expired.

The A-10 and F-111 modification programs also have excess funds. Tables III.3 and IV.3 show the amounts of funds appropriated and obligated for the A-10 and F-111 aircraft modifications for fiscal years 1983 through 1987. Available funds have been reduced by \$32.2 million for the A-10 and by \$18.5 million for the F-111 because of Gramm-Rudman reductions, inflation reductions, and reprogramming. The balance of unobligated funds is \$15.9 million for the A-10 and \$11.9 for the F-111, including \$1.8 million in A-10 funds and \$6.7 million in F-111 funds from fiscal years 1983 and 1984, which are no longer available for obligation.

Funding of other
modifications with excess funds

The Air Force has the flexibility to use excess funds for other modifications not specifically identified in the budget for that fiscal year, including some new class IV modifications not ranked high enough to be included in the President's budget. In June 1986, an Air Force deputy chief of staff expressed concern about large excesses and directed that system program managers identify a sufficient number of unfunded modifications to which excess funds could be applied. The stated purpose was to demonstrate an effective use of funds, avoid expiring excesses, and justify additional support. DOD commented that the deputy chief of staff's intention was to have program managers effectively

use available funds to satisfy as many of the unfunded requirements as possible.

As shown in tables II.7, III.1, and IV.1, a number of B-52, A-10, and F-111 modifications that were not included in the President's budget request have received funds. Many of these unbudgeted modifications had low dollar values but cumulatively are a significant amount. For example, \$15.3 million of fiscal year 1985 funds was obligated to 10 F-111 modifications for which no 1985 funds had been specifically requested or appropriated.

AGENCY COMMENTS

DOD, in a letter dated August 12, 1987 (see app. V), generally agreed with our findings but said that latest estimates show a shortfall in B-52 funding rather than an excess. We recognize that estimates are dynamic. The amounts included in this report are based on planned obligation data, as of January 31, 1987, which we obtained from program management offices. We did not review the status of funds as of the time of DOD's comments in August 1987.

DOD included other detailed comments in its response to our draft. We have revised the report where appropriate to address its concerns.

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We are sending copies of this report to the Chairmen, Senate Committee on Governmental Affairs, Senate Committee on Armed Services, House and Senate Committees on Appropriations, and House Committee on Government Operations; the Secretaries of Defense and the Air Force; and the Director, Office of Management and Budget.

Sincerely yours,



Frank C. Conahan
Assistant Comptroller General

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ABBREVIATIONS

AFLC	Air Force Logistics Command
ALC	air logistics center
ALCM	air-launched cruise missile
CSRL	common strategic rotary launcher
DOD	Department of Defense
GAO	General Accounting Office

INTRODUCTION

Aircraft modifications are changes made to aircraft for such purposes as improving the reliability and maintainability of an aircraft system or adding new mission capabilities. Modifications are accomplished using procurement funds to purchase materials (kits) and operations and maintenance funds to install them. For fiscal years 1983 through 1987, the Congress appropriated about \$14.4 billion in aircraft procurement funds for Air Force aircraft modifications. The B-52 program, among the largest of the Air Force modification programs and the major focus of our work, accounts for \$2,307.6 million (about 16 percent) of the overall Air Force program for fiscal years 1983 through 1987. The Congress appropriated \$421.9 million for the A-10 and \$959.2 million for the F-111 aircraft modification programs during this period.

AIR FORCE AIRCRAFT MODIFICATIONS

In general, the Air Force has divided aircraft modifications into five classes. The two largest are class IV, which includes modifications that are intended to correct deficiencies or extend aircraft service life, and class V, which includes the addition of new or improved operational capabilities or the removal of unneeded capabilities. Class IV modification is the largest class in terms of numbers, while class V modification is the largest in terms of dollar requirements.

Although the Air Force develops class IV and class V modifications through different processes, both classes are subject to the overall Air Force budgeting process. The Air Force develops its aircraft modification budget in a two-cycle process, which starts about 2 years prior to the first fiscal year that funds are needed. The first cycle ends with a program objective memorandum, which consists of a priority listing of proposed aircraft modifications. About 6 to 8 months after the program objective memorandum, the Air Force enters the budget estimate submission cycle, during which it refines the proposed modification listing. The process culminates in the President's budget to Congress.

Class IV priorities

Class IV modification proposals originate with system program managers who manage the logistics support of aircraft systems at the air logistics centers (ALCs). The system program manager--with input from the Air Force commands responsible for the mission of the aircraft (the commands using the aircraft, such as the Strategic Air Command or the Tactical Air Command)--sets

priorities for the weapons system's modification requirements and submits the result to the Air Force Logistics Command (AFLC).

AFLC officials integrate and set priorities for class IV modification proposals by using a mathematical algorithm. This algorithm, or formula, allows the Air Force to assign priorities to modifications in a scientific manner. The formula produces scores, based on data elements that are characteristic of the modifications and are weighted according to their importance. The scores provide a basis for comparison and ranking.

Once the priorities are set at AFLC, the resulting list is submitted to Air Force headquarters. Air Force headquarters officials review the list and make some changes based on the most current information available. The final priority list is the basis for the class IV modification requests included in the President's budget.

A modification's position on the final priority list is important because the Air Force includes modifications in the President's budget in order of priority. Generally, the Air Force only requests funding in the President's budget for about the top one-third of the modifications appearing on the priority list.

Class V priorities

Air Force budget submissions for class V modifications originate at the commands using the aircraft. Modifications are included as line items in the commands' annual priority listings of research, development, and acquisition programs. Each command submits a priority list to Air Force headquarters, where officials revise priorities and develop an integrated Air Force-wide list for use in the Air Force budget submission. Class V modifications compete for priority with all research, development, and acquisition programs, not just class V modifications. The recommendations that come from various review panels from the commands to Air Force headquarters, where the final decision is made, are the basis for priorities, not a mathematical algorithm, as is the case with class IV.

FLEXIBILITY IN USING FUNDS

The Air Force's priority-setting process is an effort to fund the most essential and executable modifications. However, plans, schedules, and technology change over time. For example, a modification may prove to be more urgent than originally anticipated, and technical difficulties may cause the production schedule of another modification to slip. The Air Force has flexibility to move funds among modifications to accommodate changing circumstances.

Air Force headquarters, in coordination with the Secretary of Defense, can approve reprogramming actions between weapons systems involving up to \$9.99 million without congressional approval. However, changes among weapons systems involving over \$9.99 million, as well as transfers of funds to other than modifications programs, require congressional approval. Within weapons systems, system program managers are given the flexibility to fund class IV modifications not ranked high enough to be in the President's budget and to move funds among modifications. System program managers, with the approval of their ALC's modification funds manager, are given the following authority in moving funds.

- They can move funding from modifications that have been cancelled or reduced in scope or cost to new modifications if total costs for each modification will not exceed \$2 million and can be funded in a single fiscal year. Prior to fiscal year 1987, system program managers could move funds to new modifications if costs for each modification did not exceed \$2 million in any one fiscal year and \$10 million in total. AFLC must approve all funding requirements that exceed these amounts.
- System program managers can move funding from a modification if no further funding is required for that fiscal year.
- They have 3 years to obligate funds received in any particular fiscal year. For example, fiscal year 1986 funds must be obligated by September 30, 1988.
- System program managers can provide funds for new modifications from the 2 prior fiscal years if the modification requirements existed in that year or earlier (i.e., new modifications in the fiscal year 1986 budget could be funded with fiscal year 1984 and 1985 funds).

The Air Force also funds some projects approved and funded as modifications through preferred spares and maintenance actions. Such actions transfer the cost of the material from modification funds to replenishment spares funds or to operations and maintenance funds, thereby generating excess funds that can be used for other unfunded modifications.

OBJECTIVES, SCOPE, AND METHODOLOGY

On October 29, 1986, the Chairman of the House Committee on Armed Services requested that we review the Air Force's use of funds appropriated for the B-52 modification program in fiscal years 1983 through 1987, as well as future plans for modification and

retirement of the B-52 aircraft. As agreed, our review also included the A-10 and F-111 modification programs.

For the B-52, A-10, and F-111 programs, we obtained and analyzed (1) Air Force aircraft modification budget request data from the President's budgets for fiscal years 1983 through 1988, (2) amounts appropriated to these modification programs from House and Senate Appropriations Conference Committee reports for fiscal years 1983 through 1987, and (3) amounts obligated and planned for obligation and information on reprogramming and recissions from Air Force records. We could not obtain relevant and reliable data regarding the basis for individual modification budget estimates because supporting documentation and personnel familiar with the justification for these estimates were no longer available.

Our work was performed from July 1986 through March 1987 at the Office of the Secretary of Defense and Air Force headquarters at the Pentagon, Washington, D.C.; Air Force Logistics Command headquarters in Dayton, Ohio; and the Air Logistics Centers in Oklahoma City, Oklahoma, and Sacramento, California. We did not verify the accuracy of the obligation data obtained from Air Force reports. Our work was performed in accordance with generally accepted government auditing standards.

B-52 MODIFICATION FUNDING

The B-52, which has been in service for over 30 years, is the major piloted element of the strategic force. The 263 B-52s currently operational are capable of delivering a wide range of weapons, including conventional and nuclear bombs, air-launched cruise missiles, and nuclear-tipped air-to-surface short-range attack missiles. Apart from its primary nuclear mission, the B-52 can be used in various conventional roles, including show of force, maritime interdiction, precision strike, and defense suppression.

The two versions still in service are the B-52G (deliveries began in February 1959) and the B-52H, the final version (deliveries began in May 1961). During the early 1970s, all B-52Gs and Hs were modified to carry short-range attack missiles. In addition, both series have improved low-level flight capability. Under improvement programs begun in 1974, the Gs and Hs have been progressively updated with avionics. They are also being fitted with a digital-based, solid-state offensive avionics system that includes inertial guidance, terrain comparison guidance, and microprocessors to upgrade their navigation and weapons delivery systems. This program is scheduled for completion in fiscal year 1989.

The B-52 is in transition to its role as an air-launched cruise missile (ALCM) carrier. A typical profile includes multiple ALCM launches at high altitude, followed by B-52 low-level descent to attack additional targets using gravity weapons or short-range attack missiles. The Air Force completed deployment of the ALCM on 90 on-line B-52Gs, each with 12 external cruise missiles, in December 1984. Development of the common strategic rotary launcher (CSRL), initiated in 1982, will permit internal carriage of eight ALCMs in the B-52H. The 60 B-52Gs not scheduled for use as cruise missile carriers have replaced the now-retired B-52Ds in conventional roles. They achieved full operational capability in June 1985 in support of naval antisurface warfare operations by employing Harpoon missiles.

Tables II.1 through II.5 compare the amounts of funds appropriated with the amounts obligated or to be obligated for specific B-52 modifications for fiscal years 1983 through 1987. These tables show that (1) funds were appropriated but not obligated for some modifications, (2) funds were obligated for modifications for which no funds had been appropriated, and (3) amounts obligated often vary greatly from amounts appropriated.

Table II.1 Fiscal Year 1983 Aircraft Modification Funds for B-52

<u>Modification number and title</u>	<u>Appropriated^a</u>	<u>Obligated</u>	<u>Percent obligated</u>
	----- (millions) -----		
Class V			
2923 Tail warning system	\$ 11.9	\$ 9.0	76
3022 ALCM-carrier aircraft	154.3	163.7	106
3023 Offensive avionics modernization	305.3	209.0	68
3087 Aircraft monitor and control	10.9	5.7	52
3101 Strategic projection force	6.0	3.5	58
3163 Harpoon missile integration	0.0	6.4	
3221 Video tape recorder	<u>0.0</u>	<u>0.5</u>	
Total	<u>\$488.4</u>	<u>\$397.9</u>	81
Class IV			
11402B Environmental control system	\$ 17.1	\$ 56.5	330
12403B Radar antenna upgrade	19.3	6.7	35
12613B Defensive fire control system	2.0	25.0	1,250
18418B Countermeasures cooler improvement	5.0	5.6	112
18421B Fuel quantity indicating system	19.3	5.6	29
18607B Threat display capability	1.0	0.0	0
40001B Crosswind crab electrical circuit	.1	b	26
67069B 20 mm gun simulator update	1.2	1.1	92
Miscellaneous modifications	<u>1.2</u>	<u>2.3</u>	192
Total	<u>\$66.2</u>	<u>\$102.8</u>	155
Total	<u><u>\$532.2^c</u></u>	<u><u>\$500.7</u></u>	94

Note: Totals may not add due to rounding.

^aUnless otherwise noted, the amount appropriated was the amount requested.

^b\$25,685 obligated.

^cThe Congress reduced the total requested amount by \$22.4 million but did not specify where the reduction was to be applied. The total shown reflects this reduction.

Table II.2: Fiscal Year 1984 Aircraft Modification Funds For B-52

Modification number and title	Appropriated ^a	Obligated	Percent obligated	
	----- (millions) -----			
Class V				
3022	ALCM-carrier aircraft	\$ 65.0	\$ 22.8	35
3023	Offensive avionics modernization	173.8	101.7	59
3049	Electromagnetic pulse hardening	12.0	0.0	0
3142	ALCM-carrier internal (CSRL)	0.0 ^b	0.0	
3145	ALQ-172 electronic countermeasures	54.3	56.9	105
3152	Pave Mint countermeasures	6.0	5.3	88
3163	Harpoon missile integration	<u>15.4</u>	<u>11.4</u>	74
	Total	<u>\$326.5</u>	<u>\$198.2</u>	61
Class IV				
11402B	Environmental control system	\$ 32.6	\$ 33.3	102
11408B	Radar upgrade	65.5	85.2	130
12403B	Radar antenna upgrade	4.1	4.4	107
12613B	Defensive fire control system	13.0	21.0	162
13610B	Viewing system signal processor	13.5	8.6	64
18420A	Automatic flight control update	0.0	4.0	
18421B	Fuel quantity indicating system	5.3	5.0	94
40001B	Crosswind crab electrical circuit	.1	^c	23
	Miscellaneous modifications	<u>1.4</u>	<u>0.4</u>	29
	Total	<u>\$135.5</u>	<u>\$161.8</u>	119
	Total	<u>\$460.5^d</u>	<u>\$360.0</u>	78

Note: Totals may not add due to rounding.

^aUnless otherwise noted, the amount appropriated was the amount requested.

^bRequested amount was \$145.0 million. The Congress deferred the entire amount, with the provision that one kit could be purchased with available funds.

^c\$23,000 obligated.

^dThe Congress reduced the total request by an additional \$1.5 million but did not specify where the reduction was to be applied. The total shown reflects this reduction.

Table II.3: Fiscal Year 1985 Aircraft Modification Funds For B-52

Modification number and Title	Appropriated ^a	Obligated as of 1/31/87			Percent obligated	
		Actual	Planned	Total		
----- (millions) -----						
Class V						
3022	ALCM-carrier aircraft	\$ 67.1	\$ 7.3	\$ 4.2	\$ 11.6	17
3023	Offensive avionics modernization	0.0	0.2	7.1	7.2	
3101	Strategic projection force	0.0	3.1	0.9	4.0	
3142	ALCM-carrier internal (CSRL)	0.0 ^b	0.0	0.0	0.0	
3145	ALQ-172 electronic countermeasures	100.7	80.4	14.1	94.5	94
3152	Pave Mint countermeasures	90.0 ^c	75.8	9.6	85.4	95
3163	Harpoon missile integration	0.0	0.0	0.2	0.2	
3258	Communications modem upgrade	0.0	1.0	0.8	1.8	
	Total	<u>\$257.8</u>	<u>\$167.8</u>	<u>\$36.9</u>	<u>\$204.7</u>	79
Class IV						
11402B	Environmental control system	\$ 33.7	\$ 25.5	\$ 0.0	\$ 25.5	76
11408B	Radar upgrade	124.2	79.3	1.0	80.3	65
12613B	Defensive fire control system	30.0 ^d	0.0	13.6	13.6	45
13610B	Viewing system signal processor	11.7	4.8	0.0	4.8	41
18420A	Automatic flight control update	0.0	10.5	9.0	19.5	
18421B	Fuel quantity indicating system	5.8	2.5	0.0	2.5	43
59110B	Chaff/flare upgrade (simulators)	2.3	0.0	0.0	0.0	0
	Miscellaneous modifications	1.0	0.3	0.5	0.8	80
	Total	<u>\$208.7</u>	<u>\$122.9</u>	<u>\$24.1</u>	<u>\$147.0</u>	70
	Total	<u>\$466.5</u>	<u>\$290.7</u>	<u>\$61.0</u>	<u>\$351.7</u>	75

Note: Totals may not add due to rounding.

^aUnless otherwise noted, the amount appropriated was the amount requested.

^bRequested amount was \$79.8 million.

^cRequested amount was \$105.9 million.

^dRequested amount was \$42.0 million.

Table II.4: Fiscal Year 1986 Aircraft Modification Funds For B-52

Modification number and Title	Appropriated ^a	Obligated as of 1/31/87			Percent obligated	
		Actual	Planned	Total		
----- (millions) -----						
Class V						
3006	Advanced cruise missile integration	\$ 45.6	\$ 40.8	\$ 0.0	\$ 40.8	89
3142	ALCM-carrier internal (CSRL)	70.9 ^b	61.4	9.5	70.9	100
3145	ALQ-172 electronic countermeasures	113.0	91.1	22.5	113.6	101
3150	Navigation system retrofit	8.1	1.8	6.3	8.1	100
3152	Pave Mint countermeasures	62.8	40.4	10.5	50.9	81
3240/						
3258	Communication modem update	14.9	0.0	14.9	14.9	100
3263	Conventional stores system	<u>11.0</u>	<u>5.5</u>	<u>5.5</u>	<u>11.0</u>	100
Total		<u>\$326.3</u>	<u>\$241.0</u>	<u>\$69.1</u>	<u>\$310.2</u>	95
Class IV						
11402B	Environmental control system	\$ 29.4	\$ 0.0	\$ 0.0	\$ 0.0	0
11408B	Radar upgrade	74.4 ^c	74.1	0.0	74.1	100
18420A	Automatic flight control update	20.0	0.0	0.0	0.0	0
46206A	Water injection switch	0.0	1.9	1.9	3.8	
	Miscellaneous modifications	<u>1.1</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	0
Total		<u>\$124.9</u>	<u>76.0</u>	<u>1.9</u>	<u>77.9</u>	62
Total		<u>\$451.2</u>	<u>\$317.0</u>	<u>\$71.0</u>	<u>\$388.0</u>	86

Note: Totals may not add due to rounding.

^aUnless otherwise noted, the amount appropriated was the amount requested.

^bRequested amount was \$75.0 million.

^cRequested amount was \$82.7 million.

Table II.5: Fiscal Year 1987 Aircraft Modification Funds For B-52

Modification number and title	Appropriated ^a	Obligated as of 1/31/87			Percent obligated	
		Actual	Planned	Total		
----- (millions) -----						
Class V						
3006	Advanced cruise missile integration	\$ 9.6	\$ 3.0	\$ 0.0	\$ 3.0	31
3142	ALCM-carrier internal (CSRL)	83.8 ^b	18.8	54.9	73.7	88
3145	ALQ-172 electronic countermeasures	104.0	0.0	106.2	106.2	102
3150	Navigation system retrofit	3.9	0.0	3.9	3.9	100
3152	Pave Mint countermeasures	83.9	0.0	83.9	83.9	100
3263	Conventional stores system	34.7	0.0	34.7	34.7	100
3308	Secure voice	<u>2.6</u>	<u>0.0</u>	<u>4.1</u>	<u>4.1</u>	158
	Total	<u>\$322.5</u>	<u>\$21.8</u>	<u>\$287.7</u>	<u>\$309.5</u>	96
Class IV						
11408B	Radar upgrade	<u>\$ 74.7</u>	<u>\$ 0.0</u>	<u>\$ 74.7</u>	<u>\$ 74.7</u>	100
	Total	<u>\$ 74.7</u>	<u>\$ 0.0</u>	<u>\$ 74.7</u>	<u>\$ 74.7</u>	100
	Total	<u>\$397.2</u>	<u>\$21.8</u>	<u>\$362.4</u>	<u>\$384.2</u>	97

Note: Totals may not add due to rounding.

^aUnless otherwise noted, the amount appropriated was the amount requested.

^bRequested amount was \$100.0 million.

Table II.6 shows the projected number of B-52 series G and series H aircraft to receive the modifications funded in fiscal years 1983 through 1987. Some of the modifications started before 1983, and some will continue beyond 1987.

Table II.6: Projected Number of B-52 Aircraft to Receive Modifications Funded in Fiscal Years 1983 Through 1987

Modification number and title	Number of aircraft		
	Series G	Series H	
Class V			
2923	Tail warning system	167	96
3006	Advanced cruise missile integration	0	96
3022	ALCM-carrier aircraft	99	96
3023	Offensive avionics modernization	167	96
3049	Electromagnetic pulse hardening	Cancelled	
3087	Aircraft monitor and control	167	96
3101	Strategic projection force	69	0
3142	ALCM-carrier internal (CSRL)	0	96
3145	ALQ-172 electronic countermeasures	0	96
3150	Navigation system retrofit	69	96
3152	Pave Mint countermeasures	114 ^a	0
3163	Harpoon missile integration	69	0
3221	Video tape recorder	167	96
3240/ 3258	Communication modem update	167	96
3263	Conventional stores system	69	0
3308	Secure voice	69	0
Class IV			
11402B	Environmental control system	167	96
11408B	Radar upgrade	98 ^b	96 ^b
12403B	Radar antenna upgrade	167	96
12613B	Defensive fire control	69 ^c	0
13610B	Viewing system signal processor	167	96
18418B	Countermeasures cooler improvement	167	96
18420A	Automatic flight control update	167	96
18421B	Fuel quantity indicating system	167	96
18607B	Threat display capability	Cancelled	
40001B	Crosswind crab electrical circuit	167	96
46206A	Water injection switch	167	96
59110B	Chaff/flare upgrade	Cancelled	

^aThe number of aircraft to receive this modification decreased from 129 to 114.

^bThe total number of series G and H aircraft to receive this modification decreased from 263 to 194.

^cThe number of aircraft to receive this modification decreased from 194 to 69.

Of the 1987 class V modifications, all but one (the secure voice for conventional B-52Gs) are included in the budget for fiscal year 1988. One new class V modification--the B-52H low-frequency miniature receiver terminal--is also planned for fiscal year 1988. The estimated amount of funds required for these modifications from fiscal years 1988 through 1992 is \$645.4 million.

No class IV modifications are included in the fiscal year 1988 budget request. The B-52 system program manager, however, did include 10 class IV modifications in the fiscal year 1989 program objective memorandum. These modifications are estimated to require \$58.2 million in fiscal year 1989.

Table II.7 provides information on how B-52 modification funds for fiscal years 1983 through 1986 were obligated. The critical elements of this table are (1) the number and dollar amounts of modifications for which funds had been requested and appropriated but not obligated (i.e., the modifications were cancelled or accomplished using other funds), (2) the number of modifications for which the amount obligated was less than the amount appropriated and the total amounts of the differences, and (3) the number and dollar amounts obligated to modifications for which no funds had been requested or appropriated for the fiscal year indicated. An analysis of fiscal year 1987 funds is not included because, as shown in table II.5, little had been obligated as of January 31, 1987. Fiscal year 1987 funds will be available for obligation through September 1989.

Table II.7: Comparison of Funding to Obligations for B-52 Modifications

	Fiscal year								Total amount
	1983		1984		1985 ^a		1986 ^a		
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	
----- (dollars in millions) -----									
Appropriated ^b	13	\$531.0	13	\$459.1	9	\$465.5	10	\$450.1	\$1,905.7
Funded but not obligated	1	1.0	1	12.0	1	2.3	2	49.4	64.7
Obligated to requested modifications	12	491.4	12	355.6	8	318.2	8	384.2	1,549.4
Obligated more than appropriated	4	72.4	5	31.3	0	0.0	1	0.6	104.3
Obligated less than appropriated	8	133.4	7	124.3	8	145.0	3	17.0	419.7
Obligated to modifications not in request ^c	13	9.3	6	4.5	13	33.6	1	3.8	51.2

^aIncludes planned obligations.

^bDoes not include funds for miscellaneous modifications.

^cModifications could have been included in earlier or later budget requests. Some may have been included in class IV modification requests under "miscellaneous," for which the Air Force requested \$4.7 million between fiscal years 1983 and 1986.

Table II.8 compares the latest total cost estimates to the total cost estimates included in the President's budgets for fiscal years 1983, 1984, and 1985 for 11 major B-52 modifications. Each figure reflects the total projected cost for all years the modification was to be funded. The latest estimates represent (1) in the case of modifications to be continued beyond fiscal year 1987, the total cost from inception to completion, which was included in the President's budget for fiscal year 1988, or (2) in the case of modifications requiring no funding beyond 1987, the actual and planned obligations for these modifications.

The table shows that the early estimates for 8 of the 11 modifications were substantially greater than the latest

estimates. For example, the first modification (number 18421B--fuel quantity indicating system) had a total estimated cost of \$70.2 million in fiscal year 1983. The 1984 budget estimate was \$32.6 million, and the 1985 budget estimate was \$28.0 million. The latest cost estimate of \$20.0 million is the total amount obligated for this modification. No additional obligations are required to complete the modification. Therefore, the cost of the modification is about one-fourth (28 percent) of the fiscal year 1983 cost estimate. The substantial decreases in the estimated costs of two other modifications (numbers 12613B and 11408B) resulted from decreases in the number of aircraft projected to receive the modifications.

DOD and Air Force officials commented that two modifications, the Offensive Avionics System (number 3023) and Cruise Missile Integration (number 3022), accounted for most of the excess funds.

Table II.8: Comparison of Cost Estimates for Selected B-52 Modifications

Modification number	Total cost estimates for all years as shown <u>in President's budgets</u>			<u>Latest cost estimate</u> As percent of first estimate		Total appropriated through FY 1987	Estimated requirement beyond FY 1987
	1983	1984	1985	Amount	shown		
----- (dollars in millions) -----							
18421B	\$ 70.2	\$ 32.6	\$ 28.0	\$ 20.0	28	\$40.8	\$ 0.0
12403B	40.0	15.2	15.2	11.1	28	23.4	0.0
12613B	174.8	100.3	57.0	59.6	34 ^a	45.0	0.0
13610B	Not shown	37.0	31.4	13.4	36	25.2	0.0
3022	1,227.6	583.6	537.5	506.5	41	629.4	0.0
3142	Not shown	633.9	650.7	332.1	52	154.7	186.7
3023	1,392.9	1,369.1	1,228.5	907.5	65	1,321.5	0.0
11408B	398.6	470.7	368.6	314.3	79 ^b	338.8	0.0
3145	Not shown	497.0	541.8	565.6	114	372.0	191.0
11402B	88.9	167.8	153.8	125.3	141	134.1	0.0
3152	Not shown	197.8	347.7	301.4	152 ^c	242.7	75.9

^aThe number of aircraft to receive this modification decreased from 194 to 69.

^bThe number of aircraft to receive this modification decreased from 263 to 194.

^cThe number of aircraft to receive this modification decreased from 129 to 114.

Table II.9 provides a summary for fiscal years 1983 through 1987 of amounts requested, appropriated, obligated, and planned to be obligated to B-52 aircraft modifications. It shows that, as of January 31, 1987, \$292.2 million had been withdrawn from the B-52 modification program and that another \$30.8 million that the B-52 system program manager had no plans to obligate was still programmed for B-52 modifications. Of the \$30.8 million, \$8.3 million is from fiscal year 1984 and is, therefore, no longer available for obligation.

Table II.9: Summary of B-52 Modification Funds For Fiscal Years 1983-1987 (as of January 31, 1987)

	Fiscal year					Total	Percent of appropriated funds
	1983	1984	1985	1986	1987		
	----- (millions) -----						
Requested by DOD	<u>\$554.6</u>	<u>\$607.0</u>	<u>\$574.2</u>	<u>\$463.6</u>	<u>\$413.4</u>	<u>\$2,612.8</u>	<u>113</u>
Appropriated	<u>\$532.2</u>	<u>\$460.5</u>	<u>\$466.5</u>	<u>\$451.2</u>	<u>\$397.2</u>	<u>\$2,307.6</u>	<u>100</u>
Obligated to B-52:							
Actual	\$500.7	\$360.0	\$290.7	\$317.0	\$ 21.8	\$1,490.2	65
Planned	<u>0.0</u>	<u>0.0</u>	<u>61.0</u>	<u>71.0</u>	<u>362.4</u>	<u>494.4</u>	<u>21</u>
Total obligated	<u>\$500.7</u>	<u>\$360.0</u>	<u>\$351.7</u>	<u>\$388.0</u>	<u>\$384.2</u>	<u>\$1,984.6</u>	<u>86</u>
Withdrawn from B-52 modification program:							
Gramm-Rudman reductions	\$ 0.0	\$ 6.8	\$ 11.0	\$ 20.9	\$ 0.0	\$ 38.7	2
FY 1987 Appropriation Act Rescission	0.0	0.0	61.2	0.0	0.0	61.2	3
DOD return to Congress	0.0	0.0	26.4	0.0	0.0	26.4	1
Inflation reduction	0.0	0.0	14.0	35.0	0.0	49.0	2
Reprogrammed	<u>31.5^a</u>	<u>85.4^b</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>116.9</u>	<u>5</u>
Total withdrawn	<u>\$ 31.5</u>	<u>\$ 92.2</u>	<u>\$112.6</u>	<u>\$ 55.9</u>	<u>\$ 0.0</u>	<u>\$ 292.2</u>	<u>13</u>
Total obligated and withdrawn	<u>\$532.2</u>	<u>\$452.2</u>	<u>\$464.3</u>	<u>\$443.9</u>	<u>\$384.2</u>	<u>\$2,276.8</u>	<u>99</u>
Balance available with no planned obligations	<u>\$ 0.0</u>	<u>\$ 8.3</u>	<u>\$ 2.2</u>	<u>\$ 7.3</u>	<u>\$ 13.0</u>	<u>\$ 30.8</u>	<u>1</u>

Note: Totals may not add due to rounding.

^a\$4.7 million to congressional reprogramming for military pay offset and \$26.8 million to other aircraft modifications.

^b\$56.8 million to C-21 procurement and \$2.5 million to classified projects were congressionally approved. \$8.2 million to C-130 special operations forces, \$8.0 million to spares procurement, and \$9.9 million to other aircraft modifications were Internal Air Force reprogramming actions.

In commenting on our draft report, DOD stated that our analysis did not include two requirements which, if included, would have resulted in a shortfall instead of an excess. One requirement is for modification number 3142 (the common strategic rotary launcher), which DOD said would cost \$11 million. The second was an engineering change order for sensor integration in two other ongoing modifications, number 3145 (ALQ-172 electronic countermeasures) and number 3152 (Pave Mint countermeasures). DOD did not identify the estimated cost of this change order.

We did recognize these requirements in determining the amount of excess funds as of January 31, 1987. We did not include the \$11 million for the common strategic rotary launcher because this amount was being held in reserve by Air Force headquarters for potential engineering change orders. This amount was in addition to other funds being held by the program office for this purpose. Because Air Force headquarters had withdrawn the funds and program officials had no plans to obligate them, we counted these funds as excess as of January 31, 1987. With regard to sensor integration, we did include in our analysis about \$40 million in planned obligations for the engineering charge order. This was the amount that program officials told us would be needed.

A-10 MODIFICATION FUNDING

The A-10, designed specifically for the close air support mission, offers a combination of large military load, long loiter capability, and a wide combat radius. Its 30 mm gun is designed to encounter a wide array of ground targets during a close air support mission, including tanks. The A-10 became operational in 1977; final delivery of the 713 aircraft was in 1984.

Table III.1 compares the appropriated amounts with obligations for fiscal years 1983 through 1986. The critical elements of this table are (1) the number and dollar amounts of modifications for which funds were requested and appropriated but not obligated (i.e., the modifications were cancelled or accomplished using other funds), (2) the number of modifications for which the amount obligated was less than the amount appropriated and the total amounts of the differences, and (3) the number and dollar amounts obligated to modifications for which no funds had been requested or appropriated. An analysis of fiscal year 1987 funds is not included because very little had been obligated as of January 31, 1987. Fiscal year 1987 funds will be available for obligation through September 1989.

Table III.1: Comparison of Funding to Obligations for A-10 Modifications

	Fiscal year								Total amount
	1983		1984		1985 ^a		1986 ^a		
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	
------(dollars in millions)-----									
Appropriated ^b	11	\$ 91.3	14	\$124.3	10	\$ 60.5	5	\$ 71.9	\$ 348.0
Funded but no funds obligated	7	26.1	9	32.5	4	6.5	2	3.4	68.5
Obligated to requested modifications	4	63.8	5	122.3	6	49.2	3	42.7	278.0
Obligated more than appropriated	1	1.9	2	37.1	1	3.1	0	0.0	42.1
Obligated less than appropriated	3	3.3	3	9.6	5	7.9	3	28.6	49.4
Obligated to modifications not in request ^c	18	17.7	23	12.0	19	11.9	5	5.6	47.2

^aIncludes planned obligations.

^bDoes not include funds requested for miscellaneous modification.

^cModifications could have been included in earlier or later budget requests. Some may have been included in class IV modification requests under "miscellaneous," for which the Air Force requested \$4.3 million between fiscal years 1983 and 1986.

Table III.2 compares the latest total cost estimates to the total cost estimates included in the President's budgets for fiscal years 1983, 1984, and 1985 for eight major A-10 modifications. The latest cost estimates represent (1) the total all-years amount included in the last President's budget in which the modification appeared or (2) the actual and planned obligations as of January 31, 1987. The early estimates are significantly greater than the latest estimates for five of the eight while the early estimate for one is significantly less. This table also shows the total amounts actually appropriated for these eight

modifications through fiscal year 1987 and the additional estimated requirements beyond fiscal year 1987.

Table III.2: Comparison of Cost Estimates for Selected A-10 Modifications

Modification number	Total cost estimates for all years as shown in President's budgets			Latest cost estimate As percent of first estimate		Total appropriated through FY 1987	Estimated requirement beyond FY 1987
	1983	1984	1985	Amount	shown		
	----- (dollars in millions) -----						
10348B	Not shown	Not shown	\$ 10.5	\$ 1.4	13	\$ 2.4	0.0
11308B	\$ 152.0	\$ 84.3	98.5	86.3	57	69.2	0.0
21109A	Not shown	12.5	Not shown	7.5	60	4.4	0.0
10349C	15.7	24.2	14.8	9.5	61	13.7	0.0
12204B	Not shown	157.9	127.0	100.4	64	91.3	0.0
3048	164.7	171.7	192.9	158.7	96	185.4	0.0
3232	Not shown	Not shown	30.0	31.4	105	26.5	8.9
10338B	35.9	40.2	29.7	62.1	173	23.2	37.1

Table III.3 provides a summary for fiscal years 1983 through 1987 of amounts requested, appropriated, obligated, and planned to be obligated for A-10 aircraft modifications. It shows that, as of January 31, 1987, \$32.2 million had been withdrawn from the A-10 modification program and that another \$15.9 million the A-10 system program manager had no plans to obligate was still programmed for A-10 modifications. Of the \$15.9 million, \$1.8 million is from fiscal years 1983 and 1984 and is, therefore, no longer available for obligation.

Table III.3: Summary of A-10 Modification Funds for Fiscal Years 1983-1987 (as of January 31, 1987)

	Fiscal year					Total	Percent of appropriated funds
	1983	1984	1985	1986	1987		
------(millions)-----							
Requested by DOD	<u>\$92.3</u>	<u>\$129.1</u>	<u>\$ 84.6</u>	<u>\$ 87.8</u>	<u>\$ 52.6</u>	<u>\$446.4</u>	<u>106</u>
Appropriated	\$92.3	\$126.1	\$ 61.9	\$ 72.0	\$ 69.6	\$421.9	100
Reprogrammed to A-10	<u>0.0</u>	<u>9.9</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>9.9</u>	<u>2</u>
Total available	<u>\$92.3</u>	<u>\$136.0</u>	<u>\$ 61.9</u>	<u>\$ 72.0</u>	<u>\$ 69.6</u>	<u>\$431.8</u>	<u>102</u>
Obligated to A-10							
Actual	\$81.5	\$134.3	\$ 52.8	\$ 37.0	\$ 6.1	\$311.7	74
Planned	<u>0.0</u>	<u>0.0</u>	<u>8.4</u>	<u>11.3</u>	<u>52.3</u>	<u>72.0</u>	<u>17</u>
Total obligated	<u>\$81.5</u>	<u>\$134.3</u>	<u>\$ 61.2</u>	<u>\$ 48.3</u>	<u>\$ 58.4</u>	<u>\$383.7</u>	<u>91</u>
Withdrawn from A-10 modification program:							
Gramm-Rudman reductions	\$ 0.0	\$ 0.8	\$ 1.1	\$ 3.6	\$ 0.0	\$ 5.5	1
Inflation reduction	0.0	0.0	0.0	0.0	4.3	4.3	1
Reprogrammed	<u>9.9</u>	<u>0.0</u>	<u>3.7</u>	<u>8.8</u>	<u>0.0</u>	<u>22.4</u>	<u>5</u>
Total withdrawn	\$ <u>9.9</u>	\$ <u>0.8</u>	\$ <u>4.8</u>	\$ <u>12.4</u>	\$ <u>4.3</u>	\$ <u>32.2</u>	<u>8</u>
Total obligated and withdrawn	<u>\$91.4</u>	<u>\$135.1</u>	<u>\$ 66.0</u>	<u>\$ 60.7</u>	<u>\$ 62.7</u>	<u>\$415.9</u>	<u>99</u>
Balance available with no planned obligations	\$ <u>0.9</u>	\$ <u>0.9</u>	\$ <u>-4.1</u>	\$ <u>11.3</u>	\$ <u>6.9</u>	\$ <u>15.9</u>	<u>4</u>

Note: Totals may not add due to rounding.

F-111 MODIFICATION FUNDING

The F-111 is the Air Force's only long-range, around-the-clock interdiction fighter. Internally it can carry a 20 mm multibarrel cannon and two nuclear bombs in an internal weapon bay, and externally up to 25,000 pounds of bombs, rockets, missiles, or extra fuel tanks on four wing pylons. Four series--A, E, D, and F--were delivered between 1967 and 1976.

Table IV.1 compares the appropriated amounts with obligations for fiscal years 1983 through 1986. The critical elements of this table are (1) the number and dollar amounts of modifications for which funds had been requested and appropriated but not obligated (i.e., the modifications were cancelled or accomplished using other funds), (2) the number of modifications for which the amount obligated was less than the amount appropriated and the total amounts of the differences, and (3) the number and dollar amounts obligated to modifications for which no funds had been requested or appropriated. An analysis of fiscal year 1987 funds is not included because little had been obligated as of January 31, 1987. Fiscal year 1987 funds will be available for obligation through September 1989.

Table IV.1: Comparison of Funding to Obligations for F-111 Modifications

	Fiscal year								Total amount
	1983		1984		1985 ^a		1986 ^a		
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	
----- (dollars in millions) -----									
Appropriated ^b	13	\$ 95.4	9	\$ 89.6	6	\$204.5	10	\$294.0	\$ 683.5
Funded but not obligated	3	7.4	2	7.0	1	1.5	3	5.5	21.4
Obligated to requested modifications	10	89.4	7	82.6	5	195.5	7	283.2	650.7
Obligated more than appropriated	5	29.8	3	19.0	1	10.6	3	15.1	74.5
Obligated less than appropriated	5	28.4	4	20.6	4	18.1	3	20.4	87.5
Obligated to modifications not in request ^c	17	15.2	13	8.2	10	15.3	0	0.0	38.7

^aIncludes planned obligations.

^bDoes not include funds for miscellaneous modifications.

^cModifications could have been included in earlier or later budget request. Some may have been included in class IV modification requests under "miscellaneous," for which the Air Force requested \$3.8 million between fiscal years 1983 and 1986.

Table IV.2 compares the latest total cost estimates to the total cost estimates included in the President's budgets for fiscal years 1983, 1984, and 1985 for eight major F-111 modifications. The latest estimates represent (1) the total all-years amount included in the last President's budget in which the modification appeared or (2) the actual and planned obligations as of January 31, 1987. The table shows that the early estimates for four of the eight modifications are significantly greater than the latest estimate while earlier estimates for two are significantly less. This table also shows the total amounts actually appropriated for

these eight modifications through fiscal year 1987 and the additional estimated requirements beyond fiscal year 1987.

Table IV.2: Comparison of Cost Estimates for Selected F-111 Modifications

Modification number	Total cost estimates for all years as shown in President's budgets			<u>Latest cost estimate</u> As percent of first estimate		Total appropriated through FY 1987	Estimated requirement beyond FY 1987
	1983	1984	1985	Amount	shown		
----- (dollars in millions) -----							
10572A	\$ 12.3	\$ 12.2	\$ 12.6	\$ 3.7	30	\$ 15.1	\$ 0.0
11338A	9.5	12.6	9.1	4.3	45	2.8	0.0
11403B	149.8	149.2	273.1	109.1	73	146.4	0.0
18316B	17.7	20.1	18.3	15.6	88	13.6	0.0
19304B	39.8	38.0	37.1	37.1	93	32.1	0.0
10320B	32.6	28.3	30.3	32.3	99	18.6	0.0
18317C	17.1	18.1	22.3	20.4	119	13.2	0.0
12356B	Not shown	776.6	863.5	1,049.2	135	627.1	389.7

Table IV.3 provides a summary for fiscal years 1983 through 1987 of amounts requested, appropriated, obligated, and planned to be obligated to F-111 aircraft modifications. It also shows that, as of January 31, 1987, \$18.5 million had been withdrawn from the F-111 modification program and that another \$11.9 million that the F-111 system program manager had no plans to obligate was still programmed for F-111 modifications. Of the \$11.9 million, \$6.7 million is from fiscal year 1984 and is, therefore, no longer available for obligation.

Table IV.3: Summary of F-111 Modification Funds for Fiscal Years 1983-1987 (as of January 31, 1987)

	Fiscal year					Total	Percent of appropriated funds
	1983	1984	1985	1986	1987		
	------(millions)-----						
Requested by DOD	\$ <u>96.0</u>	\$ <u>91.9</u>	\$ <u>206.5</u>	\$ <u>294.5</u>	\$ <u>273.2</u>	\$ <u>962.1</u>	<u>100</u>
Appropriated	\$ <u>96.0</u>	\$ <u>90.3</u>	\$ <u>206.5</u>	\$ <u>294.5</u>	\$ <u>271.9</u>	\$ <u>959.2</u>	100
Reprogrammed to F-111	<u>8.6</u>	<u>7.5</u>	<u>9.9</u>	<u>5.0</u>	<u>0.0</u>	<u>31.0</u>	<u>3</u>
Total available	\$ <u>104.6</u>	\$ <u>97.8</u>	\$ <u>216.4</u>	\$ <u>299.5</u>	\$ <u>271.9</u>	\$ <u>990.2</u>	<u>103</u>
Obligated to F-111:							
Actual	\$ <u>104.6</u>	\$ <u>90.8</u>	\$ <u>196.3</u>	\$ <u>156.6</u>	\$ <u>55.8</u>	\$ <u>604.1</u>	63
Planned	<u>0.0</u>	<u>0.0</u>	<u>14.5</u>	<u>126.6</u>	<u>214.6</u>	<u>355.7</u>	<u>37</u>
Total obligated	\$ <u>104.6</u>	\$ <u>90.8</u>	\$ <u>210.8</u>	\$ <u>283.2</u>	\$ <u>270.4</u>	\$ <u>959.8</u>	<u>100</u>
Withdrawn from F-111 modification program: Gramm-Rudman reductions	<u>0.0</u>	<u>0.3</u>	<u>3.4</u>	<u>14.8</u>	<u>0.0</u>	<u>18.5</u>	<u>2</u>
Total obligated and withdrawn	\$ <u>104.6</u>	\$ <u>91.1</u>	\$ <u>214.2</u>	\$ <u>298.0</u>	\$ <u>270.4</u>	\$ <u>978.3</u>	<u>102</u>
Balance available with no planned obligations	\$ <u>0.0</u>	\$ <u>6.7</u>	\$ <u>2.2</u>	\$ <u>1.5</u>	\$ <u>1.5</u>	\$ <u>11.9</u>	<u>1</u>

Note: Totals may not add due to rounding.

COMMENTS FROM THE ASSISTANT SECRETARY
OF DEFENSE FOR PRODUCTION
AND LOGISTICS



ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301-8000

PRODUCTION AND
LOGISTICS
L/MD

AUG 12 1987

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and
International Affairs Division
US General Accounting Office
Washington, DC 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) Draft Report, "AIRCRAFT MODIFICATIONS: Overestimates of Modification Costs Generate Excess Funds," dated June 17, 1987 (GAO Code 392260, OSD Case 7320). The Department generally agrees with the GAO findings.

The GAO statement, however, that the B-52 System Program manager has no plan to obligate all appropriated B-52 modification funds is inaccurate. Latest estimates indicate that, rather than an excess, there is actually a shortfall in B-52 modification funding. The Air Force seldom has a modification that obligates exactly the way the original estimates were forecast. Further, there are valid reasons why aircraft modifications are less than originally estimated. The Air Force has managed aircraft modification funds appropriately within fiscal and management guidelines established by Congress.

Enclosed are the detailed DoD comments on each finding. Several additional technical corrections were also separately provided to members of your staff. The DoD appreciates the opportunity to comment on the draft report.


Robert B. Costello

Enclosure

GAO DRAFT REPORT - DATED JUNE 17, 1987
(GAO CODE 392260) OSD CASE 7320

"AIRCRAFT MODIFICATIONS: OVERESTIMATES OF MODIFICATION
COSTS GENERATE EXCESS FUNDS"

DEPARTMENT OF DEFENSE COMMENTS

FINDINGS

- **FINDING A: Comparison of Actual and Anticipated Use of Modification Funds.** The GAO reported that the Congress uses the Air Force detailed modifications budget request justification in deciding the amount to be appropriated for aircraft procurement. The GAO also reported that unless the specific language directs otherwise, the Air Force is generally permitted to use appropriated funds differently from its budget request justification, within certain limits. The GAO reviewed funds appropriated and obligated for B-52 modifications from FY 1983 through FY 1987 and found:

- funds appropriated on the basis of individual modifications were not always obligated to modifications;
- funds were obligated to modifications for which no funds were requested or appropriated; and
- amounts requested and appropriated for some individual modifications were greater or lesser, often by more than 25 percent, than amounts eventually obligated.

Now on pp. 2-3,
14-19, 22,
27, 28, 31,
32.

The GAO found a similar pattern of some funds being used differently from that reflected in budget justifications for the A-10 and F-111 modification funds. The GAO concluded that how the Air Force uses aircraft modifications funds for a particular fiscal year differs from the anticipated use, as reflected in Air Force budget requests. (pp. 3-5, pp. 24-29, p. 32, pp. 37-38, pp. 42-43/GAO Draft Report)

DoD RESPONSE: Concur. The Air Force has operated in a manner consistent with Congressional guidelines, laws, and regulations. There are extenuating and differing circumstances for each of the modifications which differ from the original budget request. (See DoD Response to Findings B and C.) The decisions to deviate from the requests were based on those individual circumstances and stayed within the above guidelines.

- FINDING B: Comparison of Estimated Modification Costs To Amounts Obligated.** The GAO compared the Air Force estimates of individual modification costs included in budget requests and Congressional appropriation actions for FY 1983 through FY 1987. The GAO found that the estimated costs were often greater than obligations, particularly for the B-52 modification program. As an example, the GAO reported that of 13 modifications included in the FY 1983 budget, nine had a total of \$134.4 million more funds appropriated than were obligated, while four had appropriated amounts that were \$72.4 million less than obligations. The GAO also compared the latest estimated costs with early estimates for 11 B-52 modifications included in the FY 1983 through FY 1985 budgets. The GAO found that the latest estimates ranged from 28 percent to 79 percent of the early estimates. The GAO also compared estimates of the A-10 and F-111 modification costs. The GAO concluded that estimates for these two aircraft did not vary from actual obligations as frequently or extensively as did B-52 estimates. The GAO found, however, that the latest estimates for 6 of 8 major A-10 modifications were significantly less than earlier estimated costs. (pp. 5-6, pp. 31-35, pp. 37-40, pp. 42-45/GAO Draft Report)

Now on pp. 3,
4, 21-23,
27-29, 31-
33.

DoD RESPONSE: Concur. The Air Force seldom has a modification that obligates exactly the way the original estimates were forecast. This is due to numerous reasons; the main one being that most original estimates are based on a contractor's rough order of magnitude. An engineering change proposal (ECP) is required before a more precise estimate can be made. An ECP cannot be procured with modification funds before the modification's first-year budget request is approved. The procurement process involves competitive bidding, negotiation, component breakout, combining with other procurements, etc. Only after these steps have been completed are the true costs known. Frequently, modifications are downscoped to reduce costs or to eliminate elements that are not cost effective. Quantities are reduced consistent with revised force structure projections, and sometimes simply to reduce costs. The Air Force has managed modification funds appropriately within fiscal and management guidelines established by the Congress.

- FINDING C: Reasons Why Budget Estimates Exceeded Obligations.** The GAO reported that it was unable to determine why estimates for specific modifications exceeded obligations. The GAO, however, described several circumstances identified by Air Force officials that can lead to estimates exceeding obligations. The GAO concluded that, in essence, these various conditions create incentives for program managers to increase estimates to cover increased risks early in a modification program. The GAO also found that various changes may

Now on pp. 3-
5, 21-23,
27-29, 31-
33.

also produce excess funds, such as the cancellation of a funded modification, changing the number of aircraft to be modified, or accomplishing the modification with other sources of funds. The GAO reported that while such changes occurred in all three aircraft programs it reviewed, they were most common in the A-10 modification program, with fewer than half the FY 1983, FY 1984 and FY 1986 appropriated amounts being obligated to A-10 modifications. Overall, the GAO concluded that overestimates of modification costs generate funds excess to the modification program. (pp. 5-10, pp. 31-35, pp. 37-40, pp. 42-45/GAO Draft Report)

DoD RESPONSE: Partially concur. There are numerous reasons why estimates exceed obligations. Estimates are based on completed similar programs or contractor's rough order of magnitude. A contractor's engineering change proposal (ECP) or a firm contract proposal is required before a more precise estimate can be forecast. Modification funds cannot be used to procure an ECP prior to the start and approval of a modification. When development and production are accomplished concurrently on a modification, many engineering change orders (ECOs) are anticipated and must be budgeted. There were two major programs which contributed to most of the overestimation - Offensive Avionics System and Cruise Missile Integration. These two programs were originally budgeted in 1978, they were accomplished with concurrent development and production, and there were no completed similar programs of this magnitude. The original contractor's proposal for the last four buys of the programs was \$1.2 billion. Negotiations and factfinding (which lasted 9 months) by the Oklahoma City Air Logistics Center reduced that estimate in half. Strong management brought the modifications in without some of the anticipated engineering change orders being implemented. Of the over 570 ECPs reviewed, 382 are on contract, 188 were terminated or suspended. Some of those on contract were fixed under warranty, at no cost to the Government. Each ECO, however, had to be validated and until validation and actual contract award, estimated funding had to be made available. As ECOs were validated and cost estimates updated, funds that became excess to those two programs were moved to other B-52 modifications which had costs higher than the original estimates or to other P-1 lines, but most of the excess funds were returned to the Congress through Gramm-Rudman or inflation reductions and as part of the \$4.4 billion that DoD returned to the Congress during FY 1986. The reductions in costs of the Offensive Avionics System and Cruise Missile Integration have previously been presented to staffers in all four Congressional committees. Adjustments were made in funding through revised estimates, Congressional reductions, rescissions, Gramm-Rudman reduction and reprogrammings.

The language and tone of the report leaves one with the impression that the GAO believes that funded modifications are requested and then cancelled with the intention of using those funds elsewhere. In actuality, there were only three B-52 modifications included in President's Budgets that were cancelled: the Electro Magnetic Pulse (EMP) hardening modification and the Chaff and Flare modification for simulators were determined not to be cost effective; and the ALR20 Threat Display modification was cancelled (in April 1986) after the contractor defaulted. There were approximately eight F-111 modifications in FY 1983 that were combined under the Avionics Modernization Program modification and, therefore, appear to have been cancelled.

As stated previously, when budget estimates are submitted, they are just that - estimates. If the Air Force finds a better, more cost-effective way to accomplish a modification, through maintenance actions or through preferred spares, then that is the action taken. The Air Force continually updates its estimates in each President's Budget submission based on negotiated contracts and revised cost data. The GAO compared obligations against the original estimates, but those original estimates do not represent the amounts actually requested or appropriated.

- FINDING D: Actions To Reduce Excess Funds.** The GAO reported that various actions have been taken by the DoD and the Congress to reduce excess modification funds for FY 1983 through FY 1987. Among the actions reported by the GAO are (1) funding modifications not included in the president's budgets, (2) reprogramming funds to other aircraft programs, (3) Gramm-Rudman reductions, (4) reductions for overestimated inflation, and (5) Congressional rescissions. The GAO found that as of January 31, 1987, there was \$29.2 million programmed to B-52 modifications for which there were no plans to obligate. The GAO noted that \$8.3 million of this amount is from FY 1984, and is no longer available for obligation. The GAO found that the A-10 and F-111 programs also had excess funds as of January 31, 1987, amounting to \$15.9 million and \$11.3 million, respectively. The GAO noted that \$1.8 million in A-10 funds and \$6.7 million in F-111 funds are from FY 1983 and FY 1984 and are, therefore, no longer available for obligation. Overall, the GAO concluded that most of the excess modification funds have been eliminated. (pp. 10-11, pp. 35-36, pp. 40-41, pp. 45-46/GAO Draft Report)

Now on pp. 6,
7, 24, 25,
30, 34.

DoD RESPONSE: Partially concur. Even though the GAO report is based on January 31, 1987, funding estimates provided by the program manager, the \$11 million unfunded requirement for the B-52 3142 Common Strategic Rotary Launcher (CSRL) modification and the plan to obligate the sensor integration engineering change order as identified in the FY 1988

President's Budget were not included in the GAO analysis. When these requirements are included, there is actually a shortfall to accomplish approved programs rather than an excess. The DoD maintains that there are no FY 1985, FY 1986 or FY 1987 excess funds.

- FINDING E: Use Of Excess Funds For Lower Priority Modifications.** The GAO reported that in June 1986, an Air Force Deputy Chief of Staff expressed concern about large excesses and directed system program managers to identify unfunded modifications where excess funds could be applied. The GAO noted that the purpose was to demonstrate an effective use of funds, avoid expiring excesses, and justify additional support. The GAO found that a number of B-52, A-10 and F-111 modifications not included in the President's Budget have received funds. The GAO concluded that although many of these unbudgeted modifications had low dollar values, cumulatively they amount to significant sums of money. (pp. 11-12, p. 32, p. 38, p. 43/GAO Draft Report)

Now on pp. 6,
7, 22, 28,
32.

DoD RESPONSE: Partially Concur. There were no unbudgeted B-52, A-10 or F-111 modifications funded in the June - September FY 1986 time frame using FY 1984 excess funds. The referenced letter was based on the premise that the Air Force has valid modifications far in excess of funding. Therefore, it was the intent of the Deputy Chief of Staff that program managers effectively use available funds to accomplish as many as possible.

The Air Force has responsibly applied well over 90 percent of its past excesses to low cost or Congressionally reviewed priority modifications. There is no intent to utilize future funds, should excesses become available, other than to reduce future budget requests by insuring that projected requirements are executable. All unbudgeted modifications that are funded fall into the criteria established by the Congress. Some of the unbudgeted modifications funded are not necessarily lower priority modifications, but rather safety modifications that were not known at the time of budget submission. All modifications must be validated requirements and go through approval processes at the Air Logistics Centers as well as the Air Force Logistics Command prior to funding.

Of the 65 modifications on which excess FY 1983-1986 funds were used that were not in that year's A-10 budget request, 54 cost from \$15 to \$500,000. These low-cost modifications are typical of the modifications summarized as miscellaneous modifications and included in the budget request as such. They are frequently of equal importance to the higher cost modifications which are separately detailed. In FY 1983-1986, these modifications included at least 15 top priority safety modifications. Seven of the modifications that cost

over \$500,000 and on which funds were used had been approved as part of subsequent budgets. The available prior year funds were used to reduce FY 1984-1988 requests. This was exemplified by the \$5.3 million and \$2.2 million Senate appropriation reductions to the FY 1985 and FY 1986 requests as a result of purchasing turbine engine monitoring support equipment and stability augmentation modifications with prior year funds. Two of the modifications that cost over \$500,000 and funded in FY 1983-1985 completed modifications begun in prior years. Those modifications had not been incorporated into the entire fleet and were completed to reduce the cost of supporting a mixed configuration. Concerning the FY 1985 excess, \$3.5 million was obligated on requirements cited in the FY 1986 request as a result of the prior year transfer direction in the appropriations conference report. All of these reprogrammings were within the prescribed congressional guidelines.

Of the 40 F-111 modifications on which excesses were used in FY 1983-1986, 30 cost less than \$500,000 and are typically requested as miscellaneous low-cost modifications. Eleven of the low-cost modifications funded with FY 1983-1986 excesses were high priority safety modifications. \$24.7 million of the \$38.7 million reprogrammed was applied to modifications which were approved as a part of previous or subsequent budget requests. Available prior year funds were used to cover cost increases on these seven approved priority modifications such as the Avionics Modernization and Simulator Upgrade programs, rather than request new appropriations.

RECOMMENDATIONS

- NONE

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