

September 1995

# AIRCRAFT REQUIREMENTS

## Air Force and Navy Need to Establish Realistic Criteria for Backup Aircraft





**National Security and  
International Affairs Division**

B-257832

September 29, 1995

The Honorable Herbert H. Bateman  
Chairman  
The Honorable Norman Sisisky  
Ranking Minority Member  
Subcommittee on Military Readiness  
Committee on National Security  
House of Representatives

The Honorable Robert K. Dornan  
Chairman  
The Honorable Owen B. Pickett  
Ranking Minority Member  
Subcommittee on Military Personnel  
Committee on National Security  
House of Representatives

The Honorable Ike Skelton  
House of Representatives

Since 1977, numerous audits by the Department of Defense (DOD) and us have reported that the military services overstate the number of backup fighter/attack<sup>1</sup> aircraft needed for training, test and evaluation, and as replacements for combat-designated aircraft that are in maintenance or lost through attrition. As of the end of fiscal year 1993, the Air Force and the Navy/Marine Corps operated and maintained 2,954 combat-designated fighter/attack aircraft and 1,623 similar, equally capable backup aircraft.

The former Chairmen of the Subcommittee on Readiness and the Subcommittee on Military Forces and Personnel were concerned that backup forces were not efficiently managed and that this mismanagement adversely affected funds available for combat-designated forces. The Chairmen requested that we identify

- trends in the number of backup aircraft maintained by the services,
- actions that DOD and the services have taken in response to prior recommendations by others and us to validate backup aircraft requirements, and

---

<sup>1</sup>Fighter/attack aircraft include the Air Force F-4, F-15, F-16, F-111, F-117, and A-10 and the Navy and the Marine Corps F/A-18, F-14, A-6, and AV-8B.

- opportunities to remove unneeded backup aircraft from the force to minimize the cost of operating and maintaining combat-designated aircraft.

---

## Background

Backup aircraft account for about 35 percent of the Air Force's and Navy/Marine Corps' fighter/attack aircraft inventory. Operations and maintenance funds appropriated to support these aircraft are allocated based on the number of combat-designated aircraft, and the test and evaluation, and training aircraft in the backup force. There is no additional allocation for maintenance and attrition aircraft in the backup force. Those backup aircraft are operated and maintained with the same funds. This affects the budget, because maintenance and attrition backup forces siphon off funds from the combat-designated force.

DOD's October 1993 Bottom-Up Review: Forces for a New Era required the services to reduce and reshape their forces. The Bottom-Up Review specified 20 Air Force wings, 11 Navy air wings, and 4 Marine Corps air wings. DOD's goals for the services include reducing combat-designated fighter/attack aircraft forces to 2,230 aircraft by 1999, a reduction of 25 percent from 1993 levels.<sup>2</sup>

Since 1977, audits by us and DOD have recommended that DOD (1) develop supportable criteria to justify backup aircraft inventories and procurement, (2) reduce the number of these assets, and (3) improve the management and oversight of these aircraft.

In 1993, the Chairman, Joint Chiefs of Staff, reported that each service continues to use its own methodology, terminology, and philosophy to determine backup fighter/attack aircraft requirements.<sup>3</sup> The report recommended the services use standard terminology and inventory definitions and thereby help ensure that procurement and maintenance funds be spent only on necessary aircraft.

The Federal Managers' Financial Integrity Act (FMFIA) is a mechanism for reporting material management weaknesses, such as unsupported inventory criteria, to agency heads, Congress, and the President. FMFIA also

---

<sup>2</sup>This goal was set forth in the Secretary of Defense's Annual Report to the President and the Congress, January 1994. The goal was subsequently increased to 2,262 fighter/attack aircraft in the Secretary's February 1995 report.

<sup>3</sup>See Roles, Missions, and Functions of the Armed Forces of the United States, February 1993.

---

requires a corrective action plan be devised and milestones established to correct identified problems.

---

## Results in Brief

The Air Force and the Navy/Marine Corps operate and maintain about one backup aircraft for every two combat-designated fighter/attack aircraft. The Air Force's and the Navy/Marine Corps' plans to reduce the size of the combat-designated aircraft forces will, if implemented, essentially achieve the Bottom-Up Review's force level goals by the end of fiscal year 1996. Backup forces will also be reduced but will still make up about one-third of all fighter/attack aircraft operated and maintained by the services.

The Air Force has not developed supportable criteria for structuring and managing the backup forces and justifying the procurement of backup aircraft. The Navy/Marine Corps have begun to revise their criteria. Realistic criteria are essential today because both the Air Force and the Navy plan to buy expensive new aircraft systems in the near future—the F-22 and the F/A-18E/F, respectively. If realistic criteria for backup aircraft are not established soon, the Air Force and the Navy could buy more aircraft than needed.

If attrition aircraft in excess of short-term needs were stored until needed, the Air Force could reduce operation and maintenance costs.

---

## Services' Plan to Significantly Reduce Combat-Designated and Backup Aircraft by 1996

By fiscal year 1996, the services' force structure plans show significant reductions in combat-designated fighter/attack aircraft. These reductions are summarized in table 1 and appendix I. If these reductions are achieved, the ratio of combat-designated aircraft to backup aircraft will not significantly change. The relative number of combat-designated aircraft will increase slightly compared with backup aircraft, from 64.5 percent of the total active force in fiscal year 1993 to 66.5 percent of the total force in fiscal year 1996.

**Table 1: Comparison of Planned Fighter/Attack Aircraft Reductions and Bottom-Up Review Goals**

Service	Bottom-Up Review requirement <sup>a</sup>	Actual inventory (fiscal year 1993)		Planned inventory (fiscal year 1996)	
	Combat aircraft	Combat aircraft	Backup	Combat aircraft	Backup
Air Force	1,440	1,872	1,034	1,446	761
Navy/Marine Corps	822	1,082	589	963	453
<b>Total</b>	<b>2,262</b>	<b>2,954</b>	<b>1,623</b>	<b>2,409</b>	<b>1,214</b>

<sup>a</sup>The Bottom-Up Review force structure, planned for fiscal year 1999, will be virtually achieved by fiscal year 1996.

Appendix II shows reductions by type of aircraft.

## DOD Has Not Acted on Recommendations to Validate Backup Criteria

Over many years, there has been concern that the services' criteria for backup fighter/attack aircraft overstate requirements and need to be validated. In most cases, DOD responded that the existing criteria were relevant or that DOD would study the matter. Subsequent studies by others and us have repeatedly found that little has been done to validate the criteria.

- In 1977, we examined inventories of F-15s and F-14s and found that backup requirements for training, maintenance, and attrition aircraft were overstated. We recommended that Congress require DOD to base its justification for backup aircraft on realistic and supportable data. DOD agreed and responded that a review was underway to validate the requirements.<sup>4</sup>
- In 1983, we again questioned criteria used by the services to justify backup F-14, F-15, F-16, and F/A-18 training, maintenance, and attrition aircraft. Further, we reported DOD had not initiated a review to validate the criteria.<sup>5</sup>
- In 1992, the Naval Audit Service reported that the Navy had overstated the need for F-14 training aircraft.<sup>6</sup>

<sup>4</sup>Need to Strengthen Justification and Approval Process for Military Aircraft Used for Training, Replacement, and Overhaul (GAO/LCD-77-423, Oct. 28, 1977).

<sup>5</sup>Opportunities to Reduce the Number of Combat Aircraft Purchased for Noncombat Purposes (GAO Testimony, June 2, 1983).

<sup>6</sup>F-14 Aircraft Requirements (Naval Audit Service, 050-S-92, May 19, 1992).

- In 1993, the Chairman, Joint Chiefs of Staff, reported that the services' requirements for combat-designated and backup aircraft were inconsistent, outdated, and in need of revision.<sup>7</sup>

See appendix III for a list and discussion of our previous audits and DOD audits of backup aircraft inventories and criteria.

Despite recommendations to validate backup aircraft criteria, the Air Force continues to use unvalidated criteria. The Navy/Marine Corps has made progress toward justifying the number of aircraft needed to support the combat-designated force.

## Backup Aircraft Criteria

The Air Force and the Navy/Marine Corps used standard planning factors or percentages to determine the number of backup aircraft required to support the combat force. More recently, the Navy/Marine Corps has used student volume, flying hour requirements, and aircraft utilization rates to determine the need for training backup aircraft, and a Test and Evaluation Master Plan to determine the need for test and evaluation backup aircraft. Table 2 summarizes the Air Force's and the Navy/Marine Corps' planning factors used to determine the need for backup aircraft.

**Table 2: Air Force's and Navy/Marine Corps' Planning Factors for Backup Aircraft by Function**

Function	Planning factors
Training	The Air Force uses 25 percent of the authorized combat force. The Navy/Marine Corps uses the student volume, anticipated flying hours, and aircraft utilization rates.
Test and evaluation	The Air Force uses 3 percent of the authorized combat and training force. The Navy/Marine Corps bases needs on a Test and Evaluation Master Plan.
Maintenance	The Air Force uses 10 percent of authorized combat, training, and test and evaluation forces. The Navy/Marine Corps computes needs based on a 5-year average.
Attrition	The Air Force rate is based on an annual average peacetime loss rate and the number of years the aircraft will be supported in the inventory. The Navy uses a 5-year running average.

## Valid Criteria Needed Prior to Procurement of the F-22 and FA-18E/F

The Air Force plans to spend over \$72 billion to procure 442 F-22 fighter/attack aircraft (4 fighter wing equivalents): 288 combat-designated aircraft and 154 backup aircraft. Table 3 shows the breakout of backup

<sup>7</sup>Roles, Missions, and Functions of the Armed Forces of the United States, Joint Chiefs of Staff, February 1993.

F-22 aircraft given (1) backup aircraft required using current Air Force backup aircraft criteria and (2) the procurement plan.

**Table 3: Comparison of the Air Force's Requirements and Procurement Plan for Backup F-22s**

Backup function	Requirement	Procurement plan
Training	72	66
Test and evaluation	11	17
Maintenance	37	35
Attrition	63/86 <sup>a</sup>	36

<sup>a</sup>Assumes the same attrition rate as the F-15 aircraft (0.72 aircraft per fighter wing equivalent per year) and a service life of either 22 years or 30 years, respectively.

If the F-22 experiences the same attrition rate as the F-15, the Air Force will be able to sustain four fighter wing equivalents for 12.5 years with a force of 36 attrition aircraft. Conversely, if the F-22 experiences one-half the attrition rate of the F-15, the Air Force will be able to sustain four fighter wing equivalents for 25 years with a force of 36 attrition aircraft.

DOD plans to spend \$89 billion to procure 1,000 F/A-18E/F aircraft. The Navy's planned inventory distribution for the F/A-18E/F would continue to increase the relative number of fighter/attack aircraft used for combat versus backup categories. For example in fiscal year 1993, 65 percent of the Navy/Marine Corps fighter/attack aircraft were categorized for combat. In fiscal year 1996 that is planned to increase to 68 percent. The distribution of the planned F/A-18E/F aircraft procurement would increase the fighter/attack combat aircraft proportion to 70 percent.

**Navy Uses FMFIA to Report Its Aircraft Requirements Process as a Material Management Weakness**

FMFIA requires ongoing evaluations of internal agency management controls and accounting systems and annual reports to the President and Congress on the condition of those systems. FMFIA is not limited to accounting or administrative matters. Rather, it is intended to address the entire range of policies and procedures that management employs to perform its mission efficiently and effectively. In February 1994, the Secretary of Defense directed all Assistant Secretaries of Defense to improve implementation of the FMFIA.

Numerous audits by DOD and us, reports, and congressional testimony have shown that the Air Force and the Navy need to validate their backup aircraft criteria. In our view, the lack of valid criteria is a material weakness reportable under the FMFIA. In addition, to the extent that other



---

program analyses rely on backup aircraft criteria, those analyses would share the same weakness. The Navy acknowledged this when it reported aircraft acquisition requirements processes (which used current backup aircraft criteria) as a material management weakness in its fiscal year 1993 and 1994 FMFIA reports.

---

## Managing Attrition Aircraft Differently Could Be More Cost-Effective

Attrition aircraft are used to replace combat-designated training, and test and evaluation aircraft lost in peacetime mishaps. In 1994, the Air Force Materiel Command developed a concept that could be used to support the services' aircraft needs. Although the report on which that recommendation was based offered no specific cost savings, a 1992 Air Force-sponsored study compared 8 years of storage costs plus reconstitution costs to 8 years of operating costs for selected aircraft, including the F-15 and the F-16. The study concluded that storage and reconstitution costs were only 1.9 percent of the operating and maintenance costs for an F-15 and 2.1 percent of operating and maintenance costs for an F-16. Neither the Air Force nor the Navy/Marine Corps had exercised this option as of 1994.

The services' fiscal year 1996 plans show 218 attrition aircraft. Past attrition rates, however, show that some of these aircraft will not be needed for over 7 years. For example, over the past 5 years, the Air Force lost an average of about 17 F-16 aircraft per year to peacetime mishaps. On the basis of this rate, some of those F-16s will not be needed until the year 2002. However, the Air Force operates and maintains those aircraft in the same manner as combat-designated aircraft. That is, attrition aircraft are assigned to active and reserve units and the Air Force uses operation and maintenance funds that are appropriated for combat-designated, training, and test and evaluation aircraft to support attrition aircraft. In essence, funds that are expected to be used to operate and support combat-designated aircraft are being siphoned off to support attrition aircraft.

Attrition aircraft operating and maintenance costs are difficult to determine. However, in 1994 the Air Force Logistics Management Agency estimated the annual incremental cost of one attrition F-16 in operating units to be \$13,366.<sup>8</sup> In fiscal year 1994, the Air Force provided Air National Guard units about \$75,000 for each additional attrition aircraft in excess of the first three aircraft supported by the units. However,

---

<sup>8</sup>This estimate included costs associated with manpower and parts requirements due to calendar-driven and other non-program flying-hour-related maintenance requirements. It did not include depot-maintenance costs or the operation and maintenance costs of flying the aircraft.

---

individual Guard units estimate annual operation and maintenance costs range from about \$120,000 to \$400,000 for each aircraft. According to Air National Guard and Air Force officials, as the number of authorized combat-designated aircraft assigned to each unit decreases,<sup>9</sup> supporting attrition aircraft becomes more difficult. One unit has already reported a potential degradation of its combat-designated aircraft operation as a result of attrition aircraft that have been assigned to that unit.

---

## Recommendations

We recommend that the Secretary of Defense direct the Secretary of the Air Force to (1) develop and use supportable and consistent criteria to justify backup aircraft inventories and future procurement of backup aircraft as the Navy is doing and (2) report the lack of valid backup fighter/attack aircraft requirements criteria as a material management weakness, in compliance with FMFIA, until these criteria are developed and put in use.

We also recommend that the Secretary of Defense direct the Secretary of the Air Force and the Secretary of the Navy to adjust backup aircraft inventories, where needed, to conform to supportable and consistent criteria once established.

---

## Agency Comments and Our Evaluation

The comments DOD provided on a draft of this report appear in appendix IV. DOD partially concurred with the report. DOD believes more progress has been made in developing sound backup aircraft criteria than we describe. DOD agreed, however, that additional improvements may be necessary. Accordingly, DOD will undertake a review of the backup aircraft criteria.

DOD concurred with our description of the trends in the number of backup aircraft maintained by the services, but commented there were inaccuracies in the report, apparently referring to the process we describe that arrived at the specific number of combat-designated aircraft in the forces. We believe our description of how the number of combat-designated aircraft was determined is accurately summarized, including reference to the Secretary of Defense's January 1994 Annual Report to the President and the Congress.

---

<sup>9</sup>In recent years, the number of fighter/attack aircraft assigned to Air National Guard squadrons has been reduced from a maximum of 24 aircraft in 1992 to 15 aircraft in 1995.

---

DOD only partially agreed with our analysis of actions taken in response to prior audit recommendations by others and us to validate backup aircraft requirements. According to DOD, both services have recognized a need to review their criteria. We believe this is a positive step. We also believe, however, that, in light of previous, largely unsuccessful efforts by others and us to persuade DOD and the services of the need to formulate valid backup aircraft criteria, actions now underway need to be part of a larger process to ensure those actions are fully implemented. The recommendations in this report are intended to help achieve that objective.

The Air Force does not accept that past criticisms of its criteria, or revisions currently being made to its policies, reflect a material weakness reportable under FMFIA. We disagree. The Air Force's and the Navy's lack of supportable criteria has been the long-standing subject of numerous reports and recommendations by others and us for corrective action. Based on those reports, the Navy has identified the aircraft requirements process as a material weakness and established a time frame for corrective action. In light of new Air Force aircraft procurements potentially costing over \$72 billion, we continue to believe the lack of valid backup aircraft criteria constitutes a material management weakness and reportable under FMFIA. DOD concurred with our conclusion that the procurement of F-22 and F/A-18E/F aircraft should be based on valid criteria.

DOD partially agreed with our conclusion that unneeded attrition aircraft should be placed in storage. DOD, while citing Navy policy to store unneeded aircraft to save costs, noted the Air Force contention that the incremental cost to maintain such aircraft with the active forces is relatively small and these aircraft would be available for emergencies or other temporary needs. However, according to DOD, conclusive cost data is not yet available to support the Air Force's contention. In light of the Navy's retention policy, the analysis discussed in this report that compare storage and reconstitution costs against operating costs, and the need to base backup aircraft requirements on quantifiable needs, we continue to believe unneeded aircraft should not be operated and maintained with funds intended to support the authorized forces.

DOD partially concurred with the recommendation that the Secretary of the Air Force develop supportable and consistent criteria to justify backup aircraft inventories and future procurements, and did not concur with a similarly directed recommendation to report backup fighter/attack aircraft

---

requirements criteria as a material management weakness under FMFIA. Further, DOD partially concurred with the recommendation that the Air Force and the Navy adjust backup aircraft inventories to conform to supportable and consistent criteria. Considering the (1) lengthy history of reports concerning the need to strengthen the backup aircraft requirements determination criteria, (2) numerous recommendations to strengthen that process, (3) slow progress in that direction, and (4) planned procurements of costly F-22 and F/A-18E/F aircraft, we are retaining recommendations that identify the known weaknesses, and establish time frames for resolving those weaknesses through the FMFIA mechanism.

---

## Scope and Methodology

We analyzed directives and other pertinent documents and interviewed agency officials regarding backup aircraft procurement planning criteria, inventory management requirements, and force reduction goals. We documented past findings and recommendations regarding backup inventories and criteria. We documented changes to backup criteria and other actions taken as a result of prior recommendations.

Using the services' fiscal years 1995 and 1996 programming plans and other service provided aircraft inventory data, we documented and compared reductions in combat and backup aircraft inventories for fiscal years 1993 and 1994 and projected inventories for fiscal years 1995 and 1996.

We interviewed management officials at the Aerospace Maintenance and Regeneration Center at Davis-Monthan Air Force Base, Arizona, and reviewed studies regarding the potential for storing attrition aircraft until needed. We also visited operational units responsible for operating and maintaining backup aircraft, including active wings and squadrons, a training command, and Air National Guard units, to discuss the impact of these aircraft on unit operations and costs. We reviewed backup aircraft procurement plans to determine whether the standardized backup aircraft planning factors, previously reported as outdated and in need of revision, had been changed.

We reviewed FMFIA reports prepared by the Air Force, the Navy, and DOD for fiscal years 1993 and 1994 to determine whether material weaknesses were reported in the area of aircraft requirements.

---

We performed our review between October 1993 and February 1995 in accordance with generally accepted government auditing standards.

---

We are sending copies of this report to the Secretaries of Defense, the Air Force, and the Navy; the Director of the Office of Management and Budget; and other appropriate congressional committees. We will also make copies available to other interested parties upon request.

Please contact me at (202)512-3504 if you have any questions concerning this report. Major contributors to this report are listed in appendix V.

A handwritten signature in black ink that reads "Richard Davis". The signature is written in a cursive style with a large, prominent "R" and "D".

Richard Davis  
Director, National Security  
Analysis

---

# Contents

---

Letter	1
Appendix I Air Force and Navy Fighter Aircraft Inventories	14
Appendix II Air Force and Navy Fighter Aircraft Inventories by Type of Aircraft	16
Appendix III Past Audits Addressing Backup Aircraft Requirements	20
Appendix IV Comments From the Department of Defense	22
Appendix V Major Contributors to This Report	30
Tables	
Table 1: Comparison of Planned Fighter/Attack Aircraft Reductions and Bottom-Up Review Goals	4
Table 2: Air Force's and Navy/Marine Corps' Planning Factors for Backup Aircraft by Function	5
Table 3: Comparison of the Air Force's Requirements and Procurement Plan for Backup F-22s	6

---

Figures

Figure I.1: Comparison of Air Force and Navy Combat-Designated and Backup Aircraft for Fiscal Years 1993 and 1996	14
Figure I.2: Comparison of Air Force and Navy Backup Aircraft for Fiscal Years 1993 and 1996	15
Figure II.1: Air Force Fiscal Year 1993 Combat-Designated and Backup Aircraft by Type of Aircraft	16
Figure II.2: Air Force Fiscal Year 1996 Combat-Designated and Backup Aircraft by Type of Aircraft	17
Figure II.3: Navy Fiscal Year 1993 Combat-Designated and Backup Aircraft by Type of Aircraft	18
Figure II.4: Navy Fiscal Year 1996 Combat and Backup Aircraft Inventory by Type of Aircraft	19

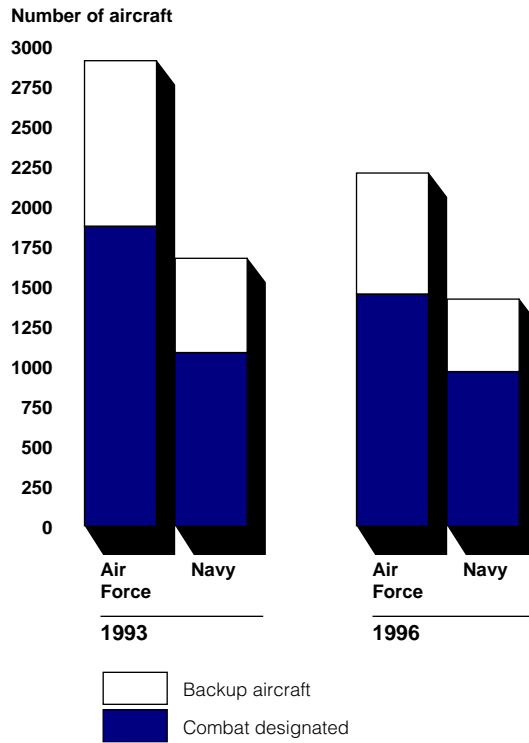
---

Abbreviations

DOD	Department of Defense
FMFIA	Federal Managers Financial Integrity Act

# Air Force and Navy Fighter Aircraft Inventories

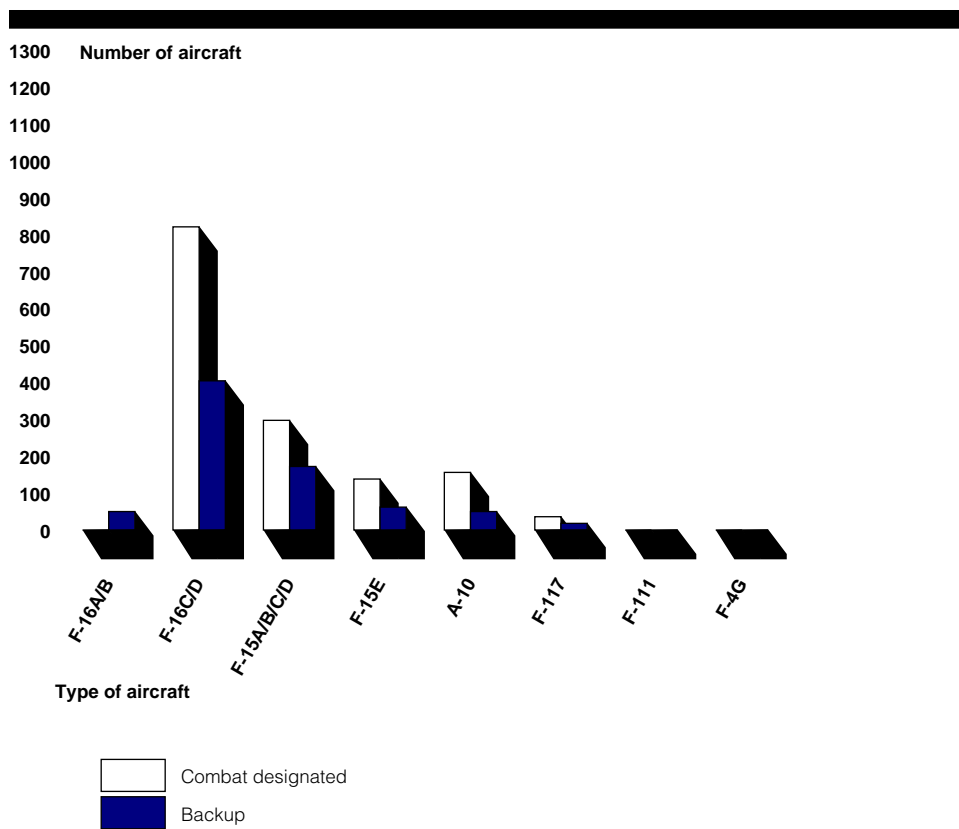
**Figure I.1: Comparison of Air Force and Navy Combat-Designated and Backup Aircraft for Fiscal Years 1993 and 1996**





**Appendix I  
Air Force and Navy Fighter Aircraft  
Inventories**

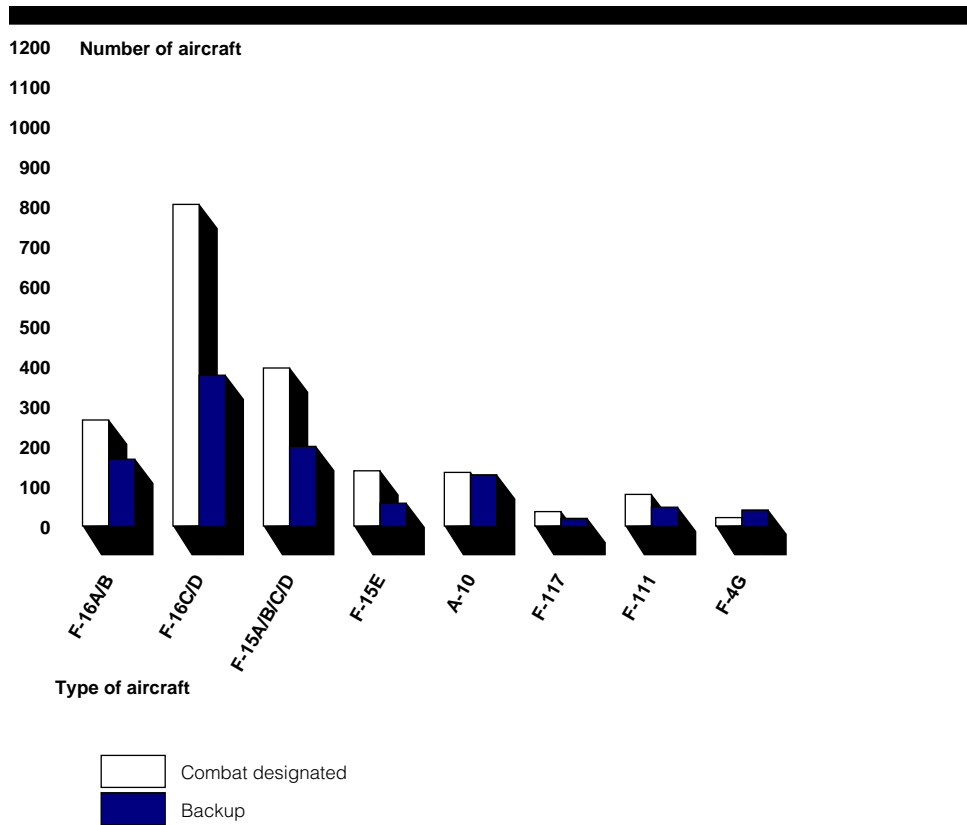
**Figure I.2: Comparison of Air Force and Navy Backup Aircraft for Fiscal Years 1993 and 1996**



Note: The Air Force did not separate maintenance and attrition reserve aircraft for fiscal year 1993 and earlier.

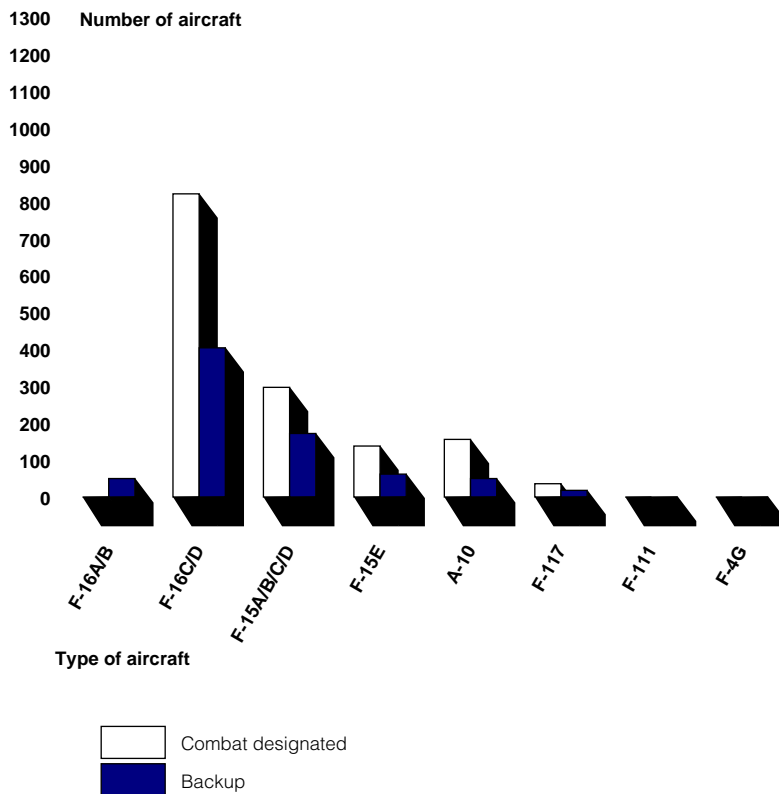
# Air Force and Navy Fighter Aircraft Inventories by Type of Aircraft

**Figure II.1: Air Force Fiscal Year 1993  
Combat-Designated and Backup  
Aircraft by Type of Aircraft**



**Appendix II**  
**Air Force and Navy Fighter Aircraft**  
**Inventories by Type of Aircraft**

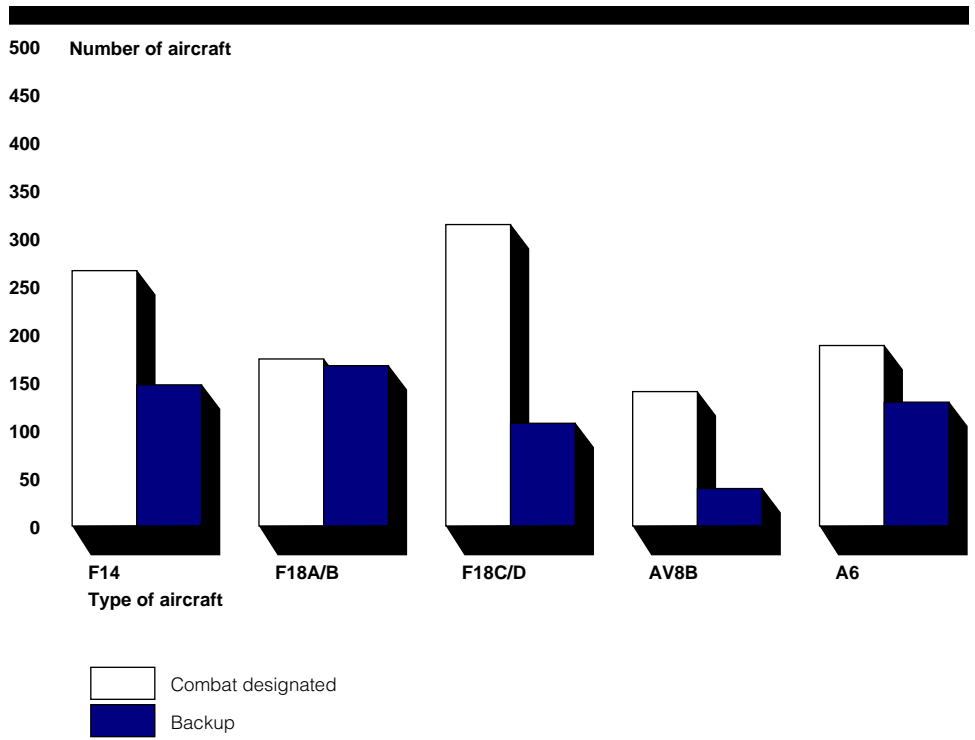
**Figure II.2: Air Force Fiscal Year 1996**  
**Combat-Designated and Backup**  
**Aircraft by Type of Aircraft**



Note: Backup F-16 A/B aircraft will be primarily used for test and evaluation.

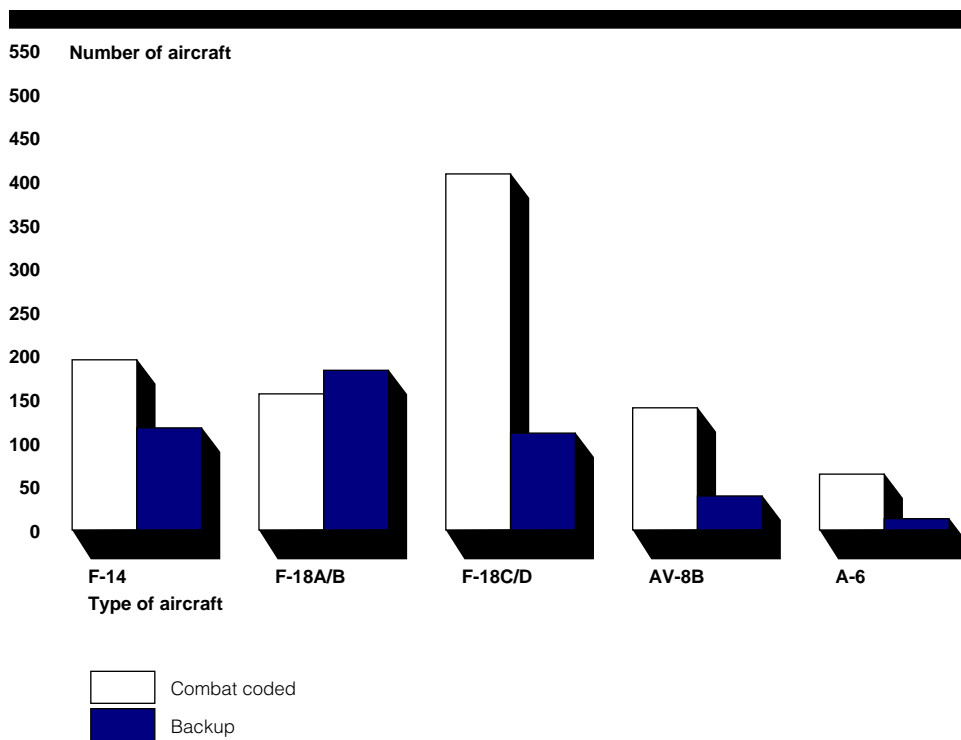
**Appendix II**  
**Air Force and Navy Fighter Aircraft**  
**Inventories by Type of Aircraft**

**Figure II.3: Navy Fiscal Year 1993**  
**Combat-Designated and Backup**  
**Aircraft by Type of Aircraft**



Appendix II  
Air Force and Navy Fighter Aircraft  
Inventories by Type of Aircraft

Figure II.4: Navy Fiscal Year 1996  
Combat and Backup Aircraft Inventory  
by Type of Aircraft



---

# Past Audits Addressing Backup Aircraft Requirements

---

F-14 Aircraft Requirements Naval Audit Service (050-S-92, May 19, 1992). The Naval Audit Service reported that the Navy had overstated its need for backup F-14 training and maintenance aircraft. The Navy did not concur with the methodology the Naval Audit Service proposed to calculate training aircraft requirements, nor with a recommendation to reduce F-14 depot maintenance funding. The Navy did concur, in principle, with the recommendation that it develop plans to remove nonessential F-14s from its active inventory.

Opportunities to Reduce the Number of Combat Aircraft Purchased for Noncombat Purposes (GAO Testimony, June 2, 1983). We questioned criteria used by services to justify the number of non-combat aircraft required. We questioned the training, maintenance, and attrition categories for the F-14, F-15, F-16, and F/A-18 and reported that the Department of Defense (DOD) had never reviewed support aircraft justifications as it said it would in 1977. DOD stated that, regardless of the justification, the support aircraft were necessary and would be used in war.

F-16 Integrated Logistics Support: Still Time to Consider Economical Alternatives (GAO/LCD-80-89, Aug. 20, 1980). We questioned the Air Force's stated requirement for a 10-percent increase in F-16 aircraft to compensate for aircraft in depot maintenance, since the aircraft was designed to eliminate planned depot maintenance. DOD stated that the 10-percent factor had been historically accurate for tactical fighter aircraft.

The Congress Should Require Better Justification of Aircraft for Noncombat Missions (GAO/LCD-80-93, July 22, 1980). We recommended to Congress, on the basis of past work, that appropriations be withheld for procurement of F-14s, F-15s, F-16s, F/A-18s, and A-10s until the services justified their noncombat aircraft needs with current and realistic data.

Operational and Support Costs of the Navy's F/A-18 Can Be Substantially Reduced (GAO/LCD-80-65, June 6, 1980). We determined that the Navy overstated the need for F/A-18 maintenance backup aircraft because they had not fully factored in the F/A-18's reliability and maintainability characteristics.

Unnecessary Procurement of A-10 Aircraft for Depot Maintenance Floats (GAO/LCD-79-431, Sept. 6, 1979). We found that, despite the A-10's design to eliminate depot-level maintenance, the Air Force continued to use the standard 10-percent reserve for maintenance to justify procurement. We recommended that DOD direct the Air Force to come up with more

---

**Appendix III  
Past Audits Addressing Backup Aircraft  
Requirements**

---

meaningful estimates to justify procurement. The Air Force responded they would study how to develop backup aircraft numbers. However, they generally felt the additional aircraft were needed.

Letter to the Secretary of Defense (GAO/LCD-79-420, May 22, 1979). We restated our findings from our 1977 report and recommended that action be taken immediately to affect procurement of F-14s and F-15s.

Need to Strengthen Justification and Approval Process for Military Aircraft Used for Training, Replacement, and Overhaul (GAO/LCD-77-423, Oct. 28, 1977). We examined inventories of F-15s and F-14s and found that backup requirements for training, attrition, and maintenance were overstated. We recommended that Congress require DOD to justify requirements for noncombat aircraft on realistic and supportable data. DOD agreed that all programs should be based on supportable data and announced that a review was underway to determine whether this was the case.

# Comments From the Department of Defense



PROGRAM ANALYSIS  
AND EVALUATION

OFFICE OF THE SECRETARY OF DEFENSE  
1800 DEFENSE PENTAGON  
WASHINGTON, D.C. 20301-1800



August 21, 1995

Mr. Richard Davis  
Director, National Security Analysis  
National Security and International  
Affairs Division  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Mr. Davis:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "AIRCRAFT REQUIREMENTS: Air Force and Navy Need To Establish Realistic Criteria for Backup Aircraft," dated July 10, 1995 (GAO Code 701024), OSD Case 9973. The Department partially concurs with the report.

The GAO uses the term "backup aircraft" as an aggregate term to differentiate between combat-designated fighter/attack aircraft and fighter/attack aircraft used for "other" purposes. The Department does not have an official definition for "other" aircraft in the sense that the term is used by the GAO. Therefore, the DoD has referred in the response to "other" fighter/attack aircraft as noncombat-designated aircraft.

As a result of the Bottom Up Review (BUR), the Services' size and composition of the tactical air wings have been changing significantly. As a result of that review and others, both the Navy and the Air Force have recognized the need to review their approaches to programming for noncombat-designated aircraft. To date, both Services have made substantial progress in developing sound methodologies for projecting requirements for such aircraft. In this regard, the Department believes that more progress has been made than the GAO has acknowledged in its report. Nonetheless, the Department agrees that additional improvements may be necessary.

Accordingly, the DoD will undertake a review of criteria used to justify aircraft inventories and future procurement of noncombat-designated aircraft used by the Services. That review will be led by the Office of the Secretary of Defense. The Departments of the





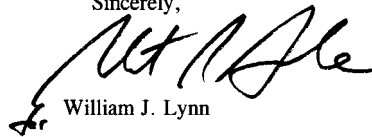
---

**Appendix IV**  
**Comments From the Department of Defense**

Navy and the Air Force will participate and the results will be provided to the GAO. The review should be completed within six months. The Services will take corrective actions, if needed, based upon the results of this review.

The Department appreciates the opportunity to comment on the draft report.

Sincerely,



William J. Lynn

Enclosure

DEPARTMENT OF DEFENSE COMMENTS

**FINDING A:** The Services' Plan to Significantly Reduce Combat-Designated and Backup Aircraft by 1996. The GAO observed that the DoD October 1993 Bottom Up Review: Forces for a New Era required the Services to reduce their combat-designated fighter/attack aircraft forces to 2,230 aircraft by 1999, a reduction of 25 percent from 1993 levels. The GAO also observed that the Services' force structure plans show significant reductions in combat-designated fighter/attack aircraft by FY 1996. The GAO concluded, however, that if the reductions are achieved, the ratio of combat-designated aircraft to backup aircraft will not change significantly. In fact, the GAO found that the relative number of combat-designated aircraft will increase slightly compared with backup aircraft, from 64.5 percent of the total active force in FY 1993 to 66.5 percent of the total force in FY 1996. (pp. 2-4/GAO Draft Report)

**DOD RESPONSE:** Concur. There are, however, some inaccuracies in the GAO report. The Bottom-Up Review: Forces for a New Era specified force levels to be maintained, but did so in general terms, without mandating a specific number of aircraft. The Bottom-Up Review (BUR) specified 13 active fighter wings and 7 reserve wings for the Air Force; 11 active aircraft carriers and 1 reserve/training carrier for the Navy; and 3 Marine Expeditionary Forces for the Marine Corps.

As discussed in the January 1994 Annual Report to the President and the Congress, which was prepared subsequent to the BUR, "Air Force wings are calculated on the basis of the number of units that could be formed assuming each had 72 fighter/attack aircraft, as found in a fully structured wing." The number of those notional wing-equivalents is arrived at by summing all of the combat-designated aircraft funded within appropriate program elements and dividing that total by 72. Thus, the 20 fighter wings cited in the BUR equates to 1,440 combat-designated aircraft.

Translating the BUR results for the Department of Navy's (DoN) force structure is not as straightforward as for the Air Force. As discussed in the January 1994 Annual Report, Navy and Marine Corps wings are structured differently, having both fighter/attack and support aircraft. The DoN aviation force levels are set at 10 active air wings, 1 reserve air wing, 3 active Marine air wings and 1 reserve air wing. Aircraft are drawn from the Marine air wings to meet the wartime taskings of the Marine Expeditionary Forces specified in the BUR. The force level (total number of combat-designated aircraft) for the Navy and Marine Corps is the total of those combat-designated aircraft funded for the carrier air wings and Marine air wings. Although the number of carrier and Marine air wings has not changed since the BUR, the total number of aircraft associated with these wings has been reduced due to budget constraints.

The number of aircraft cited by the GAO (i.e., 2,230 aircraft) was a combined Service input for January 1996 contained in the January 1994 Annual Report. The total number may change in the future if changes in Department policy are made; in that case, the rationale for

Enclosure

Now on pp. 3 and 4.

such changes will be presented in the Defense Planning Guidance.

**FINDING B: The DoD Has Not Acted on Recommendations to Validate Backup Criteria.**

The GAO observed that, since 1977, numerous DoD and GAO audits have reported that the Military Services overstate the number of backup fighter/attack aircraft needed for training, test and evaluation, and replacements for combat-designated aircraft that are in maintenance or lost through attrition. The GAO noted that the Air Force and Navy/Marine Corps operated and maintained 2,954 combat-designated fighter/attack aircraft and 1,623 similar, equally capable backup aircraft at the end of FY 1993. The GAO also observed that, in 1993, the Chairman, Joint Chiefs of Staff reported that each Service used its own methodology and terminology to determine backup fighter/attack aircraft requirements, and recommended that the Services use standard terminology and inventory definitions. The GAO concluded that, despite the many concerns that the Services' criteria overstate requirements and need to be validated, little has been done to validate the criteria. The GAO found that the Navy/Marine Corps has made some progress toward justifying the number of aircraft needed to support the combat-designated force; however, the Air Force continues to use unvalidated criteria. The GAO also observed that, although the Navy is using the Federal Manager's Financial Integrity Act (FMFIA) to report its aircraft requirements process as a material management weakness and has established a milestone to resolve the problem by September 1996, the Air Force has not reported a similar problem, even though numerous reports have found that the Air Force has a similar weakness. (p. 1, p.3, pp. 5-6, pp. 9-10/GAO Draft Report)

**DOD RESPONSE:** Partially concur. As a result of BUR direction, the Services' force levels and compositions are changing significantly. In light of those changes as well as other reviews, both Services have recognized a need to review their programming approaches. Examinations continue within each Service. More progress has been made than the GAO has acknowledged.

The Air Force has examined its approach to programming noncombat-designated aircraft, and found that current methods are based on quantifiable requirements, even though those methods are not detailed in an Air Force Instruction (AFI). Those methods are different from those found in previous programming guidance provided in Air Force Regulation (AFR) 27-15 in which ratios (e.g., 3 percent test, 25 percent training) were specified. The Air Force now considers those ratios rules of thumb that were based on historical standards that may no longer apply.

Requirements for training aircraft are driven by the size of the force structure, annual number of students to be trained (crew ratio required), the number of syllabus sorties required to train each student, and the projected pilot inventory. Student requirements are a combination of new pilots, which sustain long-term fighter pilot requirements, fighter pilots entering/reentering the weapons system from other assignments, students from countries procuring U.S. aircraft under the Foreign Military Sales (FMS) program, and Air National Guard and Air Force Reserve pilots.

Now on pp. 4 and 5.

Pilot inventory is projected using a model known as the Rated Management Decision Support System. That model is maintained by the Director of Personnel in close cooperation with the Training Division within the office of the Deputy Chief of Staff for Plans and Operations (AF/XOO) and Air Force Military Personnel Center. It uses the latest personnel data file and predicts inventory by major weapons system category based on projected pilot production, separations, promotions, and retention estimates.

The Air Force sizes the training fleet to support the training requirement for annual production of new fighter pilots, as a whole, and by individual weapons system. Annual throughput computations are based on the level required to sustain the total demand for fighter pilots and the steady-state flows that operational units can absorb while maintaining minimum pilot experience criteria. The Air Force maintains that the current criteria used for programming training aircraft are valid. This process and the associated quantitative criteria will be included in Air Force Instruction 16-402 and will supersede previous guidance for programming noncombat-designated aircraft.

For test, the Air Force Test and Evaluation Directorate, Resources Division (AF/TER) has recently reexamined Air Force requirements for those aircraft. The results now are being reviewed by other Air Force organizations. Changes in the number of test aircraft programmed, if required, will be addressed in the next budget cycle. Procedural changes, if required, will be included in the current programming guidance, Air Force Instruction 16-402.

To date, the DoN has evaluated necessary recommendations that would result in more effective management of the Naval aircraft inventory. For example, the DoN was audited in 1992 by the Naval Audit Service (NAS) on maintenance and training requirements for the F-14 aircraft. Although the DoN did not agree with the NAS's methodology for computing training aircraft requirements, the Navy revised its practice of using a 25-percent training factor to reflect a new algorithm based on recent historical experience. The DoN, as a result of the NAS audit, placed 54 F-14 aircraft in the inactive inventory. Those aircraft were placed in attrition reserve storage in the Aerospace Maintenance and Regeneration Center (AMARC), Davis Mothan Air Force Base.

As the GAO has observed, the Navy responded to earlier criticisms by using the Federal Manager's Financial Integrity Act (FMFIA) to report results of changes to its aircraft requirements process and has established a milestone to resolve any problems by September 1996. The Air Force does not agree with past criticisms that management of its noncombat-designated aircraft inventories were materially weak. Moreover, it does not view the revisions currently being made to its policies for determining those inventories as reflections of a current material weakness.

**FINDING C: Valid Criteria Needed Prior to Procurement of F-22 and F/A-18E/F.** The GAO found that the Air Force plans to spend over \$72 billion to procure 442 F-22 fighter/attack aircraft, i.e., 288 combat-designated aircraft and 154 backup aircraft. The GAO asserted that if the F-22 experiences the same attrition rate as the F-15, the Air Force will be

Now on pp. 5 and 6.

able to sustain four fighter wing equivalents for 12.5 years with a 36-aircraft attrition reserve force. Conversely, the GAO asserted that, if the F-22 experiences one half of the attrition rate of the F-15, the Air Force will be able to sustain four fighter wings equivalents for 25 years with a 36-aircraft attrition reserve force. The GAO also observed that, while the specifics of the Navy F/A-18E/F aircraft procurement are classified, the number of backup aircraft to be procured to support that force generally reflects existing Navy backup criteria. (pp. 8-9/GAO Draft Report)

**DOD RESPONSE:** Concur. Initial projections for total aircraft procurement quantities are based on both historical and projected planning factors, as well as on judgment. The actual needs for aircraft assigned to training or test may vary in the future if heightened world tensions emerge, a circumstance beyond the Department's control. Moreover, for attrition aircraft, initial planning factors are based partially on judgments regarding changes in historically-observed attrition that may occur due to advances in technologies and improved safety systems. As deliveries occur and actual attrition data are collected, attrition planning factors are updated and can change future procurement requirements. These uncertainties mean that current projections for total procurement of both the F-18E/F and F-22 may be altered in the future.

**FINDING D: Managing Attrition Reserve Aircraft Differently Could Be More Cost Effective.** The GAO indicated that attrition-reserve aircraft are used to replace combat-designated aircraft lost in peacetime mishaps. The GAO observed that the Air Force Material Command developed a concept that could be used to support the Services peacetime aircraft needs in 1994. The GAO also observed that a 1992 Air Force-sponsored study compared 8 years of storage costs plus reconstitution costs to 8 years of operation costs for selected aircraft, including the F-15 and F-16. The GAO indicated the study concluded that the storage and reconstitution costs were only 1.9 percent of the operating and maintenance costs for an F-15 and 2.1 percent of operating and maintenance costs for an F-16. The GAO found that neither the Air Force nor the Navy/Marine Corps has exercised this option.

The GAO observed that the Services FY 1996 plans reflect 218 attrition reserve aircraft, although past attrition rates show that some of those aircraft will not be needed for over 7 years. For example, over the past 5 years, the GAO noted that the Air Force lost an average of about 17 F-16 aircraft per year to peacetime mishaps, which would indicate some of the F-16s will not be needed until the year 2002. The GAO found, however, that the Air Force operates and maintains those aircraft in the same manner as combat-designated aircraft, i.e., funds that are to be used to operate and support combat-designated aircraft are being siphoned off to support attrition reserve aircraft.

The GAO also found that operating and maintenance costs for attrition-reserve aircraft are difficult to determine. For example, the GAO noted that, in 1994, the Air Force Logistics Management Agency estimated the annual incremental cost of one attrition-reserve F-16 in operating units to be about \$13,366. The GAO also observed that the Air Force provided Air National Guard units about \$75,000 for each additional attrition-reserve aircraft. The GAO

Now on pp. 7 and 8.

found, however, that the Guard estimates for annual operation and maintenance costs range from about \$150,000 to \$400,000 for each aircraft. The GAO also found that, as the number of authorized combat-designated aircraft assigned to each unit decreases, supporting attrition-reserve aircraft becomes more difficult. The GAO noted that one unit has already reported a potential degradation of its combat-designated aircraft operation as a result of attrition aircraft being assigned to that unit. (pp. 10-11/GAO Draft Report)

**DOD RESPONSE:** Partially concur. The Air Force policy is to maintain attrition reserve aircraft at the operating locations. Operations and Maintenance funds, base operations support, and personnel costs are not programmed for those aircraft. Depot modifications and time-compliance technical orders (TCTOs) are programmed, which means that the aircraft are quickly available for emergencies or to temporarily meet increased needs in other functions. The Air Force contends that the incremental funding to maintain each additional attrition reserve aircraft is small compared to reclamation costs from the AMARC. Conclusive data are not yet available to support the Air Force's contention.

Recently, the DoN has adopted a policy (stated in OPNAVINST 5442) for the management of attrition reserve aircraft to restrict their numbers to a maximum of one year of attrition reserve to remain in the operating inventory, if sufficient assets are available. The aircraft are normally distributed among the Fleet Readiness Squadrons until required. Aircraft that are above the total requirement, including long-term attrition reserve aircraft, are normally placed in storage. The DoN currently has 331 aircraft of all models in war reserve/force level assurance storage at the AMARC. Those aircraft are preserved and will be used as attrition assets when required. No parts removal is authorized, and the aircraft can be ready to fly within 90 days. It is the DoN's position that storage of aircraft for future use, both long-term attrition reserve and war reserve, is the most cost-effective management of those assets. No operating funds are programmed against those aircraft. Navy attrition planning factors will be updated annually and attrition reserve requirements adjusted accordingly. As with the Air Force, force level reductions have allowed the DoN to fill attrition reserve requirements for combat aircraft from units that were decommissioned. Thus, the DoN was able to avoid storage and/or reclamation costs. That trend should continue until the DoN force structure stabilizes in FY 1998.

#### RECOMMENDATIONS

**RECOMMENDATION 1:** The GAO recommended that the Secretary of Defense direct the Secretary of the Air Force to develop supportable and consistent criteria to justify backup aircraft inventories and future procurement of backup aircraft. (p. 12/GAO Draft Report)

**DOD RESPONSE:** Partially concur. The Department will undertake a review of criteria used to justify noncombat-designated aircraft inventories and future procurement of noncombat-designated aircraft inventories aircraft used by the Services. That review will be led by the Office of the Secretary of Defense. The Departments of the Air Force and Navy will

participate, and the results will be provided to the GAO. The review should be completed within six months. Corrective actions, if needed, will be directed at the appropriate levels within the Department.

**RECOMMENDATION 2:** The GAO also recommended that the Secretary of Defense direct the Secretary of the Air Force to report the backup fighter/attack aircraft requirements criteria as a material management weakness, in compliance with the FMFIA, until those criteria are developed. (p. 12/GAO Draft Report)

**DOD RESPONSE:** Nonconcur. The applicable Department directive is DoD Directive 5010.38, which defines a material weakness as one that "significantly impairs the fulfillment of a DoD Component's mission; deprives the public of needed services; violates statutory or regulatory requirements; significantly weakens safeguards against fraud, waste or mismanagement of funds, property, or other assets; or results in a conflict of interest." The Air Force does not agree with past criticisms that management of its noncombat-designated aircraft inventories were materially weak. Moreover, it does not view the revisions currently being made to its policies for determining those inventories as reflections of a current material weakness.

**RECOMMENDATION 3:** The GAO further recommended that the Secretary of Defense direct the Secretaries of the Air Force and the Navy to adjust backup aircraft inventories, where needed, to conform to supportable and consistent criteria once established. (p. 12/GAO Draft Report)

**DOD RESPONSE:** Partially concur. As previously stated in response to Finding B, the Air Force intends to update AFI 16-402 with appropriate programming criteria for noncombat-designated aircraft. Moreover, as stated in the response to Recommendation 1, corrective actions, if needed, will be directed at the appropriate levels within the Department.

Now on p. 8.

Now on p. 8.

# Major Contributors to This Report

---

**National Security and  
International Affairs  
Division, Washington,  
D.C.**

Jerry Herley, Assistant Director

---

**Norfolk Regional  
Office**

Hugh E. Brady, Evaluator-in-Charge  
Frank R. Marsh, Evaluator  
Jeffrey C. McDowell, Evaluator



---

### Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

#### Orders by mail:

U.S. General Accounting Office  
P.O. Box 6015  
Gaithersburg, MD 20884-6015

#### or visit:

Room 1100  
700 4th St. NW (corner of 4th and G Sts. NW)  
U.S. General Accounting Office  
Washington, DC

Orders may also be placed by calling (202) 512-6000 or by using fax number (301) 258-4066, or TDD (301) 413-0006.

Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (301) 258-4097 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.

For information on how to access GAO reports on the INTERNET, send an e-mail message with "info" in the body to:

[info@www.gao.gov](mailto:info@www.gao.gov)

---

**United States  
General Accounting Office  
Washington, D.C. 20548-0001**

**Bulk Rate  
Postage & Fees Paid  
GAO  
Permit No. G100**

**Official Business  
Penalty for Private Use \$300**

**Address Correction Requested**

---





