

November 1997

**FINANCIAL  
MANAGEMENT**

**DOD's Liability for  
Aircraft Disposal Can  
Be Estimated**



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**Accounting and Information  
Management Division**

B-273004

November 20, 1997

The Honorable William S. Cohen  
The Secretary of Defense

Dear Mr. Secretary:

Recent laws have enhanced the legislative requirements to provide policymakers and agency program managers with more reliable financial information to formulate budgets, manage government programs, and make difficult policy choices.<sup>1</sup> Recognizing the extent of incomplete and unreliable information on the cost and consequences of government programs and activities, these laws have made implementation of new accounting standards and audited financial statements a priority. New federal accounting standards have been adopted to enhance financial statements by requiring that government agencies show the financial results of their entire operations and provide relevant information on agencies' true financial status. This report discusses one such requirement for valuable information related to the disposal costs of federal agencies' property, plant, and equipment (PP&E). The second in a planned series of reports on the Department of Defense's (DOD) implementation of this requirement, this report focuses on aircraft.<sup>2</sup> The disposal process for aircraft includes removal from active service, demilitarization, removal and disposal of hazardous materials, storage, reclamation of parts, and final disposal/salvage.

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**Background**

In October 1990, the Federal Accounting Standards Advisory Board (FASAB) was established by the Secretary of the Treasury, the Director of the Office of Management and Budget (OMB), and the Comptroller General of the United States to consider and recommend accounting standards to address the financial and budgetary information needs of the Congress, executives agencies, and other users of federal financial information. Using a due process and consensus building approach, the nine-member Board, which has since its formation included a member from DOD, recommends accounting standards for the federal government. Once FASAB recommends accounting standards, the Secretary of the Treasury, the Director of OMB, and the Comptroller General decide whether to adopt the

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<sup>1</sup>The Chief Financial Officers Act (CFO) of 1990, the Government Management Reform Act (GMRA) of 1994, and the Federal Financial Management Improvement Act of 1996.

<sup>2</sup>See our first report, Financial Management: Factors to Consider in Estimating Environmental Liabilities for Removing Hazardous Materials in Nuclear Submarines and Ships (GAO/AIMD-97-135R, August 7, 1997).

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recommended standards. If they are adopted, the standards are published as Statements of Federal Financial Accounting Standards (SFFAS) by OMB and by GAO. In addition, the Federal Financial Management Improvement Act of 1996, as well as the Federal Managers' Financial Integrity Act, requires federal agencies to implement and maintain financial management systems that will permit the preparation of financial statements that substantially comply with applicable federal accounting standards.

Issued in December 1995 and effective beginning with fiscal year 1997, SFFAS No. 5, Accounting for Liabilities of the Federal Government, requires the recognition of a liability for any probable and measurable future outflow of resources arising from past transactions.<sup>3</sup> The statement defines probable as that which is likely to occur based on current facts and circumstances. It also states that a future outflow is measurable if it can be reasonably estimated. The statement recognizes that this estimate may not be precise and in such cases, it provides for recording the lowest estimate and disclosing in the financial statements the full range of estimated outflows that are likely to occur.

SFFAS No. 6, Accounting for Property, Plant, and Equipment, which is effective beginning in fiscal year 1998, deals with various accounting issues pertaining to PP&E. This statement establishes several new accounting categories of PP&E, collectively called stewardship PP&E. Other PP&E is referred to as general PP&E. One of the new stewardship categories—federal mission PP&E—is defined as tangible items owned by a federal government entity, principally DOD, that have no expected nongovernmental use, are held for use in the event of emergency, war, or natural disaster, and have an unpredictable useful life. Federal mission PP&E, which includes ships, submarines, aircraft, and combat vehicles, is a major part of DOD's total PP&E.

SFFAS No. 6 also provides information on how SFFAS No. 5's standard on liabilities should be applied to PP&E. Specifically, SFFAS No. 6 discusses how to recognize the liability for the clean up<sup>4</sup> of hazardous waste in PP&E. While this statement modifies SFFAS No. 5 with respect to the timing of

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<sup>3</sup>These requirements generally mirror those of the Statement of Financial Accounting Standard No. 5, Accounting for Contingencies (FASB No. 5), which was effective prior to the development of SFFAS No. 5.

<sup>4</sup>SFFAS No. 6 defines clean up as the removal, containment, and/or disposal of (1) hazardous waste from property or (2) material and/or property that consists of hazardous waste at permanent or temporary closure or shutdown of associated property, plant, and equipment.

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liability recognition for general PP&E, it has no effect on accounting for liabilities related to aircraft and other federal mission PP&E.

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## Results in Brief

DOD has not yet implemented the federal accounting standard that requires recognizing and reporting liabilities such as those associated with aircraft disposal, nor has it provided guidance to the military services. Aircraft disposal is an ongoing process and the cost can be reasonably estimated. Accordingly, these activities meet the criteria for a reportable liability. Information on the three major disposal processes—demilitarization, storage and maintenance, and hazardous materials removal and disposal—is available to develop cost estimates. The Congress has recognized the importance of accumulating and considering disposal cost information. In the National Defense Authorization Act for Fiscal Year 1995, the Congress required DOD to develop life-cycle environmental costs, including demilitarization and disposal costs, for major defense acquisition programs.

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## Objectives, Scope, and Methodology

We undertook this review to assist DOD in its efforts to meet the new federal accounting standard, SFFAS No. 5, and because of our responsibility to audit the federal government's consolidated financial statements beginning with fiscal year 1997. Our objectives were to determine (1) the status of DOD's efforts to implement the new federal accounting standard for disclosure of liabilities, such as aircraft disposal, and (2) whether an estimate of the minimum disposal liability for aircraft, including the removal and disposal of hazardous materials, could be made. The following was done to accomplish our objectives.

To assess the status of DOD's efforts to implement SFFAS No. 5, we reviewed DOD regulations and interviewed officials from the DOD Comptroller's office. To gain an understanding of the procedures and the financial and logistical management information systems that can be used to accumulate and report on aircraft disposal costs, we (1) examined the management and financial reporting for these programs used by the services, (2) reviewed applicable DOD and service instructions and regulations, and (3) interviewed DOD, Air Force, Army, and Navy officials.

To determine if the liability is reasonably estimable, we identified the financial and logistical management information systems and reporting mechanisms in place that contain information about the costs of aircraft disposal, including demilitarization and hazardous material disposal

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processes. We visited DOD's designated aircraft storage, reclamation, and disposal facility at the Aerospace Maintenance and Regeneration Center (AMARC) where data were readily available for addressing removal and disposal costs of older, out of service aircraft systems. To determine if the liability could be estimated for newer aircraft, we selected five aircraft for review. The five aircraft selected were the Air Force's F-16 and B-1B, the Navy's F-14 and F-18, and the Army's AH-64 Apache Helicopter. We chose these five aircraft because they represent the primary fighter or attack and bomber aircraft for each of the services, have the largest number in their class, and represent about 17 percent of the services' combined active and inactive inventory.

Because environmental costs are more variable and are likely to raise more complex estimation issues, we performed a more in-depth analysis of these costs. Using data initially obtained at AMARC, information in the DOD hazardous material disposal manual, and visits to maintenance depots, we prepared a list of hazardous materials associated with each of these aircraft. On a case-by-case basis, we then obtained depot level officials' concurrence that these items represent the primary hazardous material on each of these aircraft.

To compute the cost of removing hazardous materials from each aircraft, we reviewed documents that stated a standard or estimated removal time for each of the hazardous material items from the depot responsible for program depot maintenance on the applicable aircraft and AMARC's hourly labor rate. We did not independently verify the data obtained from the inventory and financial systems or the reported removal times.

We interviewed the services' environmental engineers to determine which hazardous materials require disposal. To determine the costs of disposing of these materials, we reviewed disposal and shipping records at AMARC and the various depots. For those materials that were not scheduled for disposal, we interviewed various depot personnel to determine their methods for reusing and recycling them. We also discussed disposal procedures with various offices of the Defense Reutilization and Marketing Service.

During our review, we contacted personnel and/or conducted work at various locations including the Army Aviation and Troop Command Headquarters, St. Louis, Missouri; Aerospace Maintenance and Regeneration Center, Davis-Monthan Air Force Base, Arizona; Air Logistics Centers at Hill Air Force Base, Utah, and Tinker Air Force Base,

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Oklahoma; Office of the Chief of Naval Operations; Naval Aviation Depots at Jacksonville, Florida and North Island, California; Corpus Christi Army Depot, Corpus Christi, Texas; offices of the Defense Reutilization and Marketing Service, Battle Creek, Michigan; and applicable headquarters offices in the Washington, D.C., area.

We conducted our review from July 1996 through June 1997 in accordance with generally accepted government auditing standards. We provided a draft of this report to the Department of Defense for review and comment. We received oral comments which have been incorporated as appropriate.

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## DOD Has Not Implemented SFFAS No. 5

Although SFFAS No. 5 is effective beginning with fiscal year 1997, as of the end of the fiscal year on September 30, 1997, DOD had not established a policy to implement this federal accounting standard. On September 30, 1997, the DOD Comptroller's office posted revisions to the electronic version of DOD's Financial Management Regulation to include SFFAS Nos. 1 through 4, but SFFAS No. 5 was not included. In addition, the DOD Comptroller, who is responsible for developing and issuing guidance on accounting standards, and the Under Secretary of Defense (Acquisition and Technology), who is responsible for the operational activities associated with aircraft disposal, have not provided implementation guidance to the services to assist them in estimating the disposal costs for aircraft. Service officials stated that they are reluctant to estimate a liability for their aircraft until they receive DOD-wide guidance. Unless prompt action to implement this standard is taken, it is unlikely that DOD's fiscal year 1997 financial statements will include an estimate of aircraft disposal costs as required.

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## Aircraft Disposal Liability Has Been Incurred

One of the key criteria cited in SFFAS No. 5 for a liability to be reported is that a future cost is probable—that is, the future outflow of resources is likely to occur. While the likelihood of a future outflow may be difficult to determine and an entity may have difficulty deciding whether to record a liability for certain events, DOD continually disposes of aircraft and has an amount for disposal costs in its annual budget. Thus, because it is known at the time of acquisition that costs will be incurred for the disposal of aircraft, the probability criterion for recording a liability is met. The Congress has also recognized that disposal costs will be incurred and has emphasized the importance of accumulating and considering this information. For example, the National Defense Authorization Act for Fiscal Year 1995 requires the Secretary of Defense to determine, as early in

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the acquisition process as feasible, the life-cycle costs for major defense acquisitions, including the materials to be used and methods of disposal. The life-cycle cost estimates are required before proceeding with the major acquisition.

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## Aircraft Disposal Process

All aircraft are eventually disposed of using the same basic processes. Any estimate of the disposal liability must take into account these processes and use them as the basis for determining costs. The disposal process starts with the decision to remove an aircraft from service, referred to as retirement (Army), decommissioning (Air Force), and striking (Navy) of military aircraft. Aircraft disposal consideration begins when the services prepare an updated force structure plan. The plan shows the projected requirements for each type of aircraft and includes new procurement and various attrition factors including crashes, programmed retirements, airframe stress tests, parts reclamation needs, and foreign military sales. Active aircraft not needed to meet the services' current and forecasted requirements are sent to AMARC, DOD's designated storage and disposal facility for aircraft for temporary or long-term storage and eventual disposal.

Aircraft arriving at AMARC are either placed in a flyable or temporary hold status, prepared for foreign military sales, salvaged for parts, or placed into long-term storage awaiting either eventual disposal or reuse determination. AMARC officials stated that, in general, planes that undergo the storage process are not recalled and are ultimately disposed of through sales or salvage. Once the military services have determined no further need exists for the aircraft, they are released for disposal. These aircraft and related parts are subjected to demilitarization processes to prevent further military use before they are transferred to the Defense Reutilization and Marketing Service (DRMS) for sale as scrap.<sup>5</sup> Demilitarization may take place at the air base, at AMARC, or at the local DRMS field office. Part of the demilitarization process involves removing all remaining hazardous materials from the aircraft.

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## Inventory of Aircraft

Aircraft acquired by the services are, in general, considered mission assets. The Air Force's Reliability and Maintainability Information System (REMIS), the Navy's Aircraft Inventory Reporting System (AIRS), the Army's Continuing Balance System-Expanded (CBS-X), and AMARC's Aircraft Status

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<sup>5</sup>The way the disposal process works is detailed in our report Federal Property Disposal: Information on DOD's Personal Property Disposal Process (GAO/NSIAD-97-155BR, July 8, 1997).

Directory identify the number of active and inactive aircraft and are used by the services to keep track of their aircraft inventories. As shown in table 1, DOD reported about 18,000 active aircraft as of September 30, 1996, the most recent data available.

**Table 1: DOD's Aircraft Inventory as of September 30, 1996**

Service/aircraft type	Active	Inactive
<b>Air Force</b>		
B-1B Bomber	95	0
B-52 Bomber	94	124
C-130 Transport	682	90
F-4 Fighter	0	903
F-15 Fighter	767	121
F-16 Fighter	1,541	354
F-111 Fighter/Bomber	18	285
KC-135 Tanker	492	67
Other	2,298	1,266
<b>Army</b>		
AH-64 Apache Helicopter	727	0
UH-60 Blackhawk Helicopter	1,351	0
UH-1 Huey Helicopter	2,011	211
AH-1 Cobra Helicopter	622	17
Other	2,191	28
<b>Navy</b>		
A-4 Fighter/Bomber	0	263
A-7 Attack Bomber	0	234
AV-8 Fighter	195	40
F-14 Fighter	311	90
F-18 Fighter	811	52
P-3 Surveillance	285	136
T-34 Trainer	319	26
CH-46 Helicopter	262	0
Other	2,634	975
<b>Total</b>	<b>17,706</b>	<b>5,282</b>

Source: AMARC, Army (CBS-X), Navy (AIRS), and Air Force (REMIS) data. We did not independently verify these data. See footnote 6 for information on reliability problems associated with DOD's accounting and logistical data.

The aircraft inventory serves as the basis for estimating the disposal liability although factors such as foreign military sales would have to be

considered in adjusting the number of aircraft. According to a March 1997 AMARC report, about 4 percent of AMARC's inventory at any given time is scheduled for foreign military sales. Aircraft lost during operations, however, are generally replaced to maintain the inventory at certain levels. As a result, operational losses may not reduce the total liability for aircraft disposal.

## Aircraft Disposal Liability Could Be Estimated

The second key criterion in SFFAS No. 5 for reporting of a liability is that an amount be reasonably estimable. Information is available to develop cost estimates for each of the major aircraft disposal processes described in the previous section—demilitarization, storage maintenance, and hazardous materials removal and disposal.<sup>6</sup> These processes account for most of the aircraft disposal costs.

Our review focused on five aircraft (the Air Force's F-16 and B-1B, the Navy's F-14 and F-18, and the Army's Apache Helicopter). Although data were available for each of the disposal processes, we performed a more detailed analysis of the costs associated with the removal and disposal of hazardous materials because these costs are more variable and likely to present more complex estimation issues. The information in the following sections indicates the types and sources of information available for DOD to develop an aircraft disposal cost estimate. As stated in SFFAS No. 5, this process may result in a range of potential aggregate costs, the lowest of which should be recorded unless an amount within the range which is most likely to occur is estimable.

## Estimated Demilitarization Costs

Demilitarization includes removing weapons and other designated items from the aircraft and then taking the aircraft off line. Other demilitarization actions include removing equipment that has, directly or indirectly, a significant military utility or capacity, such as sensitive radar equipment. A salvage or residual value for the aircraft was deducted from the demilitarization costs, since historically the remains of aircraft are sold as scrap at the time of disposal. As shown in table 2, demilitarization costs varied considerably for the three aircraft in our review for which this information was readily available from program offices. Although the B-1B and the Apache Helicopter are newer aircraft for which demilitarization

<sup>6</sup>We, as well as the DOD Inspector General and service auditors, have reported problems with the reliability of information in DOD's accounting and logistical systems. While there are limitations in the data, DOD is working to improve the systems which should over time, increase the accuracy of the information and improve the disposal liability estimates. See GAO report Defense Financial Management (GAO/HR-97-3, February 1997).

plans and costs have not yet been developed, disposal cost estimates could be based on cost experience for other aircraft with similar missions. AMARC officials stated that disposal tasks are generally similar among aircraft although the quantity and complexity of specific items may differ. For new weapons systems, including aircraft, the disposal costs, including demilitarization costs, are to be developed as part of the life-cycle costs required by the National Defense Authorization Act for Fiscal Year 1995.

**Table 2: Estimated Demilitarization Costs**

Type of aircraft	Demilitarization costs per aircraft	Residual recouped from sale	Net demilitarization costs
F-14	\$107,819	\$3,020	\$104,799
F-16	\$8,561	\$1,693	\$6,868
F-18	\$20,550	\$1,700	\$18,850

Source: GAO computation based on AMARC and maintenance depot data.

Jacksonville Naval Depot officials stated that the demilitarization cost for the F-14 was significantly more than the other two aircraft because of the complexity of the disposal work effort and the related costs.

**Estimated Cost to Maintain Aircraft in Storage**

Aircraft are stored at AMARC's long-term storage facility. All openings, cracks, and joints have to be sealed and delicate surfaces protected from the hot sun, wind, and sand. The preservation process is repeated every 4 to 5 years to ensure that each aircraft is adequately protected. According to AMARC's costing system, the maintenance costs of aircraft in long-term storage are about \$400 per aircraft per year. According to an AMARC official, aircraft, on average, are kept in long-term storage for 20 years. They also stated that, in general, planes that undergo the storage process are not recalled and are ultimately disposed of through sales or salvage. Such storage costs could result in a significant liability. For example, if the current active inventory of 18,000 aircraft were all maintained in storage for the average of 20 years and AMARC's estimated maintenance cost of \$400 per aircraft per year were used, the storage costs would be at least \$140 million.

**Removal and Disposal of Hazardous Materials**

All five aircraft types we reviewed contained hazardous materials that must be removed, and if necessary, disposed of when the aircraft are taken out of service. Some hazardous materials can be recycled and reused

multiple times, but the materials may ultimately have to be disposed of appropriately. For the five aircraft, sufficient information was available in DOD's and the services' financial and management information systems to estimate a cost for the removal of hazardous materials contained in these aircraft. Costs associated with disposal of these materials are currently insignificant, but will need to be considered based on assumptions of final disposal methods.

There are numerous sources available to DOD for identifying which materials used in aircraft are considered hazardous and have to be cleaned up before aircraft disposal. DOD Manual 4160.21-M, known as the Property Disposal Manual and 40 Code of Federal Regulations (C.F.R.) 261 identify which materials are considered hazardous. Environmental managers at the services' program offices and at the depots responsible for the aircraft, as well as maintenance personnel, are knowledgeable about the hazardous materials unique to specific aircraft. In addition, environmental managers at various Defense Reutilization and Marketing Offices (DRMOs) are familiar with the hazardous materials on aircraft. The aircraft we reviewed contain various hazardous materials, as shown in table 3. See appendix I for definitions of these materials.

**Table 3: Hazardous Materials on the Five Aircraft**

Hazardous materials	Aircraft				
	F-16	B-1B	F-14	F-18	Apache
Fire suppressant	√	√	√	√	√
Hydrazine	√				
Batteries	√	√	√	√	√
Petroleum, oil, & lubricants (POL) <sup>a</sup>	√	√	√	√	√
Composites <sup>b</sup>	√	√	√	√	
Magnesium thorium	√				
Pyrotechnics	√	√	√	√	√
Coolants	√	√	√	√	
Fuel cells					√
Tubing removal				√	
Liquid oxygen			√		

<sup>a</sup>POL products are not hazardous materials under Federal law, but a number of states including Alaska, California, and Florida, consider POL products hazardous materials.

<sup>b</sup>While the Air Force considers composites, such as carbon fiber wings, to be hazardous materials, the Navy does not if the material's structural integrity is not compromised. We included composites because DRMS, which is responsible for their removal and disposal, considers composites to be hazardous material.

Source: AMARC and maintenance depot logistical systems.

Some hazardous materials in aircraft are not shown in the above table. For example, there are many items on the aircraft, such as cadmium-plated bolts and other small items, that are too numerous to separately remove and account for during the disposal process. Because the cadmium plated items are sold for scrap and the specific items and quantities are not separately identified, they were not included in the sample aircraft analysis. However, DOD and the services would have to consider the significance of such items in the aggregate on a servicewide or DOD-wide basis.

Information on the removal costs of hazardous materials in older aircraft is generally available at AMARC and is based on its experience in aircraft disposal. However, AMARC officials said they did not yet have significant experience in dismantling and disposing of the five aircraft in our review. Therefore, the officials suggested that a reasonable estimation approach would be to use removal times that are reported by the cognizant depots that perform maintenance on these systems. The removal times for each hazardous material can then be multiplied by AMARC's hourly labor rate. Using this estimation method, table 4 shows the estimated cost of removing hazardous materials from the five aircraft.

**Table 4: Estimated Cost for Removing Hazardous Material**

<b>Aircraft type</b>	<b>Removal cost per aircraft</b>
F-16	\$ 14,788
B-1B	\$123,084
F-14	\$ 14,725
F-18	\$ 10,753
Apache Helicopter	\$ 313

Source: GAO computation based on AMARC hourly labor rate and the maintenance depot's removal times.

The wide variance in hazardous material removal costs can be accounted for by differences in the size and complexity of the five aircraft. For example, the B-1B weighs about 190,000 pounds compared to the smaller F-16 which weighs about 18,000 pounds. Moreover, the B-1B has over 1,000 items associated with pyrotechnics that cost an estimated \$92,000 to remove. The cost to remove pyrotechnics from the F-16 is only about \$1,700 per aircraft. Similarly, it takes a significant number of staff hours, estimated at about \$11,000, to remove the fuel from the B-1B tanks and fuel lines and to take the protective measures for the fuel system. For the

F-16, the same procedures take just a few hours at an estimated cost of about \$200. The fuel is removed from the aircraft because it can be reused.

The Apache Helicopter hazardous material removal cost estimate is much less than for the other aircraft because it contains considerably less hazardous material. For example, it costs an estimated \$68 per aircraft to remove pyrotechnics from the Apache compared to about \$1,700 to remove pyrotechnics from an F-16. The F-16 cost estimate includes removing one or two ejection seats and canopies and related detonating cord devices, compared to removing only emergency escape explosive bolts and related material for the Apache's crew doors.

For some mission assets, such as nuclear submarines, the actual hazardous material disposal costs are significant. However, unlike the removal costs, hazardous material disposal costs for the five aircraft in our review appear not to be significant because these materials are often reutilized, recycled, consumed (as is the case for fuel), or sold. Also, DOD does not track disposal costs by specific aircraft system since hazardous materials are disposed of in bulk. For example, AMARC transfers its nonrecyclable fuel to Davis-Monthan Air Force Base, which then disposes of it along with the base's waste fuel through its bulk disposal contract. For the first 6 months of fiscal year 1996, AMARC paid Davis-Monthan less than \$54,000 to dispose of all of its hazardous material. However, although recycling and reuse accounts for much of the hazardous material disposal costs, currently the possibility that reuse or recycling needs and capacity will change in the future must be considered in estimating the ultimate disposal costs for hazardous materials.

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## Reporting Total Disposal Costs by Future Time Periods Would Be Useful

DOD officials have pointed out that the total disposal cost estimate for aircraft will result in a significant liability—much of which would not require outlays in the current year. Thus, one way to provide a proper context for this reported liability and make it more meaningful to decisionmakers would be to, in a footnote to the financial statements, provide a breakdown of the liability based on the approximate time periods the aircraft are expected to be taken out of service. Table 5 is a simplified illustration of how the aircraft disposal liability could be reported by time period. For the purposes of this illustration, the following assumptions were used: (1) all aircraft had the same disposal costs, (2) 50 percent of the aircraft were currently awaiting disposal and the remaining aircraft were to be disposed of over the next 10 years, and (3) the total estimated liability was \$500.

**Table 5: Example of How the Liability Could Be Disclosed by Time Period**

Liability associated with aircraft currently awaiting disposal	Liability associated with aircraft to be deactivated in fiscal years						Total
	1998	1999	2000	2001	2002	Thereafter	
\$250	\$25	\$25	\$25	\$25	\$25	\$125	<b>\$500</b>

This information could provide an important context for congressional and other budget decisionmakers on the total liability by showing the potential annual impact of the actions that have already occurred or are expected to occur during various budget periods including those outside the annually submitted Future Years Defense Program. Further, if the time periods used to present these data are consistent with budget justification documents, such as DOD's Future Years Defense Program, this type of disclosure would provide a link between budgetary and accounting information, one of the key objectives of the CFO Act.

## Conclusions

As of September 30, 1997, DOD had not incorporated SFFAS No. 5 in its Financial Management Regulation. In addition, the DOD Comptroller and the Under Secretary of Defense (Acquisition and Technology) had not issued implementation guidance to the services to assist them in estimating aircraft disposal costs. Such costs are both probable and estimable and therefore meet the criteria stated in SFFAS No. 5 for reportable liabilities. DOD and the military services have information available to develop cost estimates on each of the major aircraft disposal processes. Development of the needed policy and implementing guidance is necessary to help ensure that an estimate of aircraft disposal costs is recorded in DOD's fiscal year 1997 financial statements as required. Moreover, life-cycle cost estimates that include disposal costs will provide important information to the Congress and other decisionmakers on the true costs of aircraft as well as other weapon systems.

## Recommendations

We recommend that you ensure that

- the DOD Comptroller incorporate SFFAS No. 5 in DOD's Financial Management Regulation,
- the DOD Comptroller and the Under Secretary of Defense (Acquisition and Technology) promptly issue joint implementing guidance for the services on the SFFAS No. 5 requirements for recognition of a liability for aircraft disposal costs, and

- the DOD Comptroller include the estimated aircraft disposal liability in DOD's fiscal year 1997 financial statements.

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## Agency Comments and Our Evaluation

In commenting on a draft of this report, Department of Defense officials concurred with our recommendations that SFFAS No. 5 be incorporated in DOD's Financial Management Regulation and that joint implementing guidance be issued promptly on the SFFAS No. 5 requirements for recognition of a liability for aircraft disposal costs. In addition, DOD stated that current disposal cost estimates can be reasonably determined for aircraft that have been in the active inventory for some time. However, DOD stated that it would be necessary to delay the reporting of the aircraft disposal liability until fiscal year 1998 because the development and coordination of procedures and reporting guidance would take time to complete. They also stated that the cleanup cost provisions in SFFAS No. 6 must be considered.

SFFAS No. 5 was issued almost 2 years ago, to allow agencies ample time to develop implementing policies and procedures prior to its fiscal year 1997 effective date. As stated in the report, information is available on all of the major aircraft disposal processes to develop a reasonable estimate of these costs. Such an estimate need not be precise—SFFAS No. 5 permits the reporting of a range. Also, as noted in this report, the cleanup cost provisions of SFFAS No. 6 do not affect the reporting of the aircraft disposal liability. Accordingly, we believe that DOD, with a concentrated effort, can develop an estimate of aircraft disposal costs for its fiscal year 1997 financial statements.

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This report contains recommendations to you. The head of a federal agency is required by 31 U.S.C. 720 to submit a written statement on actions taken on these recommendations. You should submit your statement to the Senate Committee on Governmental Affairs and the House Committee on Government Reform and Oversight within 60 days of the date of this report. A written statement also must be sent to the House and Senate Committees on Appropriations with the agency's first request for appropriations made over 60 days after the date of this report.

We are sending copies of this report to the Chairmen and Ranking Minority Members of the House and Senate Committees on Appropriations, the House and Senate Committees on the Budget, the Senate Committee on Armed Services, the House Committee on National

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Security, the Senate Committee on Governmental Affairs, the House Committee on Government Reform and Oversight and its Subcommittee on Government Management, Information, and Technology, and the Director of the Office of Management and Budget. We are also sending copies to the Acting Under Secretary of Defense (Comptroller), the Air Force Assistant Secretary for Financial Management and Comptroller, the Army Assistant Secretary for Financial Management and Comptroller, the Navy Assistant Secretary for Financial Management and Comptroller, the Under Secretary of Defense (Acquisition and Technology), the Deputy Under Secretary of Defense for Environmental Security, and the Acting Director, Defense Finance and Accounting Service. Copies will be made available to others upon request.

Please contact me at (202) 512-9095 if you have any questions concerning this report. Major contributors to this report are listed in appendix II.

Sincerely yours,



Lisa G. Jacobson  
Director, Defense Audits

# Hazardous Materials in Aircraft

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Hazardous material - Any waste that, because of its quantity, concentration or toxicity, corrosiveness, mutagenicity or flammability, or physical, chemical, or infectious characteristics may (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Some of the hazardous materials contained in the aircraft we reviewed are discussed below.

Batteries - Batteries consist of the following types: lead-acid, lithium-sulfur dioxide, magnesium, silver-bearing, mercury, and nickel cadmium. Unless batteries are to be recycled or reused, they must be turned in as hazardous material or hazardous waste.

Composites - Carbon composite fiber material made of long carbon fibers mixed with bonding and hardening agents, such as epoxy resins. The health hazards associated with composite fibers appear to be similar to the effects of fiberglass, including inhalation of the fibers, which can cause bronchial irritation.

Coolant - A fluid that circulates through a machine or over some of its parts in order to draw off heat. This includes chemical substances used in aircraft for cooling radar and related equipment. Certain forms of this material may be harmful if skin contact occurs.

Fire suppressant - Substances used to keep materials on aircraft, such as fuel, from igniting and burning. Halon, one such suppressant, is an ozone-depleting substance that is reclaimed or recovered.

Fuel cells - Fuel cells, which hold fuel, are not in themselves considered hazardous material, but because they are contaminated with fuel they can become hazardous. Aviation fuel contains benzene and toluene, both hazardous materials.

Hydrazine - Supplemental liquid propellant, found only on the F-16, used to power an emergency power unit in the event of main engine failure. Hydrazine is an extremely dangerous material if inhaled and has to be specially handled during transfer by teams dressed in protective gear.

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**Appendix I**  
**Hazardous Materials in Aircraft**

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Magnesium Thorium - Alloy of thorium and magnesium used to produce a strong, lightweight aircraft component. Thorium presents an internal and external radiation hazard.

Petroleum, oil, and lubricants - Includes jet fuel, hydraulic fluid, antifreeze products, and other lubricants found on aircraft. In some states, these products are not considered hazardous.

Pyrotechnics - Explosive devices used to jettison the canopy and activate the pilot's ejection seat. On helicopters, these devices are used to shear off hinge pins on the fuselage doors to enable crew to extricate themselves in the event of a crash-landing.

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