Audit Report

OFFICE OF THE INSPECTOR GENERAL

CONTRACTOR RECOMMENDATIONS FOR SPARES PROVISIONING OF THE F-16 C/D AIRCRAFT

Report No. 92-016

December 2, 1991

Department of Defense

The following acronyms are used in this report:

AFLC.....Air Force Logistics Command
AFSC.....Air Force Systems Command
AIFF.....Advanced Identification Friend or Foe
ALC.....Air Logistics Center
ASD (P&L).....Assistant Secretary of Defense (Production and Logistics)
GAO.....General Accounting Office
ORLA.....Optimum Repair Level Analysis
PPG.....Provisioning Policy Group
RILSA.....Resident Integrated Logistics Support Activity

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ARLINGTON, VIRGINIA 22202-2884

December 2, 1991

MEMORANDUM FOR ASSISTANT SECRETARY OF THE AIR FORCE (FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT: Report on Contractor Recommendations for Spares Provisioning of the F-16 C/D Aircraft (Report No. 92-016)

We are providing this final report for your review and comments because no comments were received to the draft report issued on August 15, 1991. The audit was requested by the Office of the Assistant Secretary of Defense (Production and Logistics), Provisioning Policy Group. The audit evaluated the timeliness, reliability, and use of contractor forecasting factors in spares provisioning of the F-16 C/D aircraft.

DoD Directive 7650.3 requires that all audit recommendations be resolved promptly. Therefore, the Assistant Secretary of the Air Force (Financial Management and Comptroller) is requested to provide comments on the report by February 3, 1992.

As required by DoD Directive 7650.3, your comments should indicate either concurrence or nonconcurrence with the findings and each recommendation. If you concur, describe the corrective actions taken or planned, the completion dates for actions taken, and the estimated dates for completion of planned actions. If you nonconcur, please state your specific reasons. If appropriate, you may propose alternative methods for accomplishing desired improvements.

If you nonconcur with the estimated monetary benefits associated with the corrective actions, you must state the amount you concur with and the basis for your nonconcurrence. Recommendations and potential monetary benefits are subject to resolution in accordance with DoD Directive 7650.3 in the event of nonconcurrence or failure to comment. We also ask that your comments indicate concurrence or nonconcurrence with the internal control weaknesses highlighted in Part I.

The courtesies extended to the staff during the audit are appreciated. If you have any questions on this audit, please contact Mr. James L. Koloshey at (703) 614-6225 (DSN 224-6225) or Mr. Charles E. Sanders at (703) 614-6219 (DSN 224-6219). The planned distribution of this report is listed in Appendix E.

Edward R. Jones
Deputy Assistant Inspector General
for Auditing

Enclosure

cc:
Secretary of the Air Force
Assistant Secretary of Defense (Production and Logistics)

Office of the Inspector General, DoD

AUDIT REPORT NO. 92-016 December 2, 1991
(Project No. 0LA-0025.02)

CONTRACTOR RECOMMENDATIONS FOR SPARES PROVISIONING OF THE F-16 C/D AIRCRAFT

EXECUTIVE SUMMARY

Introduction. Provisioning is the management process of determining and acquiring support items necessary to initially operate and maintain a weapon system such as an aircraft. For provisioning of spares, the Air Force Logistics Command (AFLC) required responsible contractors to recommend the items needed for initial support of a given end item and to determine whether items were already stocked by DoD or were new candidates for procurement. Contractors were also required to provide forecasting factors and to use these factors in AFLC models to compute spares requirements. Provisioning of spares for the Air Force's F-16 C/D aircraft (excluding engines) totaled about $174 million for FY 1982 through FY 1990.

Objectives. The primary objective of the audit was to determine if the Air Force was receiving adequate and timely data on provisioning of spares from contractors to serve as a sound basis for initial purchase of parts for new weapon systems. We also determined the effectiveness of internal control procedures in place to review and evaluate the quality of contractor estimates and forecasting factors before approving procurement of the initial quantities of spares. To accomplish the audit within a reasonable period, the objectives were narrowed to a specific weapon system--the F-16 C/D aircraft.

Audit Results. Contractor developed forecasting factors were submitted promptly. However, AFLC did not implement DoD policy that required minimizing investment in spares provisioning.

o Contractor developed maintenance factors were not used to determine requirements for spares. Consequently, AFLC over-procured ($43 million) for 23 line items of spares (Finding A).

o AFLC did not promptly cancel a procurement for spares when a decision was made to not use the Advanced Identification Friend or Foe system on the F-16 C/D aircraft. As a result, the Command could incur a contract termination cost of $6 million (Finding B).

Internal Controls. Internal controls were not in place to ensure that forecasting factors solicited from contractors were evaluated in a systematic manner and that adjustments to or nonuse of the contractor's factors were justified. Also, procedures did not require an assessment of forecasting factors for provisioning when significant design improvements occurred. Further, AFLC procedures did not provide for post-evaluations of provisioning to improve the accuracy of maintenance factors used in determining procurement and future provisioning requirements (Finding A). Controls were not present to require prompt assessment of program changes on provisioning requirements (Finding B).

These deficiencies were considered material internal control weaknesses. The Internal Controls section in Part I of this report contains the specific internal controls tested and provides the necessary improvements needed to correct the deficiencies.

Potential Monetary and Other Benefits. A cost avoidance of up to $2.4 million could be realized if 60 global positioning system antennas procured in excess of requirements for the F-16 C/D aircraft were used for the planned retrofit of F-16 A/B aircraft. A potential cost avoidance of up to $7.9 million could also be realized by canceling procurements initiated since FY 1989 for six line items of aircraft landing gear spares. The procurements of the landing gear spares were based on forecasted maintenance factors that actual operational experience has proven to be overestimated. Recommended improvements in the provisioning process should result in more accurate procurements of spares in future provisioning of new systems. The potential benefits of audit are summarized in Appendix C.

Summary of Recommendations. We recommended that procedures be established to provide for minimizing investment in procurements for provisioning, for effectively using contractor forecasting factors for provisioning, and for assessing program changes on procurements for provisioned items.

Management Comments. Comments were not received from the Air Force as of November 22, 1991. We request Air Force's comments by February 3, 1992.

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This report was prepared by the Logistics Support Directorate, Office of the Assistant Inspector General for Auditing, DoD. Copies of the report can be obtained from the Information Officer, Audit Planning and Technical Support Directorate, (703) 693-0340 (DSN 223-0340).

PART I - INTRODUCTION

Background

Provisioning is the management process of determining and acquiring the range and quantity of support items necessary to initially operate and maintain an end item such as an aircraft, a tank, or a ship for an initial period of service. Primary Defense guidance for provisioning is contained in DoD Directive 4140.40, "Provisioning of End Items of Material," June 28, 1983, (to be combined with DoD Directive 4140.1, "Inventory Management Policies," October 12, 1956) and DoD Instruction 4140.42, "Determination of Requirements for Spares and Repair Parts Through the Demand Development Period," July 28, 1987. Air Force guidance for provisioning is contained in Air Force Logistics Command (AFLC) Regulation 57-27, "Initial Requirements Determination," May 18, 1987.

The initial period of support for a new end item (weapon system) is usually the first 2 years after the initial operational capability has been established for the system. At the beginning of the support period, spares provisioning requirements are based on contractor identifications of items to be stocked and forecasts of maintenance and other usage factors. Follow-on provisioning requirements should initially be based on a combination of forecasted and actual usage. By the end of the support period, follow-on provisioning requirements should be based solely on actual demands.

The audit was requested by the Assistant Secretary of Defense (Production and Logistics) [ASD (P&L)], Provisioning Policy Group (PPG) to assist the PPG in its continuing review of the provisioning process within DoD. To evaluate the reliability of contractor recommendations, we, along with the PPG, selected three aircraft systems: the Army Apache Helicopter (AH-64), the Air Force Fighting Falcon (F-16), and the Navy Hornet (F/A-18). The PPG will consider our audit results in formulating new provisioning policy for DoD. This report, the second in a series of three, is on spares provisioning for the F-16 C/D aircraft. Initial and follow-on provisioning of spare and repair parts for the F-16 C/D aircraft (excluding engines) totaled about $174 million from FY 1982 through FY 1990. The primary mission of the F-16 C/D aircraft is ground attack and beyond-visual-range intercept operations by day and night, and in all weather conditions. The Air Force plans to procure 1,404 F-16 C/D aircraft by 1993, of which 1,047 had been delivered as of June 30, 1991.

Objectives

Our overall audit objective was to determine if the Air Force was receiving adequate and timely data on provisioning of spares from contractors to serve as a sound basis for initial purchase of spares for new weapon systems. We also determined if the Air Force had effective internal control procedures in place to review and evaluate the quality of contractor estimates and forecasting data before approving procurement of the initial quantities. To accomplish the audit within a reasonable period, the objectives were narrowed to a specific weapon system, the F-16 C/D aircraft.

Scope

To accomplish the audit objectives, we evaluated AFLC policies and regulations regarding the solicitation, review, verification, and use of contractor recommendations for initial provisioning of spares. (We limited our review to spares, which comprise the majority of provisioned items). To evaluate the adequacy of contractor recommendations for provisioning of spares, we selected for review 23 line items of F-16 C/D aircraft spares procured and managed by the Ogden and Sacramento Air Logistics Centers (ALC) from FY 1982 through FY 1990. Each of the line items were high value items with procurements in excess of $400,000. The spares were unique to the F-16 C/D aircraft and were initially procured from General Dynamics Corporation, the prime contractor.

For each line item procurement, we reviewed contractor maintenance factors and other forecasting factors shown on Air Force's data worksheets to determine the extent that contractor maintenance factors were used in determining provisioning requirements. We reviewed the basis of adjustments made to contractor maintenance factors. Also, supply management studies on file were reviewed to determine the accuracy of contractor provided maintenance factors.

This economy and efficiency audit was made from August 1990 through April 1991 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD, and accordingly, included such tests of internal controls as were considered necessary. Activities visited or contacted during the audit are listed in Appendix D.

Internal Controls

We evaluated AFLC policies and procedures to determine if internal controls were followed to ensure that contractor

forecasting factors for spares provisioning were reviewed in a systematic manner, adjustments to and nonuse of contractor factors were justified, and AFLC procedures provided for effective use of contractor factors to minimize investment in provisioning of new weapon systems, as required by DoD policy. We also determined if AFLC procedures provided for post-evaluations of provisioning so that reliability of contractor recommendations could be evaluated. Further, we evaluated procedures to determine if provisioning orders were promptly adjusted for program changes. None of these controls were in place. All recommendations in this report, except Recommendations A.3. and A.4., will assist in correcting these weaknesses. Correction of the internal control weaknesses will not provide readily quantifiable monetary benefits. However, improvements in the provisioning process should result in more accurate procurements of spares in future provisioning of new systems. A copy of the final report will be provided to the senior official responsible for internal controls within the Air Force.

Prior Audits and Other Reviews

Prior audits have not focused on the quality of estimates and forecasting data provided by contractors for initial provisioning of Air Force end items; however, they have indicated that the Air Force could do a better job of determining its spares provisioning requirements. For the F-16 C/D aircraft, the Air Force Audit Agency Report No. 5126114A, "Provisioning Requirements Computations," June 3, 1986, stated that initial spares requirements, totaling about $73 million, were computed on inconsistent provisioning methodologies and inaccurate provisioning factors. The Air Force Audit Agency recommended that several items be grouped to optimize requirements and that reliability improvements be projected in initial spares computations. Air Force Logistics Command Regulation 57-27 implemented the Agency's recommendations.

The General Accounting Office (GAO) Report No. GAO/NSIAD 90-178 (OSD Case No. 8372), "Strategic Missiles: Logistics Support for Advanced Cruise Missile Based on Outdated Plans," September 30, 1990, disclosed that procurement requirements for provisioning the Advanced Cruise Missile System Program were not appropriately adjusted to reflect changes in the system delivery schedule. The GAO recommended that the Air Force base its logistics support on current data, by developing procedures with guidance for assessing what changes should be made and when such changes should occur. The Air Force concurred with the recommendation and planned to revise its regulations after DoD Directives 5000.1 and 5000.2 were changed.

In March 1989, the Under Secretary of Defense for Acquisition directed the ASD (P&L) to perform a comprehensive review of the provisioning process. The results of the review were published in the "Provisioning and Process Review Study Report," May 1990. The report concluded that the Services needed a more efficient provisioning process and recommended a plan to improve the process. The report did not specifically address the reliability of contractor recommendations for provisioning of spares and other secondary items.

PART II - FINDINGS AND RECOMMENDATIONS

A. MINIMIZING INVESTMENT IN SPARES PROVISIONING

The Air Force Logistics Command did not use contractor developed maintenance factors to determine spares requirements for the F-16 C/D aircraft. This occurred because AFLC did not implement DoD policy that required minimizing investment in provisioning for new weapon systems. Additionally, AFLC did not adequately review contractor maintenance factors or document reasons for not using the factors and did not reevaluate the factors when design changes occurred. Further, the Air Force provisioning model did not accurately compute provisioning quantities for insurance items. As a result, AFLC over-procured $43 million of spares for the 23 items reviewed, in provisioning for the F-16 C/D aircraft, and initiated imprudent procurements for six landing gear items, valued at $7.9 million, after the provisioning period.

DISCUSSION OF DETAILS

Background

AFLC Regulation 57-27 provides overall guidance for determining initial spares requirements to support weapon systems on production contracts. The Regulation states that "Spares and repair parts must be acquired to support minimum supply times and to get the most initial support with the available resources."

The AFLC solicited contractor recommendations for the F-16 C/D aircraft. The contractor provided AFLC provisioning recommendations and various factors, including the maintenance factor, to forecast requirements for use in determining procurement quantities. The maintenance factor measures the frequency of repair per 100 flying hours, and is used to estimate demands on the Air Force supply system. The contractor's maintenance factors were estimates based on engineering evaluations and studies of actual Air Force information on repairs and usage of items. The results of evaluating repair information were included in the contractor's Optimum Repair Level Analysis (ORLA) studies and were provided to the Resident Integrated Logistics Support Activity (RILSA). The RILSA, which acts as AFLC's on-site logistics representative for provisioning matters, initially reviewed and approved these various factors and forwarded the factors to the Ogden ALC or the Sacramento ALC, as appropriate, for final approval.

Contractor Maintenance Factors

Our review of provisioning procurements for 23 line items of F-16 C/D aircraft spares, totaling $92.7 million, showed that AFLC used contractor developed maintenance factors in only one procurement computation. Procurements for the other 22 line items were based on AFLC maintenance factors. However, the contractor's maintenance factors have proven to be more accurate than AFLC's maintenance factors for 20 (91 percent) of 22 line items where the contractor's factors were not used. For 18 of these 20 line items, use of the contractor's maintenance factors in determining spares requirements would have resulted in fewer items being bought than the use of the Air Force's maintenance factors. Further, the contractor's estimates were closer than the Air Force's to the actual demands per 100 flying hours. For the remaining two line items, the contractor's maintenance factors were almost identical to actual demands. Appendix A lists the items reviewed and provides a comparison of contractor and AFLC maintenance factors with actual rates (converted to flying hours) for each item.

Provisioning Policy

Policy in AFLC Regulation 57-27 requiring minimum supply times and the most initial support with the available resources is contrary to DoD policy. DoD Directive 4140.40 requires that provisioning support be provided at minimal cost. The intent of the DoD policy is to limit procurement of spares and other support items, rather than maximize procurement of support items for the provisioning period based on available funding.

During 1986, Ogden ALC directed procurements of provisioning items using maintenance factors higher than those recommended by the contractor. For example, one line item, a heads up display, had a contractor maintenance factor of .204 that was based on contractor evaluations and included in the contractor's ORLA study. This maintenance factor equated to a demand occurring anytime from 1 to 490 flying hours (100 flying hours divided by .204 equals 490 flying hours). Ogden ALC used a factor of .787, which equated to a demand every 127 flying hours, instead of 490 hours, a fourfold increase. Ogden ALC did not retain documentation to show justification for not using the contractor's lower maintenance factor. The actual maintenance factor for the display was .211 (474 flying hours). Consequently, about 128 of the displays were over-procured. At an average unit cost of $96,000, the estimated amount of over-procurement for the display was $12.3 million. We estimated that AFLC could have avoided about $43 million of the $92.7 million invested in provisioning procurements for the 23 line items reviewed by using contractor instead of Air Force maintenance

factors. This would not have jeopardized the mission capability rate for the F-16 C/D aircraft. The $43 million in over-procurements, by sample item, is shown in Appendix B.

Evaluation of Contractor Maintenance Factors

AFLC Regulation 57-27 did not provide for systematic review of contractor's maintenance factors to ensure the accuracy and currency of computed procurement quantities. In addition, provisions for retention of documentation to justify revision of or nonuse of contractor's factors were inadequate. Also, the Regulation did not provide for reassessment of maintenance factors for items with design changes.

Review procedures. The scope and depth of RILSA and Ogden ALC and Sacramento ALC reviews of contractor's maintenance factors were not defined in AFLC Regulation 57-27. None of the activities verified the accuracy of maintenance and other requirement factors used to compute procurement quantities. As a result, procurement of 62 global positioning system antennas was based on an erroneous maintenance factor of .100, which equated to a demand every 1,000 flying hours. The contractor's factor was .016, which equated to a demand every 6,250 flying hours. At this rate, only one or two antennas should have been procured.

Documenting changes. AFLC Regulation 57-27 required that equipment specialists retain supporting documentation to justify significant revision to contractor estimates of maintenance factors. Although the Regulation did specify that a 100-percent change was significant, it did not specify the period of retention for documented changes. The basis for not using contractor maintenance factors, by RILSA, Ogden ALC, or Sacramento ALC was not retained for 16 of the 23 line items reviewed. For 12 of the 16 line items, changes in maintenance factors ranged from 50 to over 300 percent. We consider these changes to be significant based on the total procurement costs for each line item.

Design improvements. AFLC did not require the contractor to perform new ORLA's and submit the results to the RILSA and Ogden ALC for review and approval when design changes were made to provisioned items. Additionally, AFLC did not reevaluate maintenance factors when design improvements occurred. For example, AFLC procured 140 brake assemblies, valued at $1.4 million, for the Block 40 procurement of the F-16 C/D aircraft in FY 1987. The procurement was based on an actual maintenance factor of .388 experienced by aircraft procured before Block 40. This maintenance factor equated to a demand every 258 flying hours. However, contractor information available at the time of the procurement indicated that a much

lower maintenance factor would have been appropriate because the Block 40 brake is designed to require less maintenance. Service life tests on the brake completed in February 1987, before the procurement, indicated a maintenance factor of .076, a demand every 1,316 flying hours. The results of the service life tests were not considered in determining procurement requirements because neither the RILSA nor Ogden ALC were aware of the tests. The actual maintenance factor for the year ended December 1990 was .038, which equated to a demand every 2,631 flying hours. Maintenance factors should be reviewed and updated when modification of an item improves the item's performance.

Insurance Items

The AFLC was not properly procuring spare items that were categorized as insurance items. Provisioning of insurance items are to be kept at a minimum because the items are not expected to fail. Quantities of insurance items to be procured should be based on item essentiality. In other words, nonavailability of the item would create unacceptable weapon system downtime, prevent mission accomplishment, or cause a safety hazard. AFLC Regulation 57-27 provides that one asset for storage at an ALC depot should be enough during the provisioning period for most insurance items. The Regulation also states that procurement of insurance items with a unit cost over $10,000 should be deferred to the end of the production run for the weapon system or until a demand occurs.

Of the 23 line items of spares reviewed, AFLC procured 6 items with a unit value in excess of $10,000 that, according to contractor maintenance factors, were not expected to fail during the provisioning period. For four of the six items, Air Force factors also indicated that the items were not expected to fail during the provisioning period. These items were the optical modules, shock strut assemblies for the nose and main landing gears, global positioning system antenna, and the circuit card assembly. However, from 17 to 137 of these items were procured because the Air Force provisioning model did not properly compute quantities for items not expected to fail during the provisioning period.

For one of the over-procured insurance items, the global positioning system antenna, a potential cost avoidance of up to $2.4 million could be realized. In 1987, the Ogden ALC ordered 62 antennas at a unit cost of $31,031 and a total cost of $1,923,863. As of March 8, 1991, 60 antennas were in a serviceable condition. The other two antennas were in an unserviceable condition because they were accidentally painted.

If the 60 serviceable antennas were used in retrofit of F-16 A/B aircraft, AFLC could avoid the procurement of additional antennas projected to cost $2.4 million.

Follow-on Procurements

Six landing gear items (sample items 13, 14, and 16 and 3 additional items: National Stock Numbers 1630-01-290-6821, 1630-01-291-2497, and 1630-01-291-2498WF), valued at $7.9 million, were over-procured for follow-on peacetime and war reserve requirements, because appropriate maintenance factors were not used. For example, AFLC ordered 344 brakes, valued at $3.8 million. Follow-on procurements of spares for peacetime and wartime reserve requirements were based on outdated maintenance factors of .388 even though there was evidence that a lower factor should have been used. At the time of the 1987 procurement of 140 brakes, service life tests indicated that the maintenance factor was .076 (1,316 flying hours). However, the Air Force maintenance factors used for the 1987 and 1990 procurements were .388 (258 flying hours) and .421 (238 flying hours), respectively. The actual maintenance factor for the brakes was .038 (2,631 flying hours) for the 12-month period ended December 1990. We believe that procurement requirements for the six landing gear items should be recomputed using the actual maintenance factors, and that procurement orders should be adjusted accordingly.

Conclusion

Improvements are needed in AFLC procedures to ensure that contractor provided maintenance factors are effectively used in the procurement of spares, and that minimal investment is made in provisioning new weapon systems. Post-evaluation of provisioning is also needed to preclude repetition of uneconomical and inefficient management decisions in determining procurement requirements. Documentation must be maintained for receipt, evaluation, and disposition of contractor recommendations, computations of procurement quantities, and other related management decisions for at least high-dollar items. Savings from post-evaluations of previous provisioning actions should more than offset the additional costs of retaining pertinent provisioning documentation. Furthermore, prompt action is warranted regarding the use of excess global positioning system antennas in retrofit of F-16 A/B aircraft and the evaluation of outstanding procurement orders for the six landing gear items.

RECOMMENDATIONS FOR CORRECTIVE ACTIONS

We recommend that the Commander, Air Force Logistics Command:

1. Revise AFLC Regulation 57-27 to provide that:

a. Provisioning support be provided at minimal cost as required by DoD Directive 4140.40.

b. Contractor forecasting factors be verified and used in determining procurement requirements unless alternate factors can be justified in writing.

c. Forecasting factors be reevaluated when design improvements occur. The contractor should be tasked to provide new factors, when warranted, with supporting documentation to AFLC for its review.

d. Documentation be retained showing how contractor and Air Force factors were evaluated and used in the development of spares provisioning requirements for at least high dollar items.

2. Modify the Air Force provisioning model to calculate procurement requirements for insurance items according to AFLC Regulation 57-27.

3. Use serviceable global positioning system antennas not required for F-16 C/D aircraft in retrofit of F-16 A/B aircraft.

4. Cancel or revise outstanding procurement orders, as appropriate, for the six landing gear items.

MANAGEMENT COMMENTS AND AUDIT RESPONSE

As of November 22, 1991, the Air Force had not provided comments to the draft report. We request that the Assistant Secretary of the Air Force (Financial Management and Comptroller) provide comments indicating concurrence or nonconcurrence with the finding, recommendations, estimated monetary benefits, and internal control weakneses as required by DoD Directive 7650.3.

B. PROVISIONING ADJUSTMENTS FOR PROGRAM CHANGES

The Air Force Logistics Command did not promptly cancel its June 1986 procurement of 93 spares, valued at $21.7 million, for the Advanced Identification Friend or Foe (AIFF) system when a decision was made by the Air Force Systems Command (AFSC) to not use the system on the F-16 C/D aircraft. This occurred because AFLC did not have procedures to assess the effect of program changes on provisioning procurements. The Air Force could have avoided most of the estimated $6 million in termination costs for procurement of the AIFF system if the procurement had been terminated in 1987, when the decision was made to not use the system.

DISCUSSION OF DETAILS

Background

The AFSC made two program changes for the F-16 C/D aircraft that resulted ultimately in the removal of the AIFF system from the aircraft. On May 28, 1987, AFLC directed the contractor to delay equipping the F-16 C/D aircraft with the AIFF system until two production lots (Blocks 40H and 50) were scheduled for delivery in July 1991. This decision was made because the contractor experienced difficulties with AIFF system hardware and software and with insertion of the system antenna in wing flap composite materials. On March 22, 1989, AFSC advised General Dynamics Corporation that the F-16 C/D aircraft would not be fitted with the AIFF system. On June 9, 1989, AFLC issued a stop-work order for AIFF system spares. In response to the stop-work order, the contractor proposed termination costs of $6 million. As of April 1991, the contracting officer had not yet begun negotiations for termination costs.

Response to Program Changes

The AFLC should have canceled or substantially reduced the order for AIFF system spares in May 1987 when AFSC decided that only Blocks 40H and 50 would be equipped with the AIFF system. Reordering could have been delayed until September 1989 to meet scheduled delivery in July 1991 for Blocks 40H and 50. If AFLC had canceled the procurement in May 1987, the Air Force could have avoided most of the estimated $6 million in termination costs.

The procurement was not canceled because AFLC Regulation 57-27 does not have procedures requiring AFLC to assess the effect of program changes on previously determined procurements for provisioned items. The Regulation provides policy and procedures only for the initial determination of procurement requirements

for provisioned items. Additionally, the Regulation does not specifically describe how design stability of spares should be considered in determining spares requirements for systems not subject to interim contractor support.

RECOMMENDATIONS FOR CORRECTIVE ACTION

We recommend that the Commander, Air Force Logistics Command, modify AFLC Regulation 57-27 to provide for the assessment of program changes on procurements for provisioned items and for making appropriate adjustments to these procurements.

MANAGEMENT COMMENTS AND AUDIT RESPONSE

As of November 22, 1991, the Air Force had not provided comments to the draft report. We request that the Assistant Secretary of the Air Force (Financial Management and Comptroller) provide comments indicating concurrence or nonconcurrence with the finding and the recommendation, which is an internal control issue, as required by DoD Directive 7650.3.

STATUS OF RECOMMENDATIONS

Number	Addressee	Response Should Cover: Concur/ Nonconcur	Proposed Action	Completion Date	Related Issues*
Finding					
A.1.a.	Air Force	X	X	X	IC
A.1.b.	Air Force	X	X	X	IC
A.1.c.	Air Force	X	X	X	IC
A.1.d.	Air Force	X	X	X	IC
A.2.	Air Force	X	X	X	IC
A.3.	Air Force	X	X	X	M
A.4.	Air Force	X	X	X	M
Finding					
B.	Air Force	X	X	X	IC

* IC = material internal control weakness; M = monetary benefits

PART III - ADDITIONAL INFORMATION

APPENDIX A - Comparison of Contractor, Air Force, and Actual Maintenance Factors

APPENDIX B - Computations of Excess Provisioning Costs

APPENDIX C - Summary of Potential Monetary and Other Benefits Resulting from Audit

APPENDIX D - Activities Visited or Contacted

APPENDIX E - Report Distribution

APPENDIX A: COMPARISON OF CONTRACTOR, AIR FORCE, AND ACTUAL MAINTENANCE FACTORS

Sample No.	Item Nomenclature	National Stock Number	Maintenance Factor in Flying Hours * Estimate By Contractor	Estimate By Air Force	Actual Rate	More Accurate Estimate
1	Optical Module	1240-99-736-0412WF	1,751	740	2,564	Contractor
2	Optical Module	1240-NC-E32-3067WF	2,127	1538	50,000	Contractor
3	Multifunction Display	1260-01-193-8861WF	128	51	1,136	Contractor
4	Programmable Display Generator	1260-01-251-1150WF	147	87	500	Contractor
5	Enhanced Fire Control Computer	1270-01-235-2370WF	139	57	239	Contractor
6	General Avionics Computer	1270-01-240-0088WF	429	280	666	Contractor
7	Display Unit	1270-99-771-4187WF	179	70	492	Contractor
8	Head Up Display	1270-NC-E32-2189WF	490	127	473	Contractor
9	Latirn Electronics Unit	1270-NC-E32-3630WF	390	390	763	Not Applicable
10	32K Memory	1270-NC-E31-6903WF	900	709	1,724	Contractor
11	Advanced Control Interface Unit	1290-01-227-9260WF	181	80	421	Contractor
12	Enhanced Control Interface Unit	1290-01-322-3711WF	372	247	636	Contractor
13	Shock Strut Assembly	1620-01-252-1051	16,666	4,000	33,333	Contractor
14	Shock Strut Assembly	1620-01-303-5882	4,000	10,000	50,000	Air Force
15	Wheel Assembly	1630-01-252-3593	25	46	50	Air Force
16	Brake Assembly	1630-01-254-0478	500	258	2,631	Contractor
17	Data Enter Electronics Unit	5895-01-242-2033WF	439	146	1,149	Contractor
18	Advanced Interface Blanker Unit	5895-NC-E32-3631WF	909	543	50,000	Contractor
19	Global Positioning System Antenna	5895-01-263-0355	6,250	1,000	0	Contractor
20	Circuit Card Assembly	5998-01-250-7395	2,000	719	1,851	Contractor
21	Heads Up Display Unit	5999-99-891-9910WF	390	216	625	Contractor
22	Flight Control Computer	6615-01-220-3851WF	277	234	704	Contractor
23	Digital Flight Control Computer	6615-01-316-7226WF	325	212	320	Contractor

* A supply demand is estimated or actually occurred for the number of flying hours shown. The higher the number of flying hours shown, the fewer the demands placed on the supply system.

APPENDIX B: COMPUTATIONS OF EXCESS PROVISIONING COSTS

Sample No.	Item Nomenclature	National Stock Number	Air Force Procurement Cost	Excess Provisioning Cost *
1	Optical Module	1240-99-736-0412WF	$ 406,728	$ 234,697
2	Optical Module	1240-NC-E32-3067WF	1,431,276	396,353
3	Multifunction Display	1260-01-193-8861WF	3,078,444	1,851,779
4	Programmable Display Generator	1260-01-251-1150WF	4,966,446	2,004,005
5	Enhanced Fire Control Computer	1270-01-235-2370WF	11,310,251	6,713,264
6	General Avionics Computer	1270-01-240-0088WF	4,530,879	1,565,444
7	Display Unit	1270-99-771-4187WF	8,956,477	5,442,150
8	Head Up Display	1270-NC-E32-2189WF	17,171,777	12,342,239
9	Latirn Electronics Unit	1270-NC-E32-3630WF	1,049,471	0
10	32K Memory	1270-NC-E31-6903WF	1,584,456	337,118
11	Advanced Control Interface Unit	1290-01-227-9260WF	4,119,691	2,289,456
12	Enhanced Control Interface Unit	1290-01-322-3711WF	9,962,043	3,364,729
13	Shock Strut Assembly	1620-01-252-1051	543,920	413,379
14	Shock Strut Assembly	1620-01-303-5882	723,940	(1,085,910)
15	Wheel Assembly	1630-01-252-3593	1,120,208	(950,417)
16	Brake Assembly	1630-01-254-0478	1,413,893	685,082
17	Data Enter Electronics Unit	5895-01-242-2033WF	3,125,795	2,085,384
18	Advanced Interface Blanker Unit	5895-NC-E32-3631WF	1,762,692	529,076
19	Global Positioning System Antenna	5895-01-263-0355	1,923,863	1,616,045
20	Circuit Card Assembly	5998-01-250-7395	1,072,315	686,271
21	Heads Up Display-Electronics Unit	5999-99-891-9910WF	5,226,584	722,974
22	Flight Control Computer	6615-01-220-3851WF	1,490,201	236,120
23	Digital Flight Control Computer	6615-01-316-7226WF	5,722,326	1,980,338
	Totals		$92,693,676	$43,459,576

*The computation of the excess provisioning costs is based on two premises. First, there is a direct correlation between a maintenance factor and a procurement quantity derived from the Air Force procedures for computing provisioning procurement requirements. Second, for each item, we determined the percentage by which the Air Force maintenance factor was higher or (lower) than the contractor's maintenance factor. The procurement cost was multiplied by the percentage to compute the cost of over-provisioning and under-provisioning.

Note: We could not use the provisioning model to compute requirements using the contractor's maintenance factors because we could not reconstruct other requirements factors in the model when the procurement requirements were originally determined.

APPENDIX C: SUMMARY OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM AUDIT

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
A.1.a.	Internal Control. Ensure optimum purchases of spares for provisioning of new weapons systems.	Nonmonetary. The Air Force can reduce its risk of incurring costs of obsolescence and modification. Optimum purchases will provide funds for other priority purchases.
A.1.b.	Internal Control. To ensure forecasting factors are reevaluated when design improvements occur.	Nonmonetary. The Air Force can reduce its risk of inappropriate procurement of spares.
A.1.c.	Internal Control. To ensure forecasting factors are reevaluated when design improvements occur.	Nonmonetary. The Air Force can reduce its risk of inappropriate procurement of spares.
A.1.d.	Internal Control. Provide an audit trail for post-evaluations of provisioning of new high-dollar spares and repair parts.	Nonmonetary. The Air Force can improve its provisioning process and, thereby, reduce the risk of inappropriate spares procurements.
A.2.	Internal Control. Ensure optimum purchases of spares for provisioning of new weapons systems.	Nonmonetary. The Air Force can reduce its risk of incurring costs of obsolescence and modification.

APPENDIX C: SUMMARY OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM AUDIT (cont'd)

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
A.3.	Economy and Efficiency. Sixty global positioning system antennas not needed for F-16 C/D aircraft are used for retrofit of F-16 A/B aircraft.	Funds Put to Better Use. A potential cost avoidance of up to $2.4 million. We could not determine precisely the quantities and costs of not procuring the antennas because we could not determine the number of antennas that could be retrieved from field activities for the retrofit.
A.4.	Economy and Efficiency. Avoid unnecessary purchase of wholesale inventory for landing gear parts.	Funds Put to Better Use. A potential cost-avoidance of up to $7.9 million. We could not determine precisely the quantities and costs of cancelable purchases.
B.	Internal Control. Ensure optimum purchases of spares for provisioning of new weapons systems.	Nonmonetary. The Air Force can reduce its risk of incurring costs of obsolescence and modification.

APPENDIX D: ACTIVITIES VISITED OR CONTACTED

Office of the Secretary of Defense

Office, Assistant Secretary of Defense (Production and Logistics), Washington, DC

Department of the Air Force

Deputy Chief of Staff (Logistics and Engineering), Washington DC
Headquarters, Air Force Logistics Command, Wright-Patterson Air Force Base, OH
Aeronautical Systems Division, Wright-Patterson Air Force Base, OH
Ogden Air Logistics Center, Ogden, UT
Resident Integrated Logistics Support Activity, Fort Worth, TX
Sacramento Air Logistics Center, Sacramento, CA

Other Activities

General Dynamics Corporation, Fort Worth Division, Fort Worth, TX

APPENDIX E: REPORT DISTRIBUTION

Office of the Secretary of Defense

Assistant Secretary of Defense (Production and Logistics)
Assistant Secretary of Defense (Public Affairs)
Comptroller of the Department of Defense

Department of the Air Force

Secretary of the Air Force
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Air Force Audit Agency

Defense Agencies

Director, Defense Contract Audit Agency
Director, Defense Logistics Studies Information Exchange

Non-DoD Activities

Office of Management and Budget
  National Security Division, Special Projects Branch
U.S. General Accounting Office
  NSIAD Technical Information Center

Congressional Committees:

  Senate Subcommittee on Defense, Committee on Appropriations
  Senate Committee on Armed Services
  Senate Committee on Governmental Affairs
  Senate Ranking Minority Member, Committee on Armed Services
  House Committee on Appropriations
  House Subcommittee on Defense, Committee on Appropriations
  House Ranking Minority Member, Committee on Appropriations
  House Committee on Armed Services
  House Committee on Government Operations
  House Subcommittee on Legislation and National Security, Committee on Government Operations

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