

GAO

August 1986

MILITARY LOGISTICS

Buying Spares Too Early Increases Air Force Costs and Budget Outlays



130590

100

100

100

100



National Security and
International Affairs Division

B-223256

August 1, 1986

The Honorable Edward C. Aldridge, Jr.
The Secretary of the Air Force

Dear Mr. Secretary:

We reviewed the Air Force's practices for purchasing recoverable¹ aircraft spare parts to determine whether it was buying them at the appropriate time. Reviews at two of the Air Force's five air logistics centers showed that they regularly bought recoverable spares up to 14 months earlier than necessary. As a result, for contracts awarded during 1984, the two centers prematurely invested about \$374.5 million in spare parts inventories, thus increasing their inventory holding costs by about \$52.2 million. About \$125.4 million of the total amount invested prematurely by these two centers represented purchases made more than 1 year too early. Requests for appropriations to fund these purchases could have been deferred for 1 year if the centers had planned to buy spares at the appropriate times.

Because all five air logistics centers follow the same early procurement practice, elimination of this practice would result in significant Air Force-wide reductions in inventory holding costs and deferrals in procurement outlays and budget requests.

Our objective, scope, and methodology are in appendix I.

Introduction

The mission of the Air Force Logistics Command (AFLC) is to provide logistics support to ensure that Air Force weapon systems are kept at maximum operational capability at the least possible cost. AFLC carries out its responsibilities largely at its headquarters at Wright-Patterson Air Force Base, Ohio, and at five air logistics centers. These centers use a standard automated system—the DO41 system²—in their quarterly computations of the types and quantities of recoverable spares to be bought. This system calculates when items should be bought based on asset status, projected usage, procurement lead times,³ and the dates the

¹Recoverable, as opposed to consumable, spare parts normally can be repaired and reused after becoming unserviceable

²Recoverable Consumption Item Requirements Computation System (DO41)

³Procurement lead time represents the administrative and production lead time required to obtain spare parts. It begins when an item manager prepares the purchase request, runs through award of the procurement contract, and ends with the first significant delivery (i.e., 10 percent of the total contract quantity)

items will be needed. Using this system's data, item management specialists (item managers) decide when to buy items. The functioning of the DO41 system is governed by AFLC Regulation 57-4. In addition, AFLC issues directives—termed annual buy guidelines—which provide specific guidance pertaining to the procurement of recoverable spare parts each year to the air logistics centers.

Ideally, procurement actions should be initiated (i.e., purchase requests should be prepared) at the appropriate time to allow for the necessary administrative review and approval within the Air Force and for production by the manufacturer so that the items will be received when needed. In other words, the time between the initiation of procurement action and the date the items will be needed should be equal to the procurement lead time. This is termed, in this report, "initiating purchases procurement lead time in advance of need." Waiting too long before ordering additional parts results in inventory shortages, which may adversely affect the readiness of activities or weapon systems needing the parts. Conversely, if parts are procured too early, procurement funds are prematurely obligated and invested in items that are added to inventory before they are needed, resulting in unnecessary inventory holding costs (storage, interest, and obsolescence).

As of March 31, 1985, the five air logistics centers had on-hand inventories of serviceable recoverable items totaling \$14.2 billion and unserviceable (needing repair) items totaling \$13.5 billion. The five centers had an additional \$7.7 billion worth of recoverable items on order.

Spares for Routine Inventory Replenishment Are Regularly Bought Earlier Than Necessary

In acquiring recoverable spare parts to replenish their inventories, the air logistics centers regularly initiate purchases early in the fiscal year for items that the DO41 system projects may need to be bought sometime during that year. This early procurement practice, which has been directed for several years in AFLC's annual buy guidelines, deviates from the economically sound policy, prescribed by AFLC regulation, of initiating purchases procurement lead time in advance of need.

AFLC Regulation 57-4 stipulates that routine purchases of recoverable spares should be initiated at times that will allow them to be received when needed, considering their procurement lead times. According to the regulation, this ensures that the procurements are not started prematurely. The regulation recognizes exceptions, such as opportunities to obtain better prices or to avoid possible shortages of material. In these instances, procurement is permitted up to 3 months earlier than would

otherwise be appropriate; however, the advantage to the government of the early procurements must be documented. Since the late 1970s, AFLC's annual buy guidelines have directed the centers to initiate procurements early. AFLC officials told us that before that time the centers complied with AFLC Regulation 57-4.

The Oklahoma City and San Antonio centers made 704 recoverable spares purchases that were valued at \$200,000 or more each during 1984. Center officials were able to provide us supporting documentation for 360 of these procurements. Documentation for the remaining 344 purchases was not available because it had either been destroyed or been transferred to a records depository. Our review showed that 206 of the 360 procurements for which documentation was available represented routine inventory replenishment actions. The other 154 procurements were made for such purposes as urgent requirements and foreign military sales. (See app. II.)

All 206 purchases for routine inventory replenishment had been initiated prematurely without being documented as advantageous to the government. In addition, for 183, or 89 percent, of the 206 purchases, the procurements, which averaged \$935,000, were made from 3.1 to 14.9 months prematurely. The 183 purchases were made on an average of 9.7 and 7.7 months prematurely by the Oklahoma City and San Antonio centers, respectively.

Early Procurement Practice Causes Premature Outlays, Unnecessary Holding Costs, and Increased Budgets

We estimate that the two centers prematurely initiated purchases of recoverable spares for routine inventory replenishment made during 1984 totaling about \$374.5 million. Consequently, they incurred unnecessary holding costs (storage, interest on premature investment, and obsolescence) of about \$52.2 million for material procured and received earlier than needed. Of the \$374.5 million total, the centers made purchases of about \$125.4 million more than 1 year too early. Therefore, they could have deferred, for 1 year, requests for appropriations of this amount if they had not planned to buy spares early.

As discussed previously, we found that each of the 206 1984 routine inventory replenishment purchases of recoverable spares, valued at \$200,000 or more, for which documentation was available had been initiated too early. Of these purchases, 183 had been initiated more than 3 months early. Because officials at both centers assured us that the procurements we reviewed in detail were fully representative of those for which documentation was not available, we estimated the total value

of premature procurements made during 1984 and the amount of resultant unnecessary holding costs. In other words, we projected the premature investment and unnecessary holding costs which we calculated for the 183 purchases to the estimated number of routine inventory replenishment actions among the purchases we could not review because documentation was not available. In making our estimate, we excluded procurements that had been initiated 3 months or less prematurely because AFLC Regulation 57-4 allows procurement to be made up to 3 months early under certain conditions. (See table 1 for a summary of our estimates and appendix II for more detailed explanations.)

**Table 1: Total Estimated 1984
Premature Routine Purchases of
\$200,000 or More and Related
Unnecessary Holding Costs at Two Air
Logistics Centers**

Dollars in Millions			
	Oklahoma City	San Antonio	Total
Value of premature purchases			
Purchases reviewed in detail	\$ 85.9	\$ 99.9	\$185.8
Purchases which could not be reviewed	88.7	100.0	188.7
Total	\$174.6	\$199.9	\$374.5
Unnecessary holding costs			
Purchases reviewed in detail	\$ 12.3	\$ 13.5	\$ 25.8
Purchases which could not be reviewed	12.8	13.6	26.4
Total	\$ 25.1	\$ 27.1	\$ 52.2

The following examples illustrate the impact of early procurements for two recoverable spares included in our detailed analysis.

**Stock No. 2840-00-871-
7414PL: A Turbine Frame
Used on F-4 Aircraft
Engines**

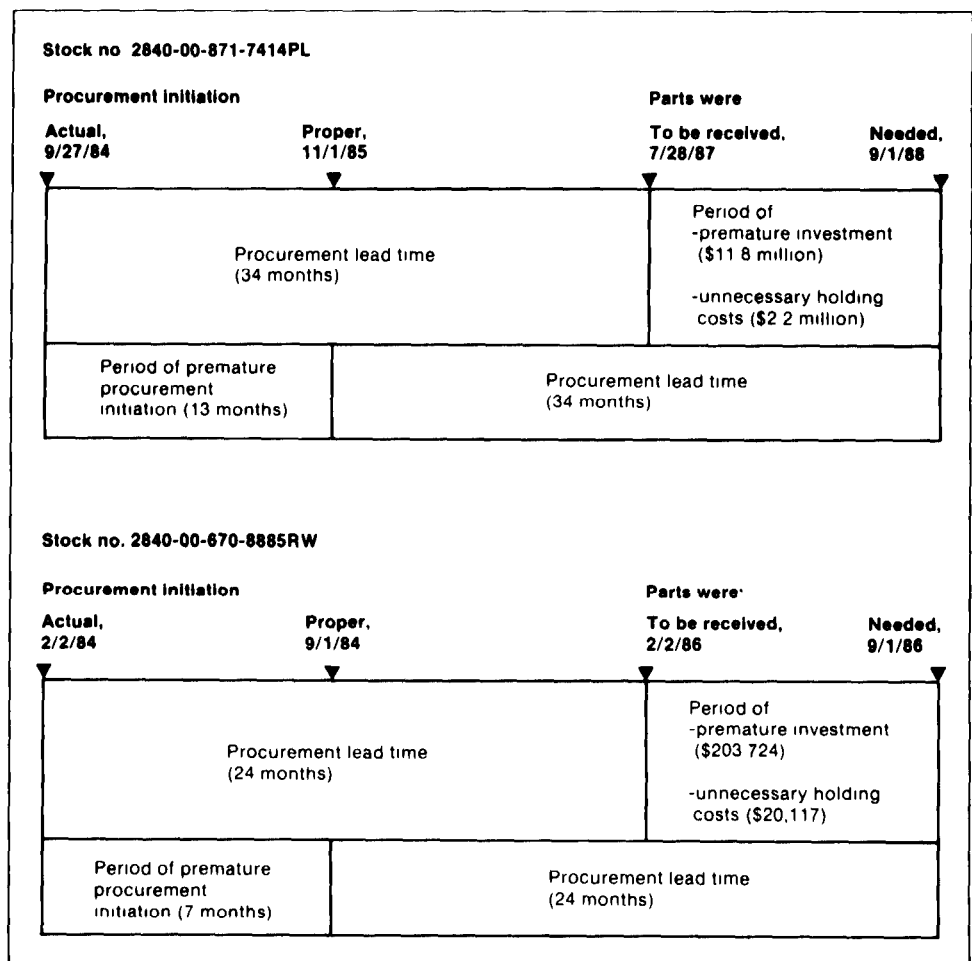
On September 27, 1984, the Oklahoma City Air Logistics Center initiated a purchase request to buy 397 of these items at \$29,722 each, a purchase totaling \$11.8 million. The procurement lead time for the item was 34 months. Therefore, the material should have been expected to arrive July 28, 1987. However, according to the DO41 system, the material would not be needed until September 1988. Thus, the \$11.8 million purchase was about 13 months premature. Increased inventory holding costs (warehousing, interest, and obsolescence) related to this procurement were estimated to be \$2.2 million, based on the application of the AFLC-provided 17 percent annual holding cost factor applicable to this center.

Stock No. 2840-00-670-8885RW: A Vane Used on C-130 Aircraft Engines

On February 2, 1984, the San Antonio Air Logistics Center initiated a purchase request to buy 165 of these items at \$1,234 each, a purchase totaling \$203,724. The procurement lead time for the item was 24 months. Therefore, the material should have been expected to arrive on February 2, 1986. However, according to the DO41 system, the material would not be needed until September 1986. Thus, the \$203,724 purchase was about 7 months premature. Increased inventory holding costs related to this early procurement were estimated to be \$20,117, based on the application of the AFLC-provided 18 percent annual holding cost factor applicable to this center.

Figure 1 shows graphic illustrations of these premature procurements.

Figure 1: Illustrations of Premature Procurement Initiation



In addition to avoiding the holding costs and deferring the outlays of procurement funds, the Air Force could effect one-time reductions in its requests for appropriations if it returned to the former practice of buying recoverable spares procurement lead time in advance of need.

As stated previously, an estimated total of \$374.5 million of premature purchases was initiated from 3 to 14 months too early. Table 2 provides an analysis of these premature purchases and of the number of months they were premature and shows that estimated purchases valued at \$125.4 million were initiated more than 1 year early.

Table 2: Value of Premature Purchases and Number of Months of Prematurity

Dollars in Millions		
Months premature		Value of purchases
From	To	
More than 3	6	\$ 57.4
More than 6	9	92.9
More than 9	12	98.8
More than 12	14	125.4
Total		\$374.5

Funding for recoverable spares outlays is provided in the annual Aircraft Procurement, Air Force appropriations. These appropriations are available for obligation for 3 years. Therefore, during 1984 the air logistics centers' obligational authority was for 4 fiscal years. From January 1 through September 30, 1984, the authority stemmed from appropriations for fiscal years 1982 through 1984. From October 1 through December 31, 1984, the authority was provided by appropriations for fiscal years 1983 through 1985.

We did not attempt to determine which fiscal year authority was used to fund each of the purchases comprising the \$125.4 million total initiated more than 1 year early. However, had the centers deferred these purchases for 1 year or more, they could have funded each of the purchases from a later year appropriation. Further, if AFLC's early procurement policy had not been in effect, the centers could have planned in advance for the deferral of these purchases and the Air Force could have effected one-time reductions in its annual funding requests to reflect the planned deferrals.

As of March 31, 1985, Air Force records indicated that the five centers had \$1.1 billion of recoverable spares on hand or on order which were excess to needs. Included in this amount was \$788.4 million of spares

that were still on order from contractors. It was not practical to determine what portion of the excess inventory represented obsolete items which might not have been bought had purchases been initiated procurement lead time in advance of need. However, we believe the significant amounts of money invested in excess inventory and the resulting unnecessary holding costs should be matters of concern to the Air Force.

Air Force Does Not Have Valid Justification for Buying Spares Early

In addition to discussing our findings with officials of AFLC and the two centers, we asked the Commander, AFLC, to explain why recoverable spares were being bought early. The Commander, AFLC, acknowledged that spares purchases were being initiated earlier than procurement lead time in advance of need and that this practice risked buying items that could become obsolete. Also, he stated that the practice could cause increased inventory holding costs, but characterized the potential for increase as being nominal. However, he indicated that the practice would be continued because it allowed the Air Force to

- procure items no more than once a year,
- compensate for rapidly increasing administrative lead times, and
- avoid increased numbers of not-mission-capable weapon systems.

The explanations for the practice are discussed in more detail below. In our opinion, the DO41 system design adequately addresses each issue; therefore, the early procurement practice is not necessary.

Annual Purchase Can Be Made Without Buying Prematurely

The Commander, AFLC, informed us that buying early was justified because of an Air Force Management Advisory Group recommendation to procure items no more than once during a fiscal year to avoid repetitive purchases. We did not evaluate the economics of buying once a year. However, buying individual items no more than once a year does not require buying them prematurely. Individual items can be procured once a year at the optimum time, which is procurement lead time in advance of the date the material is needed. This optimum time can be readily determined from the quarterly data provided by the DO41 system. In fact, the DO41 system dictates taking exactly this type of action.

The example of a premature purchase (stock no. 2840-00-670-8885RW) made by the San Antonio center, discussed on page 5, can be used to illustrate the process that the DO41 system dictates should be followed when initiating a purchase. In the example, the DO41 system showed

that the item would be needed in September 1986. The optimum date for initiating procurement should have been computed as procurement lead time in advance of that date. Since procurement lead time was 24 months, the optimum procurement initiation date was in September 1984, not in February 1984 when the San Antonio center initiated the purchase. In either case, only one purchase would have been needed

DO41 System Compensates for Administrative Lead Time Increases

The Commander, AFLC, stated that buying spares early was justified because the DO41 requirements computation system fails to compensate for significant increases in administrative lead times resulting from legislative requirements concerning procurement of spare parts. Administrative lead time is a data element input to the DO41 system to cover the time between the initiation of purchase requests and the award of procurement contracts.

Before the March 1985 DO41 system's quarterly requirements computation cycle, administrative lead times were updated quarterly to reflect increases and decreases based on actual experience and known future changes. While the March 1985 computation cycle was being processed, during our review, the DO41 system was reprogrammed to assure that a minimum of 9 months' administrative lead time was used to compute requirements for all items. According to AFLC officials, this change also was made to compensate for anticipated lead time increases resulting from Department of Defense (DOD) initiatives and congressional legislative requirements to expand competition and increase procurement directly from manufacturers.

Our analysis of the latest data available at AFLC showed that the actual average Air Force administrative lead time for spare parts decreased from 4.3 months in May 1985 to 3.6 months in October 1985. The administrative lead time for procurement actions valued at \$100,000 or more was higher; however, the average lead time for these procurement actions had decreased from 7 months in June 1985 to 6.3 months in October 1985.

As previously mentioned, we found that the Oklahoma City and San Antonio centers regularly initiated inventory replenishment purchases valued at \$200,000 or more each up to 14.9 months earlier than needed. The actual administrative lead time for these 183 premature procurements averaged 5.9 months. Moreover, while we did not evaluate the reasonableness of using an arbitrary 9-month minimum administrative lead time for all recoverable spares, our detailed analysis showed that 9

months would have been more than sufficient for all of the 183 premature procurements. This fact, along with recent indications that actual administrative lead times may be decreasing, shows that buying early is not necessary.

Safety Levels Protect Against Not-Mission-Capable Weapon Systems

The Commander, AFLC, believed that buying spares early was necessary to protect against weapon systems being not-mission-capable due to lack of parts. However, we found that only 14 percent of the purchases we reviewed were made to address urgent, critical, stockout situations. When we identified these procurements, we excluded them from the category of premature procurements.

Further, the DO41 system provides for levels of stock both at bases and at logistics centers to enable continued weapon system support by avoiding inventory shortages in the event of minor interruptions in normal replenishment or unpredictable fluctuations in demand. These safety levels, which are in addition to the normal operating levels of stock, are automatically increased by the DO41 system to compensate for increases in lead times and are allocated to specific items to achieve the greatest reduction in stockouts for the money invested.

AFLC officials acknowledged that having the air logistics centers routinely buy inventory replenishment spares early provided a double safety level. During the period March 31, 1984, to March 31, 1985, the value of safety level stocks of recoverable spares increased by \$2.1 billion to a total of \$7 billion.

Conclusions

AFLC has directed its air logistics centers to regularly initiate inventory replenishment procurements of recoverable spares early in the fiscal year in which the DO41 system indicates they may need to be bought. This practice is a departure from the policy of beginning purchase action procurement lead time in advance of need, prescribed by AFLC regulation and followed until the late 1970s. As a result, the centers obligate and spend funds for inventory investment prematurely and incur unnecessary inventory holding costs on material that is received before it is needed.

If the two centers we reviewed had initiated routine inventory replenishments procurement lead time in advance of need, they could have (1) avoided premature inventory investment of \$374.5 million, (2) avoided unnecessary holding costs of about \$52.2 million, (3) effected one-time

reductions in funding requests, obligations, and outlays of about \$125.4 million for 1984 procurements, and (4) reduced the risk of acquiring material that might become obsolete before it was used.

Discontinuing the early procurement practice would result in significant reductions in Air Force costs and deferrals of procurement budget outlays at all five air logistics centers.

Agency Comments and Our Evaluation

In commenting on a draft of this report (see app III), DOD said that it does not concur in our findings and conclusions. It is DOD's position that the adverse impacts discussed in the report—premature outlays, increased budgets, and unnecessary holding costs—occur only if material is actually received before it is needed. DOD stated that since Air Force contracts for recoverable spares specify a required delivery date which is the same as the date the DO41 system indicates the items will be needed, and since the Air Force can refuse to accept early deliveries, there is no cause and effect relationship between initiating procurement early and early receipt of material. DOD stated that it supports early procurement initiation because it provides procurement officials with order quantities and due dates as soon as practical, thereby allowing them to efficiently organize their workloads and ensure that major policy objectives, such as increased competition, are achieved.

DOD also stated that our estimated \$52.2 million of unnecessary holding costs was not accurate because it is based on annual holding cost factors at the Oklahoma City and San Antonio centers of 17 percent and 18 percent, respectively, which include cost elements for interest ("cost of capital") and obsolescence. DOD stated that these cost elements are not applicable to an early delivery situation. DOD also took exception to our relating the \$1.1 billion figure for on hand and on order excess spares to early procurement initiation. It stated that a recent Air Force study showed the figure to be significantly overstated because of errors in Air Force records.

DOD further stated that the spares requirements system is "self-correcting" in that on-order assets are applied against future requirements, thereby reducing future procurements. Consequently, DOD concluded that no current or future budgets require adjustment. However, DOD stated that initiation of procurement more than 1 year early could result in premature obligations and indicated it would apply a limitation of 12 months for early initiation.

Our draft report included three proposed recommendations. DOD stated that it partially concurred with our first recommendation, that AFLC be directed to comply with AFLC Regulation 57-4. DOD indicated that the regulation would be changed to legitimize the Air Force's current early procurement initiation practice. That is, the regulation will be rewritten to authorize early procurement initiations such as those described in this report. DOD did not concur with the other two recommendations for reasons stated previously

As discussed below, the DOD comments do not accurately portray the manner in which the Air Force actually determines and satisfies its requirements for recoverable spares. DOD's belief that, even though procurements are initiated up to 1 year early, material is received only when needed is incorrect and does not take into account the actual workings of the D041 system and procedures followed at the centers.

To eliminate any doubt regarding adverse effect, we followed up on the actual receipt of material for the procurements included in our analysis. For the 183 purchases identified in the report as having been initiated more than 3 months prematurely, we have analyzed data provided to us by the Air Force in April 1986 showing actual contractor deliveries to determine the extent to which early deliveries occurred and were accepted by the Air Force. Our follow-up analysis showed that "significant delivery" quantities had actually been received on 140 of the 183 premature purchases discussed in the report. Significant delivery is defined by the Air Force as at least 10 percent of the total contract or purchase order quantity and is the milestone used by the D041 system requirements computation to mark the completion of procurement lead time for the items ordered.

For each of the 140 purchases on which delivery information was available, we compared the actual delivery date to the date the D041 system showed the material would be needed, which is also the delivery date specified in the contract. We found that 133 purchases, 95 percent of those for which delivery information was available, were delivered and had been accepted early. This data is shown in table 3, which also shows that these purchases were received on an average of 12.2 and 14.1 months before the material would be needed by the Oklahoma City and San Antonio centers, respectively.

Table 3: Actual Delivery of Procurements Initiated Early

	Oklahoma City	San Antonio	Total
Number of procurements	89	51	140
Number delivered and accepted early	85	48	133
Percent delivered and accepted early	96	94	95
Average number of months received early—actual	12.2	14.1	
Average number of months to be received early—estimated at time of our review	9.7	7.7	
Increase in average number of months received early— actual vs. estimated	2.5	6.4	

Our analysis shows that DOD is incorrect when it states that early initiation of procurement action does not result in early receipt of material and in the adverse impacts discussed in the report. Our analysis also shows that our earlier estimates of 9.7 and 7.7 average months of early receipt for the two centers were conservative.

The scenario which DOD believes is acceptable (i.e., initiate the purchase request early, but not accept delivery until the spares are needed) would automatically increase procurement lead times used to compute requirements in the future. This fact was ignored in the DOD comments.

Procurement lead time is an important element in computing requirements and represents a significant portion of the total spares pipeline. If it takes, for example, 2 years from the time the item manager prepares the purchase request until material is delivered, there must be spares in the supply pipeline to support aircraft and equipment during that period. If the procurement lead time for the same item were to increase from 2 to 3 years, the number of spares in the pipeline would have to be increased to assure continued support.

Procurement lead time ends when material is received. Had DOD been correct in its belief that the spares were received when needed, the Air Force's early procurement initiations would have resulted in a very significant increase in spares requirements. The average number of months that material was actually received early, 12.2 and 14.1 months at the Oklahoma City and San Antonio centers, respectively, would have been added to the procurement lead times used to compute requirements for these items in the future.

Increases in procurement lead time can be very costly. Data used by the Air Force to calculate its fiscal year 1987 funding request for spares

shows that 1 month of procurement lead time equates to more than \$110 million of spares requirements. However, as discussed above, the Air Force's early procurement initiations result in early receipt of material and, therefore, are not causing the unwarranted increases in lead times.

DOD stated the Air Force could refuse to accept early delivery of spares from contractors. However, for at least several years, the air logistics centers have routinely included a standard provision in their spares contracts, authorizing the contractors to deliver early. The provision currently being used states:

"The contractor is authorized to exceed the delivery rate, or to complete performance of this contract prior to the time therefore, set forth in the schedule "

DOD's statement that our use of 17 and 18 percent holding cost factors was inappropriate because they do not apply to an "early delivery situation" is not relevant. Our report deals with procurement practices that cause early deliveries, not with simple early delivery situations. Including interest and obsolescence costs is appropriate in making procurement decisions, as discussed in Defense Audit Service (now DOD Inspector General) report 79-080, Report on the Review of the Retention and Transfer of Materiel Assets, which was concurred in by the Air Force.

On March 20, 1986, we requested the detailed data supporting the Air Force study cited by DOD as showing the inaccuracy of the \$1.1 billion figure cited in the report as the amount of excess spares on hand and on order as of March 31, 1985. As of July 1, 1986, the data had not been provided. The figure we used came from official Air Force records used to compute its fiscal year 1987 budget request for spares funding. However, its accuracy does not affect the findings in this report. We are now reviewing how effectively the Air Force terminates procurements for excess spares and will determine the reliability of the Air Force records as part of that work.

DOD's statement that the spares requirements computation system is "self-correcting" in that on-order spares are applied against future requirements, thereby reducing future procurements, does not address the issues discussed in this report, which are premature current procurements and the resultant adverse effects. DOD's statement assumes that future requirements will not change and spares procured prematurely will ultimately be used. We believe that this assumption, as

acknowledged by the Commander, AFLC (see p. 7), will result in the procurement of material which may not be needed. However, even if requirements do not change, early procurement is not necessary and causes premature outlays, increased budgets, and unnecessary holding costs.

In summary, after considering DOD's comments, we have not changed the findings, conclusions, and recommendations in our report. Our follow-up analysis of actual delivery data confirms that significant amounts of spares are procured earlier than necessary. We consider the estimates of the adverse impacts at the two air logistics centers reviewed to be conservative and indicative of larger Air Force-wide impacts.

We do not agree with DOD's intention to have AFLC Regulation 57-4 rewritten and to limit early procurement to 12 months. These are inadequate corrective actions and will not resolve the problems identified in this report.

Recommendations

We recommend that you direct the Commander, AFLC, in providing annual buy guidelines to the air logistics centers, to require compliance with the current AFLC Regulation 57-4. This regulation stipulates that routine inventory replenishment procurements of recoverable spares be initiated procurement lead time in advance of when the DO41 system indicates material is needed. We further recommend that you ensure that future requests for appropriations reflect the deferral or avoidance of outlays that will result from discontinuing the present early procurement practice.

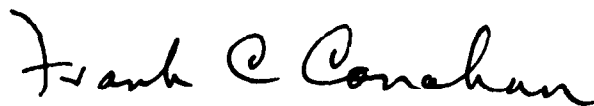
We also recommend that you direct the Commander, AFLC, to review the five air logistics centers' in-process recoverable spares purchases and (1) identify those initiated earlier than necessary, (2) cancel or defer premature purchase requests so that the material will be received when the DO41 system indicates it will be needed, (3) defer, if economically feasible, delivery of material on contract to preclude its being received before it is needed, and (4) report the extent and value of these cancellations and deferrals to you for consideration in compiling future budget requests.

As you know, 31 U.S.C. 720 requires the head of a federal agency to submit a written statement on actions taken on our recommendations to

the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

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

Sincerely yours,



Frank C. Conahan
Director

Contents

Letter	1
--------	---

Appendix I Objective, Scope, and Methodology	18
--	----

Appendix II Computation of the Value of Premature Purchases, Avoidable Holding Costs, and Budgetary Overstatements	19
--	----

Appendix III Comments From the Acting Assistant Secretary of Defense (Acquisition and Logistics)	21
---	----

Tables	
Table 1: Total Estimated 1984 Premature Routine Purchases of \$200,000 or More and Related Unnecessary Holding Costs at Two Air Logistics Centers	4
Table 2: Value of Premature Purchases and Number of Months of Prematurity	6
Table 3: Actual Delivery of Procurements Initiated Early	12
Table II.1: Number and Amount of Purchases Identified for Review	19
Table II.2: Analysis of Purchases Reviewed	19
Table II.3: Effect of Purchasing Prematurely	20

Figure

Figure 1: Illustrations of Premature Procurement
Initiation

5

Abbreviations

AFLC Air Force Logistics Command
DOD Department of Defense
GAO General Accounting Office

Objective, Scope, and Methodology

Our objective was to determine whether the Air Force was buying recoverable items at the appropriate time. We reviewed Air Force policies, procedures, and practices the Oklahoma City and San Antonio Air Logistics Centers used to initiate purchases of recoverable spares. Also, we interviewed AFLC and center officials responsible for carrying out these activities.

We obtained computer tapes covering requirements for recoverable items managed by the Oklahoma City center as of September 30, 1984, and the San Antonio center as of December 31, 1984. We also obtained procurement history tapes for the two centers as of June 30, 1985. Through our analysis of these tapes, we identified 429 Oklahoma City items and 328 San Antonio items that were bought during 1984 in which the contract value was \$200,000 or more. We selected these items as our universe because they (1) accounted for most of the expenditures the centers made for recoverable items and (2) received the most management attention. Removing repair contracts and duplicate file entries resulted in a refined universe of purchases consisting of 410 Oklahoma City items and 294 San Antonio items, which included quantities valued at \$278.6 million and \$399.2 million, respectively.

To determine whether spare parts were purchased prematurely, we analyzed the requirements computations in detail and compared the dates the purchased parts were to be received to the dates the parts were needed. Items for which the receipt dates were 3 months or more before need dates were considered to have been purchased prematurely. For these items, we calculated the unnecessary inventory holding costs, using AFLC-provided factors expressed as a percentage of inventory costs, for each logistics center.

The system for computing requirements for recoverable items (DO41 system) and the procurement history system (JO41) automatically receive input from several subsystems. We considered it impractical to analyze each subsystem to determine the reliability of data obtained from these systems. As an alternative, we determined that our universe data generally agreed with Air Force recoverable item requirements inventory analysis reports for corresponding periods, and we verified the accuracy of data on each individual item to source documents. Thus, we insured that we used the same data that the Air Force used in managing these items. Our review was performed in accordance with generally accepted audit standards.

Computation of the Value of Premature Purchases, Avoidable Holding Costs, and Budgetary Overstatements

After identifying 410 Oklahoma City and 294 San Antonio purchases for review, we provided officials at each center listings of their purchases and requested supporting requirements computation data. The officials could not provide documentation supporting 221 Oklahoma City and 123 San Antonio purchases because it either was destroyed or was in a depository and unavailable for review. Center officials said they knew of no reason that would cause the purchases with missing documentation to be different (i.e., type or timing of purchases) from those for which documentation was available. We therefore assumed that what we found in our review of purchases for which documentation was available held true for the purchases for which documentation was missing.

Table II.1: Number and Amount of Purchases Identified for Review

	Oklahoma City center		San Antonio center	
	No.	Amount	No.	Amount
Purchase documentation destroyed/sent to depository	221	\$141,516,182	123	\$199,638,516
Available for detailed review	189	137,103,684	171	199,636,271
Total	410	\$278,619,866	294	\$399,274,787

We found premature purchases of more than 3 months for 183 items (51 percent) totaling \$185.8 million. We also found premature purchases of 3 months or less for 23 items (6 percent) totaling \$13.6 million. In actuality, all routine purchases were made prematurely. The remaining 154 items (43 percent) included urgent purchases for 51 items (14 percent) and nondemand supported purchases for 103 items (29 percent). Nondemand supported items included such categories as foreign military sales and insurance and numeric stockage objective items which have low usage and are stocked on a selective basis.

Table II.2: Analysis of Purchases Reviewed

	Oklahoma City center		San Antonio center	
	No.	Amount	No.	Amount
Premature purchases exceeding 3 months	115	\$85,913,955	68	\$99,883,983
Premature purchases of 3 months or less	16	8,853,359	7	4,775,235
Urgent purchases (backorders)	23	12,214,049	28	21,173,820
Nondemand supported purchases	35	30,122,321	68	73,803,233
Total	189	\$137,103,684	171	\$199,636,271

**Appendix II
Computation of the Value of Premature
Purchases, Avoidable Holding Costs, and
Budgetary Overstatements**

We used a simple proration technique to estimate the value of premature purchases and unnecessary holding costs and the related budgetary overstatement.

Table II.3: Effect of Purchasing Prematurely

	Oklahoma City center	San Antonio center
Premature purchases:		
Values of premature purchases	\$ 85,913,955/	\$ 99,883,983/
Divided by totals reviewed	\$137,103,684	\$199,636,271
Equal projection ratio	= 62 7%	= 50 1%
Value of purchases with missing documentation	\$141,516,182	\$199,638,516
Projected value of premature purchases with missing documentation	\$ 88,730,645	\$100,018,897
Premature purchases for items reviewed	85,913,955	99,883,983
Total	\$174,644,600	\$199,902,880
Total, two centers	\$374,547,480	
Holding costs:		
Holding costs ^a	\$ 12,331,753/	\$13,493,019/
Divided by premature purchases	\$ 85,913,955	\$ 99,883,983
Equal holding cost projection ratio	= 14 4%	= 13 6%
Value of premature purchases with missing documentation	\$ 88,730,645	\$100,018,897
Projected holding costs for purchases with missing documentation	\$ 12,777,213	\$ 13,602,570
Holding costs for items reviewed	12,331,753	13,493,019
Total	\$ 25,108,966	\$ 27,095,589
Total, two centers	\$ 52,204,555	
Premature purchases exceeding 12 months:		
Premature purchases reviewed exceeding 12 months	\$ 25,692,072/	\$ 36,492,015/
Divided by total premature purchases	\$ 85,913,955	\$ 99,883,983
Equal projection ratio	= 30%	= 36 6%
Value of premature purchases with missing documentation	\$ 88,730,645	\$100,018,897
Projected premature purchases exceeding 12 months	\$ 26,619,194	\$ 36,606,916
Premature purchases reviewed exceeding 12 months	25,692,072	36,492,015
Total	\$ 52,311,266	\$ 73,098,931
Total, two centers	\$125,410,197	

^aUnnecessary holding costs for items we found had been procured more than 3 months early, calculated by applying AFLC-provided annual holding cost factors of 17 percent and 18 percent of acquisition cost for Oklahoma City and San Antonio centers, respectively

Comments From the Acting Assistant Secretary of Defense (Acquisition and Logistics)



ACQUISITION AND
LOGISTICS
LM/SD

ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301-8000

17 APR 1986

Mr. Frank C. Conahan
Director, National Security and
International Affairs Division
General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the draft General Accounting Office (GAO) audit report, dated February 21, 1986 entitled, "Air Force Logistics: Buying Spares Too Early Increases Air Force Costs and Budget Outlays" (GAO Code 392069; OSD Case #6948).

The draft report criticizes the Air Force for initiating spare parts procurement documentation early and states that the practice results in premature outlays, unnecessary holding costs, and increased budgets. Regardless of when the procurement documentation is initiated, Air Force contracts for spare parts specify a delivery date for materiel that is based on need. Early initiation does not advance the required delivery date and, therefore, does not contribute to the adverse consequences cited in the draft report. The enclosed response provides detailed comments on the audit findings and recommendations.

I appreciate the opportunity to comment on the draft report.

Sincerely,


James P. Wade, Jr., Acting

GAO DRAFT REPORT - DATED FEBRUARY 21, 1986
(GAO CODE 392069) - OSD CASE 6948

"AIR FORCE LOGISTICS: BUYING SPARES TOO EARLY INCREASES
AIR FORCE COSTS AND BUDGET OUTLAYS"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

FINDING A: Spares Needed For Routine Inventory Replenishment Are Regularly Bought Earlier Than Necessary. The GAO noted that the five Air Force Air Logistics Centers (ALCs) use a standard computerized system, the D041 system, to calculate when items should be bought. The GAO termed the ideal procurement time as "buying procurement leadtime in advance of need." In reviewing 1984 procurements of recoverable spare parts by the Oklahoma City and San Antonio ALCs, the GAO found that the ALCs regularly initiate purchases early in the fiscal year for items that the D041 system projects may need to be bought sometime during that year. The ALCs were able to provide supporting documentation for 360 of 704 recoverable spares purchased in 1984. The GAO noted that 206 of these 360 procurements represented routine replenishment actions-- the other 154 represented procurements for such purposes as urgent requirements and foreign military sales. The GAO also found that (1) all 206 purchases for routine inventory replenishment had been initiated prematurely without being documented as advantageous to the Government, (2) for 183 purchases, or 89 percent, the procurement had been started more than 3 months earlier than necessary, and (3) these 183 purchases, which average \$935,000, were made 3.1 to 14.9 months early averaging 9.7 and 7.7 months prematurely, by the Oklahoma City and San Antonio Centers, respectively. The GAO concluded that this early procurement practice, which has been directed for several years in the Air Force Logistics Command (AFLC) annual buy guidelines, deviates from the economically sound policy, prescribed by AFLC regulation, of buying a procurement leadtime in advance of need. The GAO further concluded that its discontinuance would result in significant reductions in Air Force costs and deferrals of procurement budget outlays. (pp. 1-4, 16, GAO Draft Report)

DOD RESPONSE: Nonconcur. The Department does not agree that early initiation of a purchase request increases Air Force costs or results in premature budget outlays. Even though the purchase requests are initiated early, a funding obligation is not created until the procuring official (i.e. contracting officer) actually initiates a buy, which continues to be based on the need date. All purchase requests (obligations) specify the Required Delivery Date (RDD) determined by the Air Force requirements system (D041), unless the item manager has specific information which warrants changing the need date for the materiel. The delivery

Now on pp. 1-3, 9

date stated in the contract is the need date or RDD, and it is unaffected by the date when the purchase request was initiated. The Department supports early initiation of the procurement documentation because it promotes efficiency by providing the procuring officials, as soon as practical, with the order quantities and due dates for materiel requirements. Using this information, the contracting personnel can organize their workload and ensure that major DoD policy objectives such as increased competition and economic order quantity and pricing are achieved.

FINDING B: Early Procurement Practice Causes Premature Outlays, Unnecessary Holding Costs, And Increased Budgets. The GAO estimated that the two ALCs prematurely initiated purchases of recoverable spares for routine inventory replenishment during calendar year 1984 totaling \$374.5 million. The GAO also estimated that, as a result, the Centers incurred unnecessary holding costs of \$52.2 million for materiel procured and received earlier than needed. The GAO found that the Air Force could effect one-time reductions in its requests for appropriations if it were to return to the former practice of buying recoverable spares at the procurement leadtime in advance of need. Specifically, the GAO analysis of the premature purchases indicated that purchases estimated at \$125.4 million were initiated more than one year early. The GAO concluded, therefore, that appropriations for these purchases could have been deferred for one year. The GAO pointed out that, as of March 31, 1985, the five ALCs had \$1.1 billion of recoverable spares on hand or on order which were excess to needs. (The GAO is referring to Air Force reported supplies in excess of nine and a quarter year needs, and implying that the early purchases involved in this report may contribute to that situation.) The GAO concluded that by initiating inventory replenishments at procurement leadtime in advance of need, the two Centers reviewed could have (1) avoided premature inventory investment and unnecessary holding costs totalling \$426.7 million, and (2) effected one-time reductions in funding requests, obligations and outlays estimated at about \$125.4 million for calendar year 1984 procurements. The GAO further concluded that the significant amounts of money invested in excess inventory and the resulting unnecessary holding costs should be matters of concern to the Air Force and should be considered in deciding on a course of action regarding the recommendations in this report. (pp. 5-10, 14-15, GAO Draft Report)

DOD RESPONSE: Nonconcur. The Department does not agree that by eliminating early initiations the Air Force could have avoided premature inventory investment and unnecessary holding costs totalling \$426.7 million. Air Force contracts for spare parts specify delivery of materiel in accordance with need as determined by the D041 requirements system or the item manager. There is no premature investment in inventory unless the contractor ignores the requested delivery date and ships materiel early. This situation can occur with any contract, even those in

Now on pp 3-7, 9-10

which the purchase request was initiated late. However, the Air Force can refuse to accept materiel that is delivered early.

There is no support provided in the audit that establishes a cause and effect relationship between early initiation and early delivery of materiel by a contractor. If early delivery occurs and the materiel is accepted, there is an added cost to store the materiel, which is approximately 1 percent of the value applied to the time interval in which the actual receipt of materiel improved upon the RDD. The GAO estimate of \$52.2 million in unnecessary holding costs is significantly overstated because it is based on holding costs of 17 percent at Oklahoma City and 18 percent at San Antonio. These holding costs include the "cost of capital" (10 percent) and the "cost of obsolescence" (6 percent at Oklahoma City and 7 percent at San Antonio). Neither of these two holding cost elements are applicable to an early delivery situation.

The Department does not agree that early initiations contribute to the \$1.1 billion in on-hand or on-order assets that were identified by the GAO as excess to Air Force needs. As discussed above, there is no basis to support a conclusion that early initiations result in early contractor deliveries. The Air Force recently completed a study of the potential excesses referred to by the GAO. The study concluded that approximately two-thirds of the reported excess is attributable to file maintenance errors which caused assets to be improperly shown as excess. Additionally, the study indicates that potential Air Force excesses account for approximately .8 percent of on-hand inventory and 2.7 percent of on-order inventories.

The Department does recognize that there could be a situation where initiation more than 12 months early could result in premature obligations because of the difficulty of controlling the in-process paperwork and ensuring that obligations are recorded against the correct year's appropriation. To ensure that this problem does not occur, the Department will apply a limitation of 12 months for early initiation and will ensure that this guidance is included in the annual Air Force buy guidelines. Additionally, the requirements system is self-correcting in that on-order assets are applied against future requirements, thereby reducing future spares procurements. Because of this, no current or future budgets require adjustment.

FINDING C: Air Force Does Not Have Valid Justification For Buying Spares Early. The GAO reported that the Commander, AFLC, acknowledged that spares were being bought earlier than procurement leadtime in advance of need and that this practice risked buying items that could become obsolete. The Commander, AFLC, also stated that the practice could cause increased inventory holding costs, but characterized the potential for increase as being nominal. Further, the GAO reported the Commander indicated that the practice would be continued because it allowed the Air Force to (1) procure items no more than once a

Appendix III
Comments From the Acting Assistant
Secretary of Defense (Acquisition
and Logistics)

year, (2) compensate for rapidly increasing administrative lead times, and (3) avoid increased numbers of not-mission-capable weapon systems. In addition, the GAO reported AFLC officials acknowledging that routinely buying inventory replenishment spares early provides the ALCs with a double safety level. The GAO found that (1) one annual purchase can be made without buying prematurely, as individual items can be procured at the optimum times, which can be readily determined from the quarterly data provided by the D041 system, (2) the D041 system compensates for administrative leadtime increases and was reprogrammed to assure that a minimum of 9 months administrative leadtime was used in computing requirements for all items--the actual administrative leadtime for the 183 premature procurements identified averaged 5.9 months, and (3) the D041 system safety levels protect against stockouts, which could cause not-mission-capable weapon systems. The GAO concluded that the D041 adequately addresses each issue raised by the Commander, AFLC, and, therefore, the early procurement practice is not necessary. The GAO also concluded that, while it was not practical to determine what portion of the excess inventory represented obsolete items, buying a procurement leadtime in advance of need would reduce the risk of acquiring materiel that might become obsolete before it was used. (pp. 10-14, GAO Draft Report)

DOD RESPONSE: Nonconcur. The comments attributed to the Commander, Air Force Logistics Command (AFLC) are taken from a letter to the GAO dated July 9, 1985. The letter stated:

"Current AFLC policy (see attached copy of buy guidelines) calls for initiating procurements early in the fiscal year on items in a buy position during that fiscal year, rather than waiting for the exact lead time from need point reflected in the D041 computation."

This statement refers to early initiation of a procurement and is consistent with the Department's responses to Findings A and B. Air Force contracts for spare parts specify a delivery date based on need as determined in the D041 requirements system or by the item manager, and early initiation of the procurement documentation has no affect on the requested delivery date.

In executing a spares program, there is always a risk of procuring some items that could become obsolete. This risk is not increased, however, by initiating a purchase request early, since the delivery date of the materiel has not been advanced and standard procedures can be used to cancel or modify outstanding contracts. Early delivery of materiel by a contractor could reduce the opportunity to cancel a contract and thereby increase the risk of accepting obsolete items in the inventory. This situation applies to any contract, regardless of whether it was initiated early or late. However, the Air Force has the option to accept or reject early deliveries, and this provides a control mechanism to protect the interest of the Government.

Now on pp 7-9

RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of the Air Force direct the Commander, AFLC, in providing annual buy guidelines to the Air Logistics Centers, to require compliance with AFLC Regulation 57-4, which stipulates that routine inventory replenishment procurements of recoverable spares be initiated procurement leadtime in advance of when the DO41 system indicates materiel is needed. (p. 15, GAO Draft Report)

Now on p 14

DOD RESPONSE: Concur partially. The DoD agrees that there is a need for guidance in this area, but not with the specific GAO recommendation. Significant changes in procurement policy in recent years warrant an update of AFLC Regulation 57-4 to fully describe the initiation process so it is absolutely clear that an early initiation of the procurement paperwork does not, and is not intended to, cause earlier contracts or deliveries. The Department does not agree that initiation of the paperwork should be delayed until procurement leadtime in advance of need as advocated by the GAO, since (1) early initiation does not change the required delivery date of the ordered materiel as determined by the DO41 requirements system or the item manager, or the timing of funding obligations and (2) early initiation of the paperwork provides additional processing time to support major DoD policy objectives such as increased competition and economic order quantities and pricing.

RECOMMENDATION 2: The GAO recommended that the Secretary of the Air Force ensure that future requests for funding by the Congress reflect the deferral or avoidance of outlays that will result from discontinuing the present early procurement practice. (p. 15, GAO Draft Report)

Now on p. 14

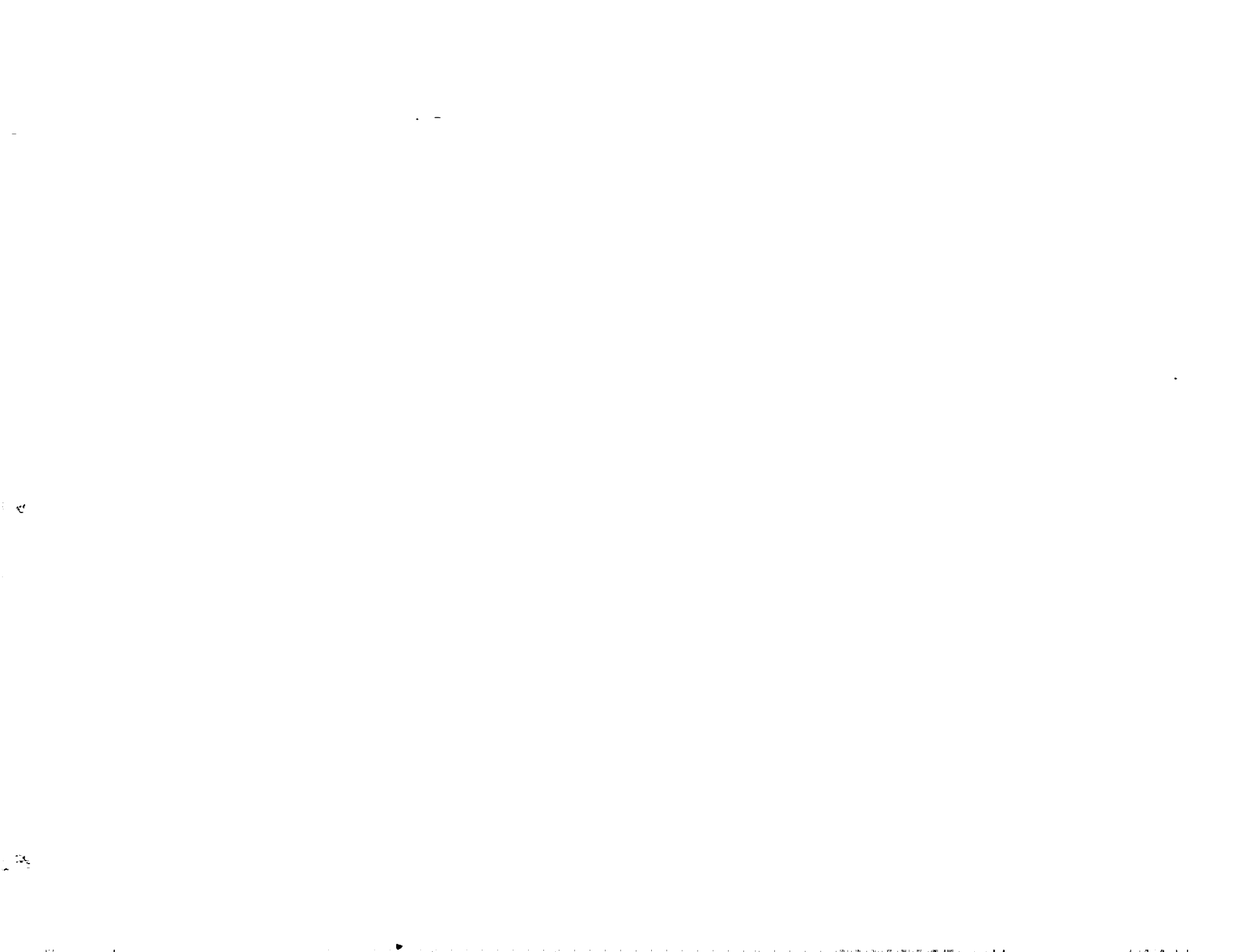
DOD RESPONSE: Nonconcur. The Air Force budget process automatically adjusts for on-order materiel, regardless of when the order was initiated. No funding avoidance will be realized. Early initiation does not advance or modify the required delivery date of the materiel; consequently, the practice does not cause premature outlays or unnecessary holding costs. Storage costs that result from early delivery of materiel by a contractor are not attributable to early initiation of a procurement action and may also occur for procurements that are initiated late.

RECOMMENDATION 3: The GAO recommended that the Secretary of the Air Force direct the Commander, AFLC, to review the five Air Logistics Centers' in-process recoverable spares purchases to (1) identify which of these were initiated earlier than necessary, (2) cancel or defer premature purchase requests so that the materiel will be received when the DO41 system indicates it will be needed, (3) defer, if economically feasible, delivery dates of materiel on contract to preclude its being received before it is needed, and (4) report the extent and value of these cancellations and deferrals to him for consideration in compiling future budget requests. (p. 15-16, GAO Draft Report)

Now on p 14

**Appendix III
Comments From the Acting Assistant
Secretary of Defense (Acquisition
and Logistics)**

DOD RESPONSE: Nonconcur. The Department does not agree that it is necessary to perform a review of in-process recoverable spares purchases to cancel or defer those that were initiated early. Air Force contracts for spares specify a required delivery date based on need as determined by the D041 requirements system or by the item manager. There is no basis in the audit to support a cause and effect relationship between early initiation of a purchase request and early contractor delivery of materiel.



Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office
Post Office Box 6015
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are \$2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.

United States
General Accounting Office
Washington, D.C. 20548

Official Business
Penalty for Private Use \$300

Address Correction Requested

First-Class Mail Postage & Fees Paid GAO Permit No. G100
