

GAO

Report to the Chairman, Subcommittee on
Defense, Committee on Appropriations,
U.S. Senate

November 1992

AIR FORCE REQUIREMENTS

Cost of Buying Aircraft Consumable Items Can Be Reduced by Millions



147953

**National Security and
International Affairs Division**

B-250883

November 18, 1992

The Honorable Daniel K. Inouye
Chairman, Subcommittee on Defense
Committee on Appropriations
United States Senate

Dear Mr. Chairman:

As requested by your office, we performed a follow-up review of the Air Force's system for computing requirements for aircraft consumable items.¹ This report addresses the status of Air Force actions and the potential procurement savings the Air Force could achieve in fiscal year 1993 by making the changes to its requirement computation system that we recommended in a July 1991 report.²

Results in Brief

Contrary to the Senate Appropriations Committee expectations, as set forth in its report on the fiscal year 1992 Department of Defense (DOD) Appropriations Act, the Air Force did not make the changes we recommended to its consumable item requirement computation system. The changes would have assured that (1) recurring demand backorders are not counted twice in requirement computations and (2) on-hand assets available to satisfy depot maintenance requirements are considered in the computations.

Had the Air Force made the recommended changes, it could have reduced fiscal year 1993 requirements by \$508 million and related procurements by \$203 million. This estimate is based on budget data showing procurements to be about 40 percent of requirements.

Background

The Air Force manages about 400,000 aircraft consumable items ranging in cost from a few cents each to thousands of dollars. For fiscal year 1993, the Air Force has forecasted requirements for consumable items valued at about \$4.5 billion. To satisfy this requirement, the Air Force is buying or

¹Consumable items are items that cannot be repaired economically and are discarded when worn out or broken. They include not only low-cost and common items such as gaskets and fasteners, but also high-priced and sophisticated electronic modules.

²Air Force Requirements: Requirement Computations for Aircraft Consumable Items Can Be Improved (GAO/NSIAD-91-201, July 17, 1991).

plans to buy \$1.8 billion of consumable items. The remainder will be satisfied by assets already on hand.

The Air Force's five air logistics centers use a standard automated system known as the economic order quantity computation system to compute requirements and generate buy or on-order termination notices whenever assets on hand and on order either fall short of or exceed requirements. Buy and on-order termination notices are validated by item managers prior to final buy or termination decisions. The consumable item computation system considers a number of factors in making buy and on-order termination recommendations. (See the glossary at the end of report for definitions of these factors.)

Backordered Requirements Are Unnecessarily Considered Twice

As we previously reported, the consumable item requirements computation system includes backordered requirements in both the lead-time demand and the backorder portion of the computation. The lead-time demand is based on the recurring demands, both filled and still on backorder, for the past 24 months. The backorder portion is based on the unfilled recurring and non-recurring demands for the same 24-month period. As a result, recurring demands that cannot be filled and become backordered are included twice in the computation.

As of March 31, 1992, backordered requirements for consumable items were valued at \$408 million, of which \$383 million represented unfilled recurring demands for the past 24 months. Unnecessarily including recurring demand backorders twice in computations has increased requirements by \$383 million and related fiscal year 1993 procurements by about \$153 million. This estimate is based on fiscal year 1993 Air Force budget data that show a procurement dollar to requirement dollar ratio of 40 percent.

The following examples illustrate the potential for procurement savings by including recurring demand backorders only once in requirement computations.

- In March 1992, the San Antonio Air Logistics Center contracted for 8,827 F-100 engine duct segments (NSN 2840-01-270-7659PT) costing \$843,773. In computing the buy quantity, 2,556 recurring demand backorders were included twice as both lead-time requirements and as backorder requirements. Had this not occurred, the procurement could have been reduced by 2,556 units valued at \$244,328. The reduced

procurement quantity, plus stock already on hand and on order, would provide a 24-month supply of stock, more than sufficient to satisfy needs over the item's 15-month procurement lead-time and reorder cycle based on economic order quantity considerations.³

- In May 1992, the Oklahoma City Air Logistics Center initiated a procurement for 781 F-111 aircraft liner assemblies (NSN 2840-00-184-5077PQ) costing \$1,358,081. In computing the buy quantity, 323 recurring demand backorders were included twice—once as a lead-time requirement and again as a backorder requirement. Had this not occurred, the procurement could have been reduced by 323 units valued at \$561,665. The reduced buy quantity, plus stock already on hand or on order, would provide a 38-month supply of stock, more than sufficient to satisfy needs over the item's 34-month procurement lead-time and reorder cycle based on economic order quantity considerations.
- In May 1992, the San Antonio Air Logistics Center initiated a procurement for 12,752 C-130 aircraft compressor blades (NSN 2840-01-291-8116RW) costing \$1,897,115. In computing the buy quantity, 349 recurring demand backorders were included twice as both lead-time requirements and as backorder requirements. Had this not occurred, the procurement could have been reduced by 349 units valued at \$51,921. The reduced buy quantity, plus stock already on hand or on order, would provide a 28-month supply of stock, more than sufficient to satisfy needs over the item's 23-month procurement lead time and reorder cycle based on economic order quantity considerations.

In commenting on our previous report, DOD and Air Force officials told us that it is necessary to include recurring demand backorders in requirements computations as both a part of the lead-time demand requirement and separate backorder requirement in order to compensate for past wholesale stock shortages and to avoid future outages. In response to our rebuttal that the consumable item requirement computation system contains self-correcting features to compensate for past shortages and to prevent recurrences, Air Force officials stated that nevertheless the system functions on the assumption that what has occurred in the past will recur in the future.

³The most economical quantity to buy based on considerations of ordering and holding costs. See glossary for additional details.

Available Assets Not Considered

As we previously reported, the Air Force continues to overstate its procurement requirements for consumable items by millions of dollars by excluding from requirement computations on-hand assets reserved to satisfy depot maintenance requirements. As of March 31, 1992, the Air Force's requirement computation system took into consideration depot maintenance requirements valued at \$193 million but did not consider \$125 million of on-hand assets that were reserved to satisfy these requirements.

We estimate that fiscal year 1993 procurements could be reduced by \$50 million by considering available on-hand depot maintenance assets in requirement computations. Our estimate is based on fiscal year 1993 Air Force budget data that show a procurement dollar to a requirement dollar ratio of 40 percent.

The following examples illustrate the potential procurement savings that could be achieved by considering in requirement computations on-hand assets reserved to satisfy depot maintenance requirements.

- In March 1992, the San Antonio Air Logistics Center contracted for 14,100 C-130 engine blades (NSN 2840-00-877-0032RW) costing \$199,092. In computing the buy quantity for this part, no consideration was given to the 39,471 parts on hand that were reserved to satisfy forecasted demands of the local depot maintenance activity. The local depot's past 24-months' demands accounted for about 35 percent, or 40,000, of the forecasted demands. Had these 39,471 on-hand parts been properly considered in the computation, the \$199,092 buy could have been avoided.
- In May 1992, the Oklahoma City Air Logistics Center initiated a procurement for 801 F-111 liner assemblies (NSN 2840-184-5042PQ) costing \$2,853,282. In computing the buy quantity for this part, no consideration was given to the 225 units on hand that were reserved to satisfy forecasted demands of the local depot maintenance activity. The local depot's past 24-months' demands accounted for 100 percent of the forecasted demands. Had these on-hand assets been properly considered in the computation, the buy would have been reduced by 225 liner assemblies valued at \$801,484.
- In November 1991, the San Antonio Air Logistics Center initiated a procurement for 43,337 F-100 engine blades (NSN 2840-01-205-0564PT) costing \$1,284,468. In computing the buy, the forecasted demands of 142,012 blades were offset by 99,675 of the 122,496 blades on hand. The computation did not consider the 22,821 blades that were reserved to satisfy forecasted demands of the local depot maintenance activity. This

activity's past 24-months' demands accounted for 83 percent of the forecasted demands. Had these reserved depot maintenance assets been properly considered in the computation, the buy could have been reduced by 22,821 blades valued at \$693,987.

In commenting on our previous report, it was DOD's and the Air Force's position that assets held in reserve for depot maintenance support are not available to offset worldwide wholesale requirements. The Air Force stated that if the reserved depot maintenance assets were used to offset worldwide wholesale requirements, they would not be available to support the depot maintenance repair workload. We do not agree. As demonstrated by the above examples, worldwide wholesale requirements include forecasted depot maintenance requirements. Since the subject assets are being held in reserve to satisfy forecasted depot maintenance requirements, it is only reasonable to expect that they be used to offset the applicable wholesale procurement requirements in requirement computations.

Matters for Consideration by the Congress

The Congress may want to consider reductions to future Air Force funding requests to reflect the procurement savings that the Air Force could achieve by acting on GAO's prior recommendations to eliminate the double counting of backordered requirements, and to consider on-hand depot maintenance assets in buy computations.

Recommendations

We recommend that the Secretaries of Defense and the Air Force reconsider their positions on our prior recommendations and direct that the necessary changes be made to the Air Force's requirements computation policy and automated systems for aircraft consumable items to assure that

- recurring demand backorders are not included twice in requirement computations and
- on-hand assets reserved to satisfy depot maintenance requirements are considered in requirement computations.

Objective, Scope, and Methodology

As requested by the Senate Appropriations Defense Subcommittee staff, the objective of this review was to assess the impact of the Air Force's continued consideration of backordered requirements twice in

requirements computations and failure to consider on-hand assets reserved to satisfy depot maintenance needs in computations for consumable items.

At three of the five Air Logistics Centers, we obtained and compared listings of items with relatively large amounts of backorders or depot maintenance assets with listings of items for which buys had recently been initiated or were planned. From these listings, we made a judgmental selection of items having relatively large amounts of backorders or depot maintenance assets, and for which buys were recently initiated or were planned. For the selected items, we evaluated the requirements computations and related documentation supporting recently made or planned buys.

To determine the magnitude of the backorder computation and asset exclusion problems, we obtained information on the value of (1) recurring and nonrecurring backorders and (2) depot maintenance requirements and applicable on-hand assets as of March 31, 1992. We also analyzed the Air Force's fiscal year 1993 budget data for aircraft consumable items in order to determine the ratio of procurement dollars to requirement dollars.

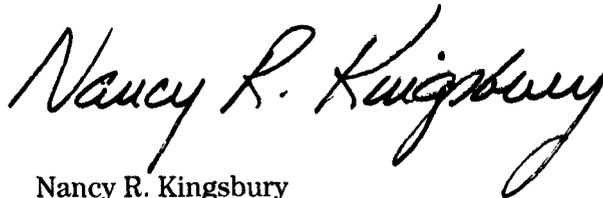
We performed our work at the San Antonio, Warner Robins, and Oklahoma City Air Logistics Centers between April 1992 and September 1992. Our work was performed in accordance with generally accepted government auditing standards.

As agreed with your office, we did not obtain formal Department of Defense comments on this report. However, we provided DOD and the Air Force with advance copies of the report, which we discussed at a closeout meeting on October 29, 1992. DOD and Air Force officials stated that they still disagreed with our findings and recommendations for the same reasons cited in response to our prior report. Also, they questioned the \$1.8 billion of ongoing or planned Air Force buys to satisfy fiscal year 1993 requirements which we used in arriving at a 40 percent procurement dollar to requirement dollar ratio. In this respect, we were told that the Air Force was allocated \$558.6 million of additional procurement funds for fiscal year 1993 rather than the \$770.3 million that we included in the \$1.8 billion figure on the basis of documentation previously provided by DOD and the Air Force. Subsequently, we were advised by DOD and Air Force officials that they could not provide us documentation supporting the \$558.6 million figure because it was part of fiscal year 1994 budget data that had not been approved for release.

We are sending copies of this report to the Chairmen, Senate and House Committees on Appropriations, and Senate and House Committees on Armed Services; the Secretaries of Defense and the Air Force; and the Director, Office of Management and Budget. Copies will be made available to others on request.

Please contact me at (202) 275-4268 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix I.

Sincerely yours,

A handwritten signature in black ink that reads "Nancy R. Kingsbury". The signature is written in a cursive style with a large, sweeping "N" and a long, trailing "y".

Nancy R. Kingsbury
Director
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Glossary

Reorder Level	The quantity of assets that must be on hand and on order to sustain operations over the item's procurement lead time. This level is the sum of the lead-time demand quantity and other requirements.
Reorder Level Deficiency	The extent to which the quantity of assets on hand and on order falls short of the reorder level. The consumable item computation system generates a buy notice whenever a reorder level deficiency occurs.
Lead-Time Demand Quantity	The quantity of item assets that is needed to satisfy forecasted demands during the time it takes to order and receive stocks. This quantity is computed by averaging the recurring demands for the past 24 months, multiplying by a program ratio (future flying hours divided by past flying hours) that predicts whether future recurring demands will be higher or lower than past demands, and then multiplying by the procurement lead-time.
Computable Dueouts (Backorders)	The unfilled portion of recurring and nonrecurring demands that occurred during the past 24 months.
Economic Order Quantity (Reorder Cycle Quantity)	The term implies the most economical quantity to buy based on considerations of ordering and holding costs. However, the Air Force's computation formula is programmed with minimum buy constraints, which can result in buys of several months' more supply than would be the case if based only on economic order quantity considerations. This is done to insure a desired reorder cycle (such as a 6- to 12-month interval between orders). The economic order or reorder cycle quantity is calculated by multiplying the forecasted average monthly demand rate by the desired months' intervals between orders.
Buy Quantity	The sum of the reorder level deficiency plus the reorder cycle quantity.
Termination Level	The quantity of on-hand and on-order assets that will cause the automated computation system to generate an on-order termination notice. It represents the sum of the reorder level, the reorder cycle quantity, and an additional 6 months of forecasted demands.

**On-Order Termination
Quantity**

The quantity of assets on order that, when added to assets on hand, exceeds the sum of the reorder level and reorder cycle quantity.

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