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Report to Congressional Requesters

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AIR FORCE LOGISTICS

C-17 Support Plan Does Not Adequately Address Key Issues

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National Security and
International Affairs Division

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The Honorable John Warner
Chairman
The Honorable Carl Levin
Ranking Minority Member
Committee on Armed Services
United States Senate

The Honorable Floyd Spence
Chairman
The Honorable Ike Skelton
Ranking Minority Member
Committee on Armed Services
House of Representatives

In 1998, Congress mandated[1] that the Secretary of the Air Force submit a plan to Congress by March 1, 1999, identifying core[2] logistics capabilities for the C-17 aircraft consistent with the requirements of 10 U.S.C. 2464.[3] Congress also mandated that we review the Air Force's C-17 plan and submit a report to Congress evaluating its merits. This report addresses the extent to which the Air Force's plan (1) identifies core logistics capabilities, (2) provides assurance of the cost effectiveness of the planned support strategy, and (3) allows implementation under current law.

Results in Brief

The Air Force is working to pilot test a new logistics support concept for the C-17 that places increased reliance on the private sector for support. The Air Force plan incorporating this concept was provided to the

[1] Section 351 of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (Public Law 105-261).

[2] Section 2464 of title 10 requires that the core logistics capability be government-owned and operated and sufficient to ensure a source of technical competence and resources necessary to ensure an effective and timely response to mobilization, national defense contingency situations, and other emergencies.

[3] This provision calls for core requirements to be identified within 4 years of a mission-essential weapon system attaining initial operating capability. Initial operating capability represents the date when a service determines that a new system has been fielded at its first operating base in sufficient numbers.

Congress. The plan has three key shortcomings that need to be addressed so the pilot's merits can be adequately assessed. These shortcomings relate to identifying
C-17 core requirements, the strategy's cost-effectiveness, and the Air Force's ability to implement the plan under current law.

The plan the Air Force submitted to Congress did not identify C-17 core requirements or provide information on a process for establishing the specific capabilities needed to support such requirements. The Air Force outlined its current process for analyzing core requirements and capabilities and indicated that its current approach to such analysis is not weapon-system specific. To date, requirements for the C-17 aircraft have not been included in the Air Force's core process. Further, the Air Force stated that it does not expect to complete a core analysis incorporating the C-17 requirements until 2002. This would be 8 years after the C-17 achieved its initial operational capability.

The 1999 Air Force plan's conclusion that C-17 depot maintenance would be less cost-effective in Air Force depots is not adequately supported. Our first concern is that the analysis is based on 1996 data, and more current information should have been used. The Air Force plans to complete an updated cost analysis in 2002. However, work remains to fully develop the methodology, metrics, criteria, and data sources that will be used in making any future sourcing decisions for C-17 logistics work. Secondly, the conclusions drawn from the 1996 data about the cost-effectiveness of the private sector under the flexible sustainment approach are based on incomplete analysis. Finally, the Air Force is not programming the funds that would be required to establish in-house logistics support capabilities, without which there may not be a viable in-house alternative.

We question whether the Air Force plan can be implemented under current law. The Air Force plan envisions that the C-17 contractor will contract with public depots for selected maintenance services for some C-17 systems and equipment. Under applicable law, the Air Force must determine that the services to be obtained from public depots are not commercially available. Past assessments by the Air Force have shown that commercial sources are available to perform depot maintenance on the same or similar commodities for other aircraft.

This report includes recommendations concerning the Air Force's approach to conducting a cost analysis and implementing its planned support approach.

Background

For many years the Air Force has relied on contractors to provide logistics support for commercial derivative systems such as the KC-10 aircraft as well as for some high-cost, highly classified systems produced in small quantities, such as the U2. In recent years the Department of Defense (DOD) and the services have initiated actions to expand contractor logistics support to other military systems that were not derived from similar commercial systems.

The Air Force has designated the C-17 as 1 of the 10 Air Force systems that will be used as a pilot to implement a DOD initiative that will emphasize contracting with the private sector for support services as a part of its logistics reengineering efforts. This designation of the C-17 as a pilot project is consistent with defense reform initiatives, which called for a strategic shift toward increased reliance on the private sector to meet support needs.

Overview of C-17 Program

The C-17 is a four-engine, wide-bodied, strategic airlift aircraft designed to accomplish a wide variety of tasks, including (1) transporting vehicles, equipment, cargo, and personnel over intercontinental ranges and (2) landing at small, austere airfields. The aircraft has a demanding and diverse worldwide mission, and it is designed to provide significant improvements in performance and reduced operational costs relative to other strategic air-lifters. The number of aircraft to be bought has changed over time, ranging from an initial quantity of 210 to the currently approved quantity of 120. Although the Air Force had originally determined that the C-17 would largely use in-house support, the reduction in fleet size prompted officials to reconsider support options. Forty-nine aircraft have been produced and will be based at four operating locations. C-17 production is expected to extend through 2005.

Program Management Organization

Since program inception in 1981, C-17 development and production has been managed by the C-17 System Program Office at Wright-Patterson Air Force Base, Ohio. In 1984 the San Antonio Air Logistics Center became the C-17 systems support manager, responsible for sustainment management functions[4] such as materiel management, depot maintenance, and

[4] Sustainment management is the support of a system after it becomes operational. Recently proposed changes in DOD's sustainment management process would retain more of these functions in the acquisition program office rather than transferring them to the system support management office, which is generally collocated with the responsible Air Force depot.

configuration control. After the San Antonio Air Logistics Center was identified for closure during the 1995 Base Realignment and Closure process, the Air Force designated Warner Robins Air Logistics Center as the new C-17 systems support manager, with some C-17 functions previously performed at San Antonio transferring to Warner Robins, while others are to be performed by contract.

Flexible Sustainment Strategy

On November 1, 1996, the Air Force C-17 program office issued its analysis of alternative long-term support options for the C-17. This report estimated in-house and contractor support costs for the materiel management and depot maintenance functions. The report summary stated that certain subsystems are more economical to accomplish organically and others by contractors and the addition of materiel management costs shows that a significant savings may be gained by consolidating functions at a contractor location.

In 1997, based on this conclusion and on uncertainties surrounding the future Air Force depot maintenance structure, the Air Force postponed its final decision on where both materiel management and depot maintenance activities would be performed and it adopted a support strategy for the C-17 referred to as "flexible sustainment."[5] Under flexible sustainment, the Air Force expected to rely principally on contractor supported logistics for the C-17, at least through 2003. The contractor, Boeing Company, would be expected to provide materiel management,[6] depot maintenance, and engineering support for the total system during this time. At the same time, the contractor could use the military depot system to provide some support.

The Air Force's C-17 flexible sustainment strategy involves

- having Boeing, the C-17 aircraft manufacturer, retain responsibility for depot maintenance;
- moving materiel management—including inventory management, engineering, data management, and some program management—from

[5] Although the C-17 support program is the only Air Force system that is referred to as using flexible sustainment, it is similar to traditional contractor logistics support or the newer concept of total system program responsibility, except that it is approved for a limited period of time rather than for the life of the system.

[6] Materiel management involves the determination of requirements for spare and repair parts, stock issuance and supply parts support, and engineering.

the closing San Antonio Air Logistics Center to Boeing between 1998 and 2000;[7]
- moving remaining systems support management responsibilities to Warner Robins Air Logistics Center;
- evaluating the flexible sustainment approach between 2001 and 2002; and
- conducting a final depot support decision process in 2003.

Air Force Plan in Response to Congressional Mandate

In response to the congressional mandate for a plan addressing C-17 core capabilities, the Air Force submitted a plan consisting of two volumes:

- a resubmission of an October 10, 1997, report sent to the Senate Appropriations Committee entitled Depot Support Strategy: Flexible Sustainment and
- the March 1, 1999, report to Congress entitled Depot Support Strategy: Flexible Sustainment Strategic Plan.

The first volume had previously been issued in response to a requirement in Senate Report 104-286 on the Department of Defense Appropriations Bill of 1997. It pointed out that the C-17 Flexible Sustainment strategy takes advantage of the strengths of both industry and the government by establishing an "intelligent partnership." It defines this strategy as a joint venture between the public and private sector that relies on support from the source providing the best value, based on technical competence and economic factors. Air Force officials said that, under flexible sustainment, Boeing could award specific depot maintenance work to the most cost-effective provider from the private or public sector.

The second volume of the Air Force plan stated that the Air Force intends to postpone the C-17 source-of-repair decision until 2003—2 years prior to

[7] The conversion of non-depot commercial functions, such as materiel management, to contractor performance is generally subject to OMB Circular A-76. The C-17 program office believes that A-76 does not apply to the materiel management services because the circular provides for a waiver for functions performed at installations scheduled for closure. Further, the program office believes that the study and notification provisions of 10 U.S.C. 2461 do not apply to the C-17 materiel management function since the law applies only to functions that were being performed by DOD civilian employees as of October 1, 1980. The program office states that the C-17 full-scale engineering and development contract was not awarded until 1982 and that the first sustainment contract for the C-17 did not begin until 1995. Given the limited time available for this review, we were unable to fully evaluate these issues.

the projected end of C-17 production. This process would be accomplished using three separate but related subprocesses:

- a core determination process;
- a cost-benefit analysis comparing costs of in-house and contractor support options over the life of the C-17 and including both recurring and non-recurring costs; and
- an analysis providing an assessment of the current and projected balance of depot maintenance workloads between the public and private sectors for purposes of addressing requirements of 10 U.S.C. 2466, which provides that not more than 50 percent of the depot maintenance funding may be used for maintenance performed by nongovernmental personnel.[8]

At the current time, the interim contractor support arrangement that was established with Boeing is being extended under the flexible sustainment strategy. Additionally, materiel management work is being moved to Boeing from the San Antonio Air Logistics Center, where the C-17 system support manager currently is located.

Air Force Plan Does Not Identify Core Capability Requirements for the C-17

While the Air Force C-17 plan provided information about its support strategy and plans for long-term decision-making, it did not identify any current core capability requirements for the C-17. Since specific core requirements were not identified, there was also no information provided on a plan for establishing the capabilities needed to support the core requirements. The Air Force outlined its current process for analyzing core requirements, which, to date, have not included consideration of the C-17. The Air Force stated that it did not expect to complete a core analysis incorporating the C-17 until 2002. This will be 8 years after the C-17 achieved an initial operating capability. A core assessment of the C-17 is necessary to identify specific C-17 maintenance capabilities needed in military depots to support DOD core logistics capability now or in the future. For several reasons we question the Air Force's rationale for postponing the core logistics assessment. Delaying making this assessment could create the risk that some maintenance capabilities might not be available when needed.

[8] Section 2460 of title 10 provides that depot maintenance includes overhaul, upgrading, or rebuilding of parts regardless of the source of funds for the maintenance or repair. It also specifies that depot maintenance includes all aspects of depot-level software maintenance.

Department of Defense Core Methodology

The Department of Defense's core determination process is designed to use the Joint Chiefs of Staff strategic planning scenario to identify contingency requirements for tasked systems and ensure that in-house maintenance capabilities can surge and expand to meet wartime requirements. However, DOD's core policy, which was modified in 1996, does not require that a DOD depot have repair capabilities for each tasked system.[9] The policy requires that depots have the capability to be able to support all tasked systems, unless an analysis of private sector capability determines that sufficient reliable commercial sector capability exists. For example, the DOD policy states that if the facilities, equipment, and skilled personnel to perform maintenance on one type of aircraft enable a depot to be capable of performing maintenance on other types of aircraft, then the core capability does not necessarily have to include each individual system.

Air Force Postponed Core Determination Incorporating C-17 Aircraft

The Air Force's March 1999 plan stated that the Air Force has postponed the incorporation of C-17 surge requirements into its core determination process until 2002. The plan indicates that it would be premature to do such an analysis now given the limited number of C-17 aircraft in the active inventory. The plan does describe how the Air Force expected to address core logistics capabilities related to the C-17. However, by the time such an analysis is completed, the Air Force will have relied largely on the contractor to support the C-17 for 8 years after achieving initial operational capability. If, at that later date, the Air Force were to identify the need for establishing C-17 specific capability in an Air Force depot, some additional period of time could be required to develop that capability. For example, the C-17 Program Director indicated the need for surge capability at the Warner Robins depot to complement the contractor's capacity. He stated that the C-17 fleet might require a mission-unique modification to perform in a specific theater of operations, such as adding enhanced defense systems. Given such a requirement, the program director said that because of the (1) time that would be required to increase capacity and (2) limitations on support equipment and hangar space at the Boeing facility, a fleet-wide modification would take significantly longer without Warner Robins Air Logistics Center as an immediately available source. Meanwhile, the C-141 workload—the in-house workload that the Air Force says is supporting much of the current, large airframe surge

[9] Under this policy, the Air Force identified core capability requirements by commodity (i.e., airframe, engine, landing gear, avionics, etc) versus whole new weapons.

requirements—is declining as the aircraft is being phased out of the inventory.[10]

Given the requirement in 10 U.S.C. 2464, the Air Force's past practices, and workload considerations, the Air Force's position that it is premature to include the C-17 into the current core determination process is not reasonably supported. For example, and most importantly, the Air Force is required by statute to identify a core logistics capability not later than 4 years after a mission-essential weapon system achieves an initial operating capability. The C-17 achieved this capability in January 1995. Also, while the Air Force is delaying assessing core requirements for its military unique C-17 aircraft system, it has already made a core assessment for the C-17's commercial engine. Further, the Air Force has previously completed other core assessments as a normal part of the logistics planning process during the systems acquisition phase.[11] Lastly, the Air Force is contracting out depot maintenance workloads from its closing Sacramento and San Antonio depots that are valued at about $238 million annually. With this transfer the Air Force is moving increasingly toward the limit in 10 U.S.C. 2466 that prohibits contracting out more than 50 percent of its depot maintenance workload. As this happens, the Air Force could be faced with difficult choices regarding what workloads it wants to retain in-house and contract out. Given the mandate in 10 U.S.C. 2466, the Air Force's past practices, and workload considerations, it is unclear why the Air Force maintains it is premature to include the C-17 into the current core determination process.

Uncertainties Regarding Cost Effectiveness of the Current Plan

The 1999 Air Force plan's conclusion that C-17 depot maintenance would be less cost-effective in Air Force depots is not adequately supported. Our first concern is that the analysis is based on 1996 data and more current information should have been used. The Air Force plans to complete an updated cost analysis in 2002. However, work remains to fully develop the methodology, metrics, criteria, and data sources that will be used in making any future sourcing decisions for C-17 logistics work. Secondly, the conclusions drawn from the 1996 data about the cost-effectiveness of the

[10] The last programmed C-141 depot maintenance work will be performed in 2004. Unless other large airframe workloads are designated as core, C-17 core may be needed.

[11] For example, the Joint Stars program office made decisions regarding depot maintenance and materiel management support in 1988, during the acquisition process and prior to the initial operating capability being established.

private sector under the flexible sustainment approach are based on incomplete analysis. Additionally, the Air Force is not programming the funds that would be required to establish in-house logistics support capabilities, without which there may not be a viable in-house alternative.

Improved Cost Data Needed

The Air Force used its 1996 cost analysis to support its 1999 plan. In completing its 1996 cost analysis, an Air Force cost team collected projected usage data (failure rates, repair times, repair parts requirements, etc.) and overlaid a projected flying hour program to estimate repair and maintenance requirements in direct labor hours for the C-17 over a 30-year life cycle. The team applied then current labor rates for the appropriate contractor or DOD depot to develop recurring cost estimates for the projected depot repair requirements. They did not include the cost of material, which they assumed would be the same for both providers. They also identified nonrecurring cost estimates for both the contractor and DOD depots.

The basic methodology employed by the Air Force to develop the cost data is sound. However, we are concerned about the lack of more recent data for the 1999 plan. Air Force officials said they plan to collect data during the C-17 flexible sustainment contract period that will allow a more up-to-date assessment in support of its planned 2003 source-of-repair decision. The Air Force will use a cost benefit analysis to determine whether continued contractor or public sector support would be the most cost-effective, long-term support option. However, the Air Force has not identified the methodology, for estimating recurring and nonrecurring cost elements or the metrics, criteria, and data sources that will be used in making any future sourcing decisions for non-core C-17 logistics work. Air Force officials said they recognize the need to develop cost metrics to be used in the future C-17 sourcing assessment, but they have not yet done so. The information is needed to ensure the Department will be in a position to make the most cost-effective decision; for example, to ensure that it has data available to evaluate in-house costs.

DOD's March 1999 update to its November 1997 Defense Reform Initiative report said that the Department intends to increase the competitiveness of its depot maintenance contracts. While the program office has not yet determined if a competition will be conducted to determine the long-term C-17 source of support, they believe they have acquired the necessary technical data to conduct a competition. We have reported in the past that it is difficult to control costs for sole source contracts. We also reported

that 91 percent of the depot maintenance contract actions we reviewed—representing 69 percent of the DOD non-ship depot maintenance contracts—were awarded on a sole source basis.[12] One of the major factors inhibiting competition was not having required technical data.

Weaknesses in Air Force Analysis

The Air Force based its increased reliance on the private sector in the flexible sustainment concept on data in its 1996 depot support strategy study. However, the Air Force's analysis of data in that study produced some conclusions about the cost-effectiveness of the materiel management and depot repair functions that were not adequately supported.

The 1996 Cost Study Conclusions Are Inaccurate

The Air Force's March 1999 plan concluded that there is an insignificant cost difference when comparing government and private sector performance of the materiel management function. The Air Force's plan reached a different conclusion than the 1996 Depot Support Strategy Study. The 1996 study concluded that significant savings could be achieved by consolidating materiel management and depot maintenance with the contractor. The 1996 conclusion was a key factor in the Air Force's 1997 decision to implement the flexible sustainment concept. Air Force officials told us that its 1996 conclusion was not supported by its cost data. Nevertheless, its 1999 plan indicated that the Department still plans to transfer materiel management to the contractor by the end of fiscal year 1999.

Weaknesses in 1999 Plan Methodology Gave Incomplete Results on Cost-Effectiveness of Public Sector Maintenance

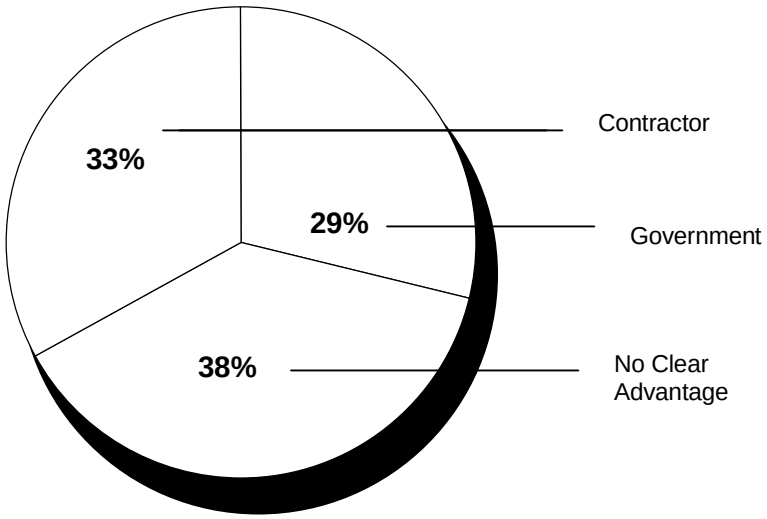
The 1999 plan did not provide a complete analysis of the share of C-17 depot maintenance workload estimated to be more cost-effectively performed in Air Force depots. The analysis assessed the maintenance requirements for C-17 subsystems by aggregating the number of systems being evaluated, but did not consider the dollars associated with the maintenance. The analysis approach gives an incomplete picture of the optimum mix of depot maintenance workload between the public and private sectors.

As indicated in figure 1, the 1999 study concluded that 33 percent of the C-17 depot maintenance work would be performed more cost-effectively by the private sector and 29 percent more cost-effectively by Air Force depots.

[12] Defense Depot Maintenance: Contracting Approaches Should Address Workload Characteristics (GAO/NSIAD-98-130, June 15, 1998).

For the remaining 38 percent, it concluded that there was no meaningful cost difference between public and private sector sources of repair.

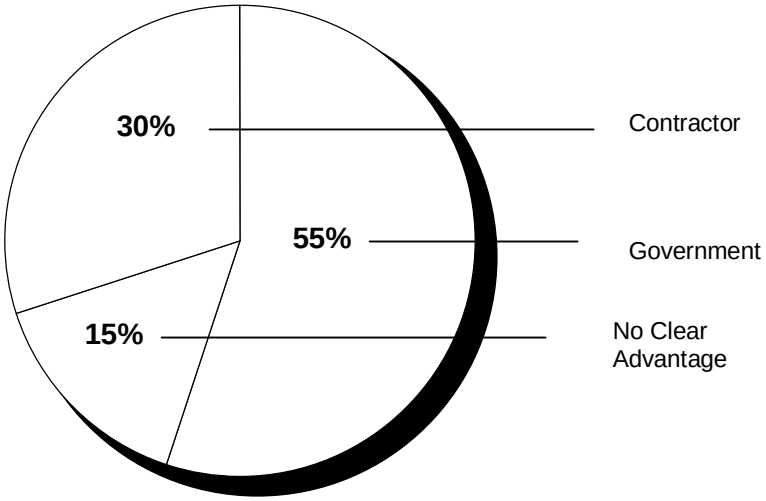
Figure 1: Air Force Analysis of Optimum C-17 Depot Workload Mix



Source: Air Force March 1999 Plan to Congress on C-17 Flexible Sustainment.

The plan indicated that the mix was based on total life cycle cost. Our analysis showed the Air Force calculations were based on the number of systems or subsystems that would fall in each category, but did not include the total dollar value represented in each category. (See app. I for the analysis showing individual subsystems categorized as performing more cost-effectively by the private and public sectors or not having a clear difference.) We recomputed the public-private sector mix percentages using the cost data from the study. The results are shown in figure 2.

Figure 2: GAO Analysis of Optimum C-17 Depot Workload Mix



Source: GAO calculations based on data from 1996 C-17 Depot Support Strategy Study.

The results indicate that 30 percent of the dollar value of the depot maintenance work would be performed more cost-effectively by the private sector and 55 percent more cost-effectively by Air Force depots. For the remaining 15 percent, the cost team's data showed there was no meaningful cost difference between public and private sector sources of repair. These figures include repair costs for the C-17's commercial engine, which has been designated for contractor logistics support for the life of the system.

Funding Not Currently Programmed for Maintaining a C-17 In-house Option

While the Air Force C-17 support strategy calls for postponing a depot maintenance support decision until 2003, maintaining a viable Air Force depot option requires that the Air Force program funds to establish depot capabilities. Program officials said that some funds had been programmed, but were shifted to support other flexible sustainment needs. Without programming funds in a timely manner to support depot activation, the Air Force may not be able to pursue an in-house option, even if otherwise determined to be the most cost-effective alternative. Air logistics center officials said that funds should be programmed to preserve the option to revert to in-house depot support.

Additional Authority Needed to Implement the Plan

The Air Force plan also envisions that the C-17 contractor will contract with public depots for selected maintenance services for some C-17 systems and equipment. Under current law, the Air Force must determine that the services to be obtained from public depots are not commercially available. Past assessments by the Air Force of the same or similar commodities have concluded that commercial maintenance services are available. Given these assessments, additional statutory authority would likely be required to implement the Air Force's planned strategy to have military depots sell maintenance services to the support contractor.

Commercial Nonavailability Requirements Under 10 U.S.C. 2553 Could Limit Public Depot Participation

Boeing expects to purchase services from military depots using the sales provisions of 10 U.S.C. 2553. Section 2553 of title 10 authorizes sales under certain conditions of services and articles by DOD industrial facilities—including depots—to the private sector. [13] This authority is predicated on an agency determination that these services or articles are not available commercially in the United States.

To what extent capabilities to perform C-17 maintenance workloads are not available in the private sector is unclear given conflicting historical information available on this subject. For example, in 1996, as a part of its core determination process for workloads at the closing Sacramento depot, the Air Force performed repair base analyses to assess private sector capabilities and capacities for repairing flight instruments, electrical accessories, hydraulics, and software engineering maintenance work. The assessment determined that considerable private sector capability was available for these commodities; therefore the Air Force determined that it did not need to retain these capabilities in-house. It should also be noted that the C-17 workloads initially identified as candidates for private sector performance were identified based on cost rather than on an assessment of commercial availability. Given this information, it is uncertain to what extent a market assessment for similar items on the C-17 would produce different results.

[13] Air Force officials originally had anticipated using 10 U.S.C. 2474 as a basis for Boeing to contract with military depots for some depot maintenance workloads, but did not since DOD has not implemented the legislation. As we previously reported [Defense Depot Maintenance: Public-Private Partnering Arrangements (GAO/NSIAD-98-91, May 7, 1998)], the statute does not contain any specific sales or leasing authority.

According to program officials, they recognize the limitations of selling goods and services under 10 U.S.C. 2553, but they believe it is the only option available at this time. These officials said they plan to acquire services from public depots in support of the C-17 program under 10 U.S.C. 2553, and initially they are pursuing two private-public partnering projects.

Conclusions

The Air Force is implementing a pilot for a new logistics support approach for its C-17 aircraft. However, the support plan it submitted to Congress had several key shortcomings. These issues must be addressed before the pilot program's merits can be adequately assessed.

The plan did not identify the core logistics capabilities for the C-17 or provide specifics about establishing the in-house workload necessary to maintain such capabilities. Also, the plan's cost effectiveness conclusions are not adequately supported due to the age of the data and incomplete supporting analysis. The Air Force plans to reassess C-17 support options and make a long-term support decision in 2003. However, it has not identified the methodology, metrics, criteria, and data sources that will be used in making such an assessment. Also, funds have not been programmed for public depot support for the C-17, which may limit the viability of a public sector alternative in 2003. These issues need to be resolved quickly so all needed data can be identified and gathered as the Air Force moves toward the 2003 decision-making timeframe. Further, current law does not provide the required authority to implement the Air Force's C-17 plan to have the military depots sell services to the support contractor for some of the C-17 depot maintenance work.

Recommendations

We recommend that the Secretary of Defense direct the Secretary of the Air Force to

1. update the Air Force's core analysis to include the C-17 airframe and subsystems and provide this information with the fiscal year 2001 president's budget ,

2. develop a more specific logistics resourcing plan that includes a comprehensive cost effectiveness analysis and evaluation metrics prior to the submission of the 2001 budget, and

3. develop budget requirements for public depot funding consistent with having this capability as a support option, including incorporating requirements in the fiscal year 2001 Program Objective Memorandum.

Also, if DOD decides to implement the current support plan, we also recommend that the Secretary of Defense seek legislative authority to allow military depots to sell depot maintenance goods and services to the C-17 support contractor, notwithstanding the commercial availability of those repair services.

Agency Comments

In providing oral comments on a draft of this report. Air Force officials said that they generally agreed with the intent of our recommendations, but they also said the Air Force plans already address these recommendations. Regarding our recommendation to update the Air Force's core analysis to include the C-17 requirements, the Air Force stated that its plan to complete the C-17 core analysis by 2002 dovetails precisely with the flexible sustainment approach leading to a final support decision in 2003. Air Force officials noted that the flexible sustainment approach was implemented prior to the fiscal year 1998 National Defense Authorization Act changes to 10 U.S.C. 2464, which added the requirement that DOD identify core logistics capability within 4 years of a mission-essential system attaining initial operating capability. While we recognize that the Air Force implemented its flexible sustainment program prior to the fiscal year 1998 amendment to 10 U.S.C. 2464, there is no provision that would exempt the C-17 aircraft system. Consequently, we believe that the Air Force must comply with the 10 U.S.C. 2464 requirement. By maintaining the existing schedule for performing a C-17 core workload assessment in 2002, the Air Force is delaying compliance with the requirement. Therefore we have modified our recommendation to specify an earlier core determination.

In commenting on our recommendation that the Air Force develop a more specific logistics resource plan that includes a comprehensive cost-effectiveness analysis and evaluation metrics, the Air Force stated that it will use the source-of-repair assignment process methodology, which includes a cost-benefit analysis. The Air Force also stated it will use a best value criteria for making a source-of-repair decision for the C-17 should it not be designated as a core workload. Although the Air Force's source-of-repair decision process requires a cost analysis, as we pointed out, it does not identify the recurring and non-recurring cost elements, data sources, or methodology for performing the required cost analysis. The intent of our

draft recommendation was to focus on developing a cost analysis methodology earlier than the 2003 source-of-repair decision to ensure that the appropriate cost data are collected during the flexible sustainment period and thereby available at the time of the final support decision. Therefore we modified our recommendation to clarify the actions we believe are needed.

In response to our recommendation that the Air Force develop budget requirements for public depot funding consistent with the plan to have this capability as a support option at the time of the final support decision, the Air Force stated that it will ensure full funding to establish depot maintenance capabilities wherever dictated by the long-term depot decision. However, during further discussions with Air Force officials we determined that funding has not yet been included in the Air Force Program Objective Memorandum (POM). Officials said that during the fiscal year 2002 POM development, the Air Force plans to include an undetermined amount of funding for fiscal years 2004 and 2005. They noted that this allowance could represent about 10 percent of the estimated funding requirement for developing depot capability. We question whether the timing of such a funding decision or the level of funding, if approved, would be adequate to ensure timely public depot activation if in-house maintenance were determined to be the more cost-effective alternative. We continue to believe that adequate funds should be programmed to preserve the option to revert to in-house depot support. Thus, we modified our recommendation to more specifically represent that view.

Regarding our recommendation on seeking legislative authority to allow military depots to sell goods and services to the C-17 support contractor, the Air Force stated that presently-identified contracting opportunities can be implemented under current law. Nevertheless, they said the Air Force would support an amendment to allow military depots to sell depot maintenance goods and services to the C-17 support contractor, notwithstanding the commercial availability of those repair services. We continue to believe it is unclear whether a determination of non-availability could be made for potential C-17 maintenance work the contractor may wish to obtain from a government depot.

Scope and Methodology

In conducting our work, we contacted officials at Headquarters, United States Air Force, Washington, D.C.; Headquarters, Air Force Materiel Command, Wright Patterson Air Force Base, Ohio; Headquarters Air Mobility Command, Scott Air Force Base, Illinois; the San Antonio Air

Logistics Center, Kelly Air Force Base, Texas; the Warner Robins Air Logistics Center, Robins Air Force Base, Georgia; the Air Force Audit Agency, Wright Patterson Air Force Base; as well as the Boeing Company, Long Beach California; PEMCO, Birmingham, Alabama; American Airlines, Tulsa, Oklahoma; and BF Goodrich Aerospace, Everett, Washington.

To evaluate the merits of the Air Force's C-17 March 1999 report, we interviewed officials and collected relevant corroborating documents from Headquarters, Department of the Air Force; Headquarters, Air Force Materiel Command; Air Force C-17 System Program Office team members. We reviewed the methodology for the cost analysis underlying the first volume of the Air Force's report and analyzed the summary cost estimates to test the resulting conclusions.

To determine the optimum public-private mix of depot workloads based on the projected maintenance costs for the C-17 subsystems, we sorted the costs for each alternative and calculated the resulting percentage shares. We also collected actual cost data from the contractor for depot repairs accomplished during 1998 and 1999 and compared the data to cost estimates in the 1996 depot support strategy report. We were not able to analyze differences between the actual contract data and the earlier estimates because the data were in incompatible formats.

To assess the Air Force decision to postpone its determination of core logistics capabilities for the C-17 aircraft until 2002, we collected information on DOD and Air Force policies and procedures for determining core logistics capabilities. We also reviewed projected depot maintenance workloads currently supporting Air Force core capacities for cargo aircraft and surge requirements for the C-17 aircraft. To assess assertions in the second volume of the report regarding adequate technical data that would be procured and be available, we discussed and reviewed the technical data for both repair and procurement of spare parts available with both the Air Force Audit and C-17 managers for engineering configuration and technical data.

To determine whether the Air Force's C-17 flexible sustainment plan is compatible within the existing legal framework, we performed a legal assessment. To test the sufficiency of the Air Force's determination regarding non-commercial availability, we reviewed the Air Force's determination and findings documentation; interviewed officials from the Boeing Company, PEMCO, American Airlines, and BF Goodrich Aerospace; and reviewed all additional documentation provided to support Boeing's

market research. We performed our review between February 1999 and April 1999 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Honorable William S. Cohen, Secretary of Defense; the Honorable F. Whitten Peters, Acting Secretary of the Air Force; the Honorable Jacob J. Lew, Director, Office of Management and Budget; and to interested congressional committees. Copies will be made available to others upon request. If you have any questions regarding this report, please call the contacts listed in appendix II.

David R. Warren, Director
Defense Management Issues

Contents

Abbreviations

DOD	Department of Defense
GAO	General Accounting Office
POM	Program Objective Memorandum

Potential for Public Support to Private Sector Contractors Sorted by Subsystems

In its 1996 depot support strategy report, which is part I of its March 1999 Flexible Sustainment Plan submitted to Congress, the Air Force identified types of workload that it believed could be performed more cost-effectively in public and private facilities, and some workloads where they did not believe the cost difference was significant between the two. The results of the 1996 study were used to justify the Air Force's flexible sustainment strategy.

Table I shows subsystems for which the private or public sector would likely be the most cost-effective source of repair. It also shows the extent to which the Air Force concluded that a determination could not be made where there was less than a 10 percent difference between the cost estimates for the public and private sector providers.

Table I.1: C-17 Subsystems Sorted by Most Cost-effective Source of Repair

Private sector	Public depots	Not clear
Engine	Automatic test equipment	Environmental control systems
Quick engine change	Operational flight programs	Structures
Auxiliary power units	Heavy aircraft maintenance	Mechanical flight controls
Electrical	Landing gear	Lighting
Fuel	Fuselage	Recorders
Hydraulics	Instruments	Utilities
Oxygen	Integrated flight controls	Navigation
Composites		Intercom
		Misc. communications

Source: Air Force C-17 Depot Support Strategy Study, November 1, 1996.

GAO Contacts and Staff Acknowledgements

GAO Contacts

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