

DOCUMENT RESUME

05646 - [B1246223]

Survey of Integrated Logistics Support Planning of the UH-60 Blackhawk. LCD-78-415; B-163058. May 3, 1978. 6 pp.

Report to Secretary, Department of Defense; by Fred J. Shafer, Director, Logistics and Communications Div.

Issue Area: Military Preparedness Plans: Logistic Support Planning for Major Equipment (801); Facilities and Material Management: Requirements for Equipment, Spare Parts and Supplies (702).

Contact: Logistics and Communications Div.

Budget Function: National Defense: Department of Defense - Military (except procurement & contracts) (051).

Organization Concerned: Department of the Army; United Technologies Corp.; Sikorsky Aircraft Div.; General Electric Co.

Congressional Relevance: House Committee on Armed Services; Senate Committee on Armed Services.

A survey was conducted of the Army's Integrated Logistics Support (ILS) planning for the UH-60 Blackhawk helicopter program to determine whether there were any weaknesses in the Army's planning for the logistics support for the Blackhawk. The Blackhawk helicopter is being developed and produced by Sikorsky Aircraft Division of United Technologies Corporation, and General Electric is providing the engines. The Army has contracted for 71 helicopters during the first 2 years of initial production; through fiscal year 1985, the Army plans to buy 1,107 helicopters. The contracts include about \$5.2 million for development and dating of the logistics support analysis (LSA) program. The LSA programs developed by Sikorsky and General Electric are not up-to-date. The programs could not be used for determining spare parts and support equipment requirements for the initial support period, and the Army could provide little assurance that the programs would be up-to-date for full scale production provisioning in 1979. The Project Manager's decision to allow Sikorsky to discontinue efforts on the LSA in the latter stages of Blackhawk development resulted in the program being incomplete and unusable. The reason General Electric's LSA was incomplete was not determined. The Secretary of Defense should take action to insure that the Army: increases its monitoring of the LSA program, evaluates the status of LSA programs, and takes necessary action to assure that the contractors complete the programs on a timely basis. (RBS)

6223



UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

LOGISTICS AND COMMUNICATIONS  
DIVISION

B-163058

May 3, 1978

The Honorable  
The Secretary of Defense

Dear Mr. Secretary:

In February 1978, we completed a survey of the Army's Integrated Logistics Support (ILS) planning for the UH-60 Blackhawk helicopter program at the Project Manager's office at the Army Aviation Research and Development Command, St. Louis, Missouri. The Blackhawk is the first major Army weapons system to use the relatively new integrated logistics support concept. The objective of the survey was to determine whether there were any weaknesses in the Army's planning for the logistics support for the Blackhawk.

While we did not find major weaknesses in the logistics support planning, our survey showed that the Logistics Support Analysis system used to document logistics functions and determine logistics requirements was not up-to-date. As a result, the system was not used to determine the quantity of spare parts and support equipment needed during the initial 3-year contract period and future benefits to be derived from the system may be in jeopardy. The Project Manager could not provide any studies or information about the current status of the problem but he agreed to increase his office's monitoring of the system and take action necessary to assure that the programs are up-to-date and ready for use when full scale provisioning occurs in early 1979.

In view of the action promised by the Project Manager, we did not pursue this matter further. We plan, however, to monitor this program later as more of the ILS programs are implemented.

INTEGRATED LOGISTICS SUPPORT CONCEPT  
AND PURPOSE OF LOGISTICS SUPPORT ANALYSIS

The Blackhawk helicopter is being developed and produced by Sikorsky Aircraft Division of United Technologies Corporation. General Electric will provide the engines for the helicopter. Initial logistics support for the Blackhawk is being provided by the airframe and engine contractors and ultimately will be turned over to the Army in 1981. The Army has contracted for 71 helicopters during the first 2 years of initial production and plans to procure 129 during the the third year. The Army plans to buy 1,107 helicopters through fiscal year 1985.

LCD-78-415  
(947303)

Logistics support constitutes a significant part of the cost of weapons systems. To better control these costs, the Department of Defense requires all weapons systems managers to use the ILS concept to plan logistics support requirements for new weapons systems. Under this concept, ILS elements, such as maintenance, supply parts, and support equipment requirements, are planned early in the design stage of new weapons systems rather than after the design has stabilized and changes are apt to be costly. Further, logisticians as well as operators are introduced into this planning process and encouraged to contribute from their experience in supporting and using earlier generations of weapons systems. In preparing the ILS plan for the Blackhawk, logisticians, maintenance personnel, and combat experienced pilots made significant contributions.

Logistics support analysis (LSA) is a tool used in ILS planning. The airframe and engine contractors were required to develop automated LSA programs to identify and control logistics data during development and production. The LSA programs are designed to assist management in its evaluation of weapons systems design and operational characteristics, and to help in making sound logistics support decisions. LSA data is gathered from various sources and includes information such as component parts identification, maintenance tasks, assembly and disassembly of components, failure rates, support equipment identification and training needs. Data generated by the LSA process is documented in a series of data sheets which when assembled, constitute a logistics support analysis record (LSAR). This record, which has to be updated on a continuing basis, can be used to provide qualitative and quantitative data to describe support and test equipment, facilities requirements, personnel skills, spare parts, and maintenance and operational support needs.

The Army's development and initial production contracts with the airframe contractor include about \$5.2 million for development and updating of the LSA program. Related costs on the engine contract were \$1.1 million.

The development contracts and the ILS plan called for preparation of the LSAR during the Basic Engineering Development phase which ended in October 1977. The contractors were required to compile the basic engineering data and to manage the LSA program using automatic data processing equipment located at the contractor's plants. Provisioning for the first 3 years of initial production took place during the first part of calendar year 1977. The next provisioning conference is scheduled for March 1979. At this conference, logistics requirements for the first year of full scale production (beginning in late 1981) will be compiled.

EXPECTED BENEFITS OF THE LSA PROGRAM  
HAVE NOT BEEN DERIVED AND FUTURE  
BENEFITS MAY ALSO BE IN JEOPARDY

The LSA programs developed by Sikorsky and General Electric are not up-to-date. The programs could not be used for determining spare parts and support equipment requirements for the initial support period and the Army could provide little assurance that the programs would be up-to-date for full scale production provisioning in 1979.

LSA programs are not up-to-date

Sikorsky cut back its work on the development and updating of the LSA program because funding constraints were placed on them by the Army. The Project Manager advised Sikorsky in November 1975 that due to funding restrictions, the Army would not fund its proposed development contract overrun. He suggested that they proceed to produce their best prototype helicopter within authorized funding. Sikorsky elected to cut back work on the LSA program and deferred portions of the testing program until the follow-on development phase. Work was not resumed until January 1977 after Sikorsky was awarded the initial production contract. The work stoppage resulted in the LSA program being incomplete.

The Army Source Selection Evaluation Board (SSEB) reviewed Sikorsky's LSA data in September 1976 as part of the competitive evaluation at the end of the development phase. The SSEB found that Sikorsky's LSAR pertaining to support equipment, repair parts, and maintenance was incomplete. The Board noted that the LSA computer files identified only three of the 24 items of support equipment included in the contractor's proposal and that the initial procurement of spare parts for the first 3 years of contractor support could not be supported with the available LSA data. The contractor told SSEB members that there were 178 LSA packages for which engineering effort was complete, but they had not been input to the automated file. The contractor estimated 5,000 man-hours would be required to input the packages to the master file. The SSEB pointed out in its November 1976 report that the contractor's effort to complete the automated LSAR would be accomplished by June 1978; however, this completion data was subsequently slipped to December 1978.

During our survey, Army officials told us that in addition to the packages mentioned in the SSEB's review there were some LSA packages that required engineering effort before they could be put into the system. They also said that the LSA program was not updated to include the logistics data obtained during Government competitive testing. Project Manager officials could not tell us, however, the status of the packages or the amount of work required to complete them. The Project Manager

has not performed any studies or evaluations to determine the overall status of the contractors' efforts to bring the LSA program up-to-date, but he was satisfied that the program would be complete and up-to-date by December 1978.

Project Manager officials told us that General Electric's LSA program is generally more up-to-date than Sikorsky's, but it, too, is incomplete.

LSA was not used for determining quantities for initial spare parts

The lack of a complete and functional LSA program precluded Sikorsky and the Army from using LSA data to determine an accurate estimate of quantities of spare parts for the first year of the initial production contract.

Sikorsky proposed and contracted for about \$5.9 million of spare parts for the first year of contractor support. In July 1977, subsequent to the initial proposal, the contractor recommended an additional procurement of \$1.1 million of spare parts for the first year primarily for use as safety stock and to provide spares for parts that were initially overlooked. In November 1977, a net decrease of \$2.9 million was recommended by the contractor for the first year due to quantity increases and decreases caused by computation errors, deletions and parts changes caused by configuration changes, and deletion of common hardware items. This revision included the earlier proposal for additional items valued at \$1.1 million. Sikorsky said that some of these changes were a result of their review of the items in light of development phase experience and LSA analysis gained after the initial proposal was made to the Army. Army officials said the contractor is preparing other revisions that will increase the cost of the first year spare parts to \$7 million. At the end of our survey the Army had not received the other proposals nor had it amended the contract to include these revisions. The LSA program data available at the Project Manager's office, however, could not be used by the Army to substantiate any of the proposed quantities.

General Electric's LSA program also was not used for determining the initial spare parts and support equipment requirements on the engine contract, and the Army could not use available LSA data to verify the need for the quantities procured. Army officials, while they have not specifically evaluated the status of the contractor's efforts to complete the program, said that General Electric plans to complete it by December 1978.

A major use of LSA data in the future is for provisioning spare parts for the Army's assumption of support functions in March 1981. To have the parts available by that time, the Project Manager planned to

begin provisioning in March 1979. Thus, it is critical that the Army meet its goal of having the LSA program up-to-date by December 1978 if the LSA data is to be used in the provisioning process.

#### AGENCY COMMENTS AND OUR EVALUATION

The Blackhawk Project Manager generally agreed with our survey observations. The Project Manager pointed out that although his office has not made any studies to determine the overall status of the LSA programs, he has conducted meetings with the contractors and other Army activities to resolve problems related to the development and implementation of the LSA program and to coordinate logistics functions. He agreed there was a need to place more emphasis on monitoring the status of the contractors' LSA programs. He said the Project Manager's office would take immediate action to establish a plan for determining the status and assuring the completion of the program on a timely basis.

In our opinion, the Project Manager's plan to place more emphasis on monitoring and evaluating the status and milestones for completion of the LSA programs should provide better visibility of the progress being made by the contractors and additional action needed to complete the programs.

#### CONCLUSIONS AND RECOMMENDATIONS

The LSA programs have not provided the contractors or the Army with expected benefits when they were most needed, and there is some doubt that the programs will be available on a timely basis for future use. An important benefit of the LSA program is its use in assisting management in determining the quantities of spare parts and support equipment needed--this benefit was lost for the initial 3-year contract period, and may be in jeopardy for full scale production provisioning. The Project Manager's decision to allow Sikorsky to discontinue their efforts on the LSA in the latter stages of the Blackhawk development resulted in the program being incomplete and unusable. The reason General Electric's LSA is incomplete was not determined.

The Army has placed much emphasis on developing reliable LSA programs for making logistics decisions. The incompleteness of the contractors' LSA programs at this time, however, concerns us because the effort required to complete the programs on a timely basis is not known. Additionally, these programs are expensive. They will cost the Army more than \$6.3 million through the first 3 years of initial production. The Project Manager has agreed to place more emphasis on monitoring the status of the LSA programs and take action necessary to assure their completion on a timely basis.

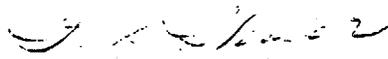
We recommend that the Secretary of Defense take action to insure that the Army:

- increases its monitoring of the LSA programs;
- evaluates the status of the LSA programs; and
- takes necessary action to assure that the contractors complete the programs on a timely basis so the remaining benefits of LSA are obtained.

As you know, section 236 of the Legislative Reorganization Act of 1970 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 would appreciate being advised of actions taken on the matters discussed in this letter.

Sincerely yours,



F. J. Shafer  
Director