United States General Accounting Office

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Report to the Chairman, Subcommittee on Defense, Committee on Appropriations, House of Representatives

April 1993

TACTICAL INTELLIGENCE

Joint STARS Needs Current Cost and Operational Effectiveness Analysis

GAO/NSIAD-93-117

GAO

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

National Security and
International Affairs Division

B-251954

April 28, 1993

The Honorable John P. Murtha
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

As requested, we examined the status of the $9-billion Joint Surveillance Target Attack Radar System (Joint STARS) acquisition program. In 1993, the Air Force and Army plan to seek Department of Defense (DOD) approvals for low-rate initial production of the air and ground segments for Joint STARS. The full-rate production decisions are planned for 1995 and 1996, respectively. These production plans have raised questions concerning the data needed to permit an informed full-rate production decision. A key issue is whether the 1985 cost and operational effectiveness analysis (COEA) for Joint STARS is sufficient or should be updated or replaced by a new analysis.

Results in Brief

The 1985 COEA for the Joint STARS is no longer valid. Significant changes in key Joint STARS concepts such as the threats it is intended to meet, the environment in which it will operate, and what it will cost have occurred. An updated or new COEA could require as long as 18 months to complete depending on its scope. As currently planned, the need for and scope of such an analysis may not be determined until 6 months prior to the full-rate production decision scheduled for September 1995. Waiting that late for a decision on a COEA could jeopardize the full-rate production schedules if a full 18-month study is required. Deciding now on the scope of a COEA would eliminate this concern.

Background

Joint STARS is a joint Air Force and Army wide-area surveillance and target attack radar system being designed to detect, track, classify, and support the attack of moving and stationary ground targets. The program consists of air and ground segments: refurbished 707 aircraft (designated the E-8) equipped with radar, operation and control, data processing, and communications subsystems, as well as ground stations equipped with communications and data processing subsystems.

The program is currently in the engineering and manufacturing development phase of the acquisition cycle. The planned initial force structure is 20 aircraft and 95 ground stations. Program acquisition cost estimates are $7.4 billion for the air segment and $1.7 billion for the ground segment. Further details on Joint STARS program production quantities and fiscal year 1993 funding levels are contained in appendix I.

In 1991, during Operation Desert Shield/Storm, two developmental E-8 aircraft and six interim ground stations were deployed. The system provided air and ground components with 49 consecutive nights of operational support, including real-time surveillance and targeting. Air Force officials assessed the system's performance as excellent and concluded that the developmental Joint STARS made a significant contribution to eliminating enemy sanctuaries and providing responsive targeting and intelligence. Army officials also assessed the system's performance as excellent and concluded that the developmental Joint STARS was the single most valuable intelligence and targeting system supporting Operation Desert Storm.

Joint STARS Cost and Operational Effectiveness Analysis Is No Longer Valid

DOD regulations require that COEAs be developed and considered at various decision points in the development of acquisition programs. The regulations also indicate that updated or new COEAs should be developed when conditions change. Significant changes have occurred in key concepts affecting Joint STARS since a COEA was developed for the system in 1985. Changes in threat, operations, and costs mean that an updated or new COEA should be developed to support the full-rate production decisions.

DOD Instruction 5000.2 requires that COEAs be prepared and considered at milestone decision reviews beginning with concept demonstration approval (Milestone I) for major programs like Joint STARS. These analyses are intended to accomplish three objectives: (1) aid decision-making by illuminating the relative advantages and disadvantages of the alternatives being considered and showing the sensitivity of each alternative to possible changes in key assumptions (e.g., the threat) or variables (e.g., selected performance capabilities); (2) facilitate communications by early identification and discussion of reasonable alternatives among decisionmakers and staffs at all levels; and (3) document acquisition decisions by providing the analytical underpinning or rationale for decisions on a program.

The scope of a COEA depends upon the milestone decision to be made and the system's cost. With reference to Milestone III, production approval, the guidance indicates that the analysis may only have to be an update of the Milestone II analysis. The guidance also states that an assessment is not required "unless conditions have changed sufficiently so that previous cost effectiveness determinations are no longer valid." A key determination regarding the scope of a new Joint STARS COEA then would be the extent to which conditions have changed since the 1985 Joint STARS Milestone II COEA. Assistant Secretary of Defense for Program Analysis and Evaluation officials believe that the scopes of past analyses, including the 1985 COEA, and the Desert Storm experience studies have significant limitations. They also believe that the COEA should be updated to reflect changes in threat and missions, new performance assumptions, and increased costs.

DOD guidance on how to do a COEA lists a dozen key concepts that are relevant to such an analysis. We reviewed these key concepts and concluded that most of the concepts or conditions affecting them have changed substantially since the 1985 Milestone II COEA. Our analysis of these key concepts is presented in appendix II and summarized in table 1.

Table 1: Substantial Changes in Joint STARS Cost and Operational Concepts Since 1985

	Substantial change		
Key concept	**Yes**	**No**	**Partly**
Mission needs, deficiencies, and opportunities		X	
Threats	X		
Operational environments			X
Constraints and assumptions	X		
Operational concept	X		
Functional objectives		X	
Alternatives		X	
Models	X		
Data for analysis	X		
Measures of effectiveness	X		
Costs	X		
Trade-off analyses			X

These changes in key concepts could ultimately affect the Joint STARS force structure. For example, changes in the constraints and assumptions concept raises the issue of affordability. Joint STARS entered the engineering and manufacturing development phase in 1985 during a period of general growth in the overall funding of the defense budget. The

program will enter the production phase during a period of general decline. In addition, evolving Army battlefield intelligence operational concepts describe a synergistic "system of systems" in which Joint STARS will play an important role. As these concepts mature, more or less Joint STARS platforms may be needed to complement other expected battlefield intelligence systems.

Timely Cost and Operational Effectiveness Analysis Decision Is Critical

The Defense Acquisition Board is scheduled to begin its formal 1995 full-rate production milestone review process with a planning meeting in March 1995, about 6 months prior to the milestone review itself. One objective of the planning meeting is to assess the plans for key milestone documents such as the cost estimate, acquisition strategy, test and evaluation master plan, and COEA. The product of the planning meeting will include a recommendation on whether to proceed with the milestone review.

Currently, it is unclear what the Defense Acquisition Board may require in terms of a Joint STARS COEA. An Under Secretary of Defense for Acquisition representative acknowledged that the need for a COEA to support the full-rate production decision has not yet been resolved. Army officials estimate that a comprehensive COEA could take as long as 18 months. The Army estimate suggests that, if a comprehensive analysis is required, work should begin no later than March 1994 in order for the results to be available to support the air segment's September 1995 full-rate production decision.

If the scope of the COEA is not established until the time of the full-rate production decision planning meeting scheduled for March 1995 and a comprehensive 18-month analysis is determined to be required, the Joint STARS production schedule could be placed in jeopardy.

Recommendations

We recommend that the Secretary of Defense direct the Under Secretary of Defense for Acquisition to perform an updated or new COEA to support full-rate production of Joint STARS.

We also recommend that the Secretary direct that the Under Secretary determine the scope of the COEA by March 1994 to allow adequate time for the evaluation without affecting the Joint STARS acquisition plan.

Agency Comments

DOD agreed or partially agreed with the findings and recommendations in this report. DOD stated that a May 1993 Defense Acquisition Board will review the need for updating the 1985 COEA for Joint STARS. Also, direction to the Army and the Air Force to perform further cost and operational effectiveness analysis is expected to be provided in an acquisition decision memorandum following the Defense Acquisition Board review. In addition, DOD commented that whatever analyses are determined necessary would be completed in time to avoid adversely affecting the Joint STARS acquisition plan. DOD's plan to have the May Defense Acquisition Board reviews of the E-8 aircraft and the ground station determine what additional analysis is needed is consistent with our recommendations. We will continue to monitor DOD, Army, and Air Force actions to implement our recommendations.

DOD's comments and our responses are included in appendix III.

Scope and Methodology

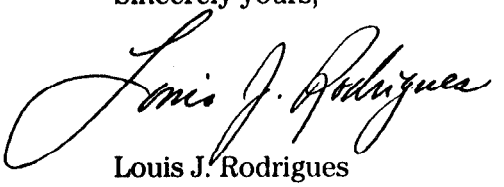
We interviewed program officials and examined program management and budget documents, system requirements, test plans and results, acquisition plans and schedules, and other program documentation. We performed work at the Air Force Air Combat Command, Langley Air Force Base, Virginia; Air Force Electronic Systems Center, Hanscom Air Force Base, Massachusetts; Army Training and Doctrine Command, Fort Monroe, Virginia; and Army Communications and Electronics Command, Fort Monmouth, New Jersey. We also contacted program representatives within the Office of the Assistant Secretary of Defense for Program Analysis and Evaluation; Director, Operational Test and Evaluation; and the Departments of the Air Force and Army.

We performed our review from January 1992 to March 1993 in accordance with generally accepted government auditing standards.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days after its issue date. At that time, we will send copies to other interested congressional committees; the Secretaries of Defense, the Army, and the Air Force; the Director, Office of Management and Budget; and other interested parties. We will make copies available to others upon request.

Please contact me on (202) 512-4841, if you or your staff have any questions concerning this report. Other major contributors are listed in appendix IV.

Sincerely yours,



Louis J. Rodrigues
Director, Systems Development
and Production Issues

Contents

Abbreviations

COEA	cost and operational effectiveness analysis
DOD	Department of Defense
Joint STARS	Joint Surveillance Target Attack Radar System

Joint STARS Program Production Quantities and Fiscal Year 1993 Funding Levels

Air Segment

Table I.1 shows how the 20 aircraft will be acquired.

Table I.1: Joint STARS Aircraft Acquisition

Acquisition phase	Quantity
Engineering and manufacturing development	3
Low-rate initial production	5
Full-rate production	12
Total	**20**

The three engineering and manufacturing development aircraft are under contract and in various phases of testing or refurbishment.

Fiscal year 1993 funding is to be used to produce the first two low-rate initial production aircraft and to acquire advance procurement items for both the third and fourth low-rate initial production aircraft. Table I.2 summarizes the outcome of the fiscal year 1993 funding process.

Table I.2: Fiscal Year 1993 Air Segment Funding

Dollars in millions

Purpose	Budget request	Quantity	Funding	Quantity
Engineering and manufacturing development	$355.9	[a]	$333.4	[a]
Low-rate initial production procurement	310.6	1	511.8	2
Advance procurement	50.7	1	79.1	2

[a]Funding for testing and refurbishment of previously procured aircraft.

Funding for the remaining low-rate initial production aircraft will be requested in fiscal years 1994 and 1995.

Ground Segment

Table I.3 shows the Army's planned ground station production configuration.

Table I.3: Ground Station Production Configuration

Block	Configuration	Quantity
I Medium	5-ton truck	12
I Light	Highly mobile multipurpose wheeled vehicle	45
I Heavy	Electronic fighting vehicle	7
II	Common ground station	31
Total		**95**

According to DOD, the validated number of ground stations is 75. The Joint Requirements Oversight Council will have to review the Army's plans to increase the number of ground stations to 95. The fiscal year 1993 budget requested funding to continue engineering and manufacturing development efforts ($31.2 million) and to produce the first five Block I Medium ground stations ($36.2 million). The Congress provided the funds requested and provided increased funding to accelerate the engineering and manufacturing development efforts. Table I.4 summarizes the outcome of the fiscal year 1993 funding process.

Table I.4: Fiscal Year 1993 Ground Segment Funding

Dollars in millions

Purpose	Budget request	Quantity	Funding	Quantity
Engineering and manufacturing development	$31.2	[a]	$66.2	[a]
Block I Medium production	36.2	5	36.2	5

[a]Funding for testing and development of ground stations.

Funding for the remaining seven Block I Medium ground stations ($54.5 million) will be included in the fiscal year 1994 budget request.

GAO Analysis of Changes in Joint STARS Cost and Operational Concepts Since 1985

Key concept	Substantial change	GAO analysis
Mission needs, deficiencies, and opportunities	No	According to DOD guidance, this type of analysis is conducted for Milestone I, concept demonstration approval, and Milestone II, development approval. As they did in 1985, the Air Force and Army continue to articulate a need for near-real-time, wide-area surveillance of moving targets on the battlefield. Army officials are also adamant in articulating a need for a system to replace the Mohawk surveillance system, which is estimated to end operational support to Army corps by 1996. In addition, Army officials believe that new battlefield strategies—win fast, win decisively, with minimum casualties—emphasize the need for systems like Joint STARS.
Threats	Yes	It is clear that the main threat envisioned in 1985—Soviet Union and Warsaw Pact forces—has reduced substantially.
Operational environments	No	The physical operational environment has not changed. Joint STARS is designed to be a "near all-weather" system.
	Yes	The Joint STARS survivability requirements have evolved since 1985.
Constraints and assumptions	Yes	The 1985 COEA did not identify a concern about the affordability of the program. Joint STARS entered the engineering and manufacturing development phase in a period of general growth in the overall funding of the defense budget. The program will enter the production phase during a period of general decline in the overall funding of the defense budget.

(continued)

Key concept	Substantial change	GAO analysis
Operational concept	Yes	These plans describe the way in which forces and equipment would be arranged and employed in battle. Sometimes, field experimentation is necessary to refine a plan. The 1985 COEA identified a single joint operational and organizational plan. In 1990, the Air Force and Army published a joint concept of operations that would also serve as the operational reference for the development of three theater-specific operational plans and concepts. Joint STARS' testing, operational field demonstrations, and the Desert Storm experience have provided an abundance of operational data since 1985 that can be used to validate operational concepts for Joint STARS. For example, user/operator comments from an Army Operational Evaluation Command summary report on Operation Desert Storm reflect different opinions on the utility of Joint STARS as a corps versus theater asset and continuous surveillance versus selected missions. After continued analysis, these data could affect the number of Joint STARS orbits needed or the number of aircraft needed per orbit.
Functional objectives	No	Functional objectives are statements describing, in quantitative terms, the tasks a system will be expected to perform. The Joint STARS functional objectives do not appear to have changed substantially since 1985.
Alternatives	No	Although the 1985 Joint STARS COEA did not examine alternative systems, the 1987 Operational Utility Evaluation assessed the survivability, operational utility, and cost of Joint STARS and alternative systems of air/land battle management, including situation and target development and target attack. The 1987 evaluation supported the Milestone IIB decision. Given that the objective of the program is to provide near-real-time, wide-area surveillance of the battlefield by 1997, it does not appear that there is any single system that is a viable alternative to Joint STARS.

(continued)

Key concept	Substantial change	GAO analysis
Models	Yes	The effectiveness and utility of the Joint STARS radar reported in the 1985 COEA was derived from models using only moving target indicator radar data; whereas, the Joint STARS requirement is for a multimode radar. The abundance of operational data gathered since 1985 would also enhance any new modeling.
Data for analysis	Yes	There is an abundance of new operational data available to analysts.
Measures of effectiveness	Yes	Although the 1985 COEA identified operational utility as a critical issue and developed measures of performance for use in the analysis, no measures of effectiveness were identified. These are currently being developed for the Air Force and Army segments by the services' operational test and evaluation centers for use during the Multi-Service Operational Test and Evaluation. That test and evaluation will be used to support the full-rate production decision in 1995. DOD's Director of Operational Test and Evaluation is monitoring the development of these measures.
Costs	Yes	The 1985 COEA used fiscal year 1983 dollars to estimate a unit cost of $151.5 million for 24 C-18 airborne systems. In December 1991, a comparable unit cost estimate was $235.4 million—an increase of 55 percent— for 20 used 707 aircraft. In addition, in 1985, the approved force structure was 10 C-18s. Currently, the initial force structure is projected to be 20 refurbished 707s.
Trade-off analyses	No	These analyses are an important component of both Milestone I and II analyses. To do a trade-off analysis, one must identify areas of uncertainty, conduct sensitivity analyses, and establish thresholds.
	Yes	Performance thresholds show at what point degradations in performance yield outcomes that no longer satisfy the mission need. In November 1991, the Air Force and Army Chiefs of Staff performed a review of the operating command requirements and status of the program in meeting those requirements. As a result, 29 thresholds for noncritical characteristics were replaced with objective values, and 9 critical characteristics were clarified, with clearly stated thresholds being established.

Comments From the Department of Defense

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

OFFICE OF THE UNDER SECRETARY OF DEFENSE

WASHINGTON, DC 20301-3000

ACQUISITION

05 MAR 1993

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and International
Affairs Division
U. S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report entitled--"TACTICAL INTELLIGENCE: Joint STARS Needs Current Cost and Operational Effectiveness Analysis," dated January 26,1993 (GAO Code 395181/OSD Case 9312). The Department partially concurs with the report.

See comment 1.

The DoD agrees that significant changes have occurred in the European theater since the initial Joint Surveillance and Target Attack Radar System Cost and Operational Effectiveness Analysis was accomplished in 1985. However, such changes do not render useless all of the analyses performed and the information derived from combat operations since then. The Department is currently reviewing the need for updating the Joint Surveillance and Target Attack Radar System Cost and Operational Effectiveness Analysis, and will decide on the matter after the Defense Acquisition Board's review of the low rate initial production for the E-8C and the Ground Station Module Block I Medium, scheduled for May 1993.

The Department partially concurs with the recommendation that the Under Secretary of Defense for Acquisition direct that an updated or new Cost and Operational Effectiveness Analysis be completed to support the production milestone decision. To do so at this time is premature in view of the upcoming Defense Acquisition Board review. The Department concurs with the recommendation to make a decision on any updated analysis by March 1994. A decision on the matter will be made well in advance to allow adequate time for an updated or new cost and operational effectiveness analysis to be accomplished prior to the production milestone.

The detailed DoD comments on the report findings and recommendations are provided in the enclosure. The DoD appreciates the opportunity to comment on the GAO draft report.

Sincerely,

Frank Kendall
Director
Tactical Systems

**GENERAL ACCOUNTING OFFICE DRAFT REPORT - DATED JANUARY 26, 1993
(GAO CODE 395181) OSD CASE 9312**

"TACTICAL INTELLIGENCE: JOINT STARS NEEDS CURRENT COST AND OPERATIONAL EFFECTIVENESS ANALYSIS"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

- **FINDING A: The Joint Surveillance Target Attack Radar System Performance During OPERATION DESERT STORM.** The GAO reported that the Joint Surveillance Target Attack Radar System is a joint Air Force and Army long-range, wide-area surveillance and target attack radar system -- and a $9 billion acquisition program. The GAO explained that the program is currently in the engineering and manufacturing development phase of the acquisition cycle. The GAO observed that planned initial force structure is 20 aircraft and 95 ground stations, with estimated costs of $7.4 billion for the air segment and $1.5 billion for the ground segment. The GAO reported that, during OPERATION DESERT STORM, two developmental E-8 aircraft and six interim ground stations were deployed, and that system provided air and ground components with 49 consecutive nights of operational support, including real time surveillance and targeting. The GAO noted that Air Force officials assessed the system performance as excellent, determining that the developmental Joint Surveillance Target Attack Radar System made a significant contribution to eliminating enemy sanctuaries and providing responsive targeting and intelligence. The GAO further noted that Army officials also assessed system performance as excellent, and determined that the developmental Joint Surveillance Target Attack Radar System was the single most valuable intelligence and targeting system supporting OPERATION DESERT STORM. (pp. 1-3/GAO Draft Report)

  DoD RESPONSE: Concur.

- **FINDING B: Joint Surveillance Target Attack Radar System Cost and Operational Effectiveness Analysis Is No Longer Valid.** The GAO reported that DoD Instruction 5000.2 requires that Cost and Operational Effectiveness Analyses be developed and considered at various decision points in the development of weapon systems, and that new analyses be developed when conditions have changed. The GAO found that significant changes have occurred in key concepts affecting the Joint Surveillance Target Attack Radar System since a Cost and Operational Effectiveness Analysis was developed for the system in 1985. The GAO concluded, therefore, that changes in threat, operations, and costs mean that an updated or new Cost and Operational

Enclosure/1

Now on pp. 1-2.

Effectiveness Analysis should be developed to support the full-rate production decisions.

The GAO observed that the scope of a Cost and Operational Effectiveness Analysis depends on the milestone decision to be made and the system cost. The GAO explained that DoD guidance on how to do a Cost and Operational Effectiveness analysis lists a dozen key concepts that are relevant to such an analysis. The GAO found that most of the key concepts and conditions related to the system have changed substantially since the 1985 Milestone II Cost and Operational Effectiveness Analysis. The GAO noted, for example, that affordability is an issue, since the system will enter the production phase during a period of general budget decline, while the system entered the engineering and manufacturing development phase in 1985, during a period of general growth in the overall funding of the defense budget. The GAO also observed that as operational concepts mature -- such as the evolving Army battlefield intelligence synergistic "system to systems" -- more or fewer Joint Surveillance Target Attack Radar System platforms may be needed to complement other expected battlefield intelligence systems. The GAO concluded that changes in key concepts ultimately could affect the system force structure. (pp. 4-7/GAO Draft Report)

Now on pp. 2-4.

DoD RESPONSE: **Partially Concur**. The DoD agrees that, because of the significant changes in the threat, the analytical rationale for the E-8 and the Ground Station Module may have to be updated. However, the change in the threat is not as drastic as the GAO has observed. The current System Threat Assessment Report for the Joint Surveillance and Target Attack Radar System program indicates that, although the primary theater of operation envisioned for the system has changed, the threat is composed of the same type of opposition force that has existed for the last decade, trained in the same tactics and operations. The total number of forces involved at any one time may have shifted with the breakup of the Warsaw Pact and Soviet Union, but the tanks and the planes are, for all purposes, still there. For example, DESERT STORM provides the example of a massed armor enemy while Korea remains unchanged as a Soviet style offensive force.

See comment 2.

See comment 1.

The DoD does not agree that all the cost and operational effectiveness related analyses are no longer valid. Furthermore, a process is in place to determine at the low rate initial production Defense Acquisition Board reviews in May 1993 for the E-8 and the Ground Station Module programs, what further analyses may be needed for the production decision reviews in 1995. Following the Gulf War, the Conventional Systems Committee reviewed the Joint Surveillance and Target Attack Radar System program to determine the impacts of the deployment of the two test aircraft, ground station modules, and supporting personnel and equipment to DESERT STORM. The Office of the Secretary of Defense questioned the validity of the existing cost and operational effectiveness documentation and asked the Army and the Air Force to provide after action reports, analyses, and lessons learned that came out of the DESERT STORM experience pertaining to the Joint Surveillance and Target Attack Radar System. Those reports were subsequently developed. In addition, since the Conventional Systems Committee review of the E-8 long lead items in January 1992, the Army and the Air Force have been engaged in a process to provide updated analytical rationale and to

See comment 3.

Enclosure/2

See comment 1.
See comment 3.

identify, for the Defense Acquisition Board in May 1993, the remaining issues and areas that require additional analyses.

See comment 4.
See comment 5.

The GAO report also indicates substantial change has occurred in the operational concept for the Joint Surveillance and Target Attack Radar System. The Joint Requirements Oversight Council has reviewed the concept of operation and has validated a force structure requirement for 20 E-8C aircraft and 75 ground station modules. The Joint Requirements Oversight Council will review the Army proposal to increase the ground station module requirement, prior to the next Defense Acquisition Board Milestone review. Regarding the operational concept, decisions by a theater commander-in-chief to employ scarce resources (E-8A and interim ground station modules), in a non-doctrinal way, do not change the operational concept. There have been no changes in the operational concept.

- **FINDING C: Timely Cost and Operational Effectiveness Analysis Decision Is Critical.** The GAO reported that the Defense Acquisition Board is scheduled to begin its formal 1995 full-rate production milestone review process with a planning meeting in March 1995. The GAO explained that it is unclear what the Defense Acquisition Board may require in terms of a Joint Surveillance Target Attack Radar System Cost and Operational Effectiveness Analysis. The GAO noted that, according to an official within the Office of the Under Secretary of Defense for Acquisition, the need for a Cost and Operational Effectiveness Analysis to support the full-rate production decision has not yet been resolved. The GAO further noted that, according to Army officials, a comprehensive Cost and Operational Effectiveness Analysis could take as long as 18 months. The GAO concluded that, based on the Army estimate, if a comprehensive analysis is required, work should begin no later than March 1994, in order for the results to be available to support the air segment September 1995 full-rate production decision. The GAO further concluded that, if the scope of the Cost and Operational Effectiveness Analysis for the Joint Surveillance Target Attack Radar System is not established until the time of the full-rate production decision planning meeting, scheduled for March 1995, and a comprehensive 18-month analysis is determined to be required, the production schedule could be placed in jeopardy. The GAO also noted that one resulting outcome might a break in Joint Surveillance Target Attack Radar System production, with consequent increased production costs. (pp. 7-8/GAO Draft Report)

Now on p. 4.

DoD RESPONSE: Concur. The determination of the need for an updated or new Cost and Operational Effectiveness Analysis will occur before the March 1994 date specified in the GAO report. As currently planned, in May 1993 the Defense Acquisition Board will review the need for updating the 1985 Cost and Operational Effectiveness Analysis to support the E-8 and the Ground Station Module Milestone III Production decision, which is scheduled for 1995. An expected outcome of that review will be the direction to update all or portions of the analysis. In any event, the cost aspects of both programs are being updated as part of the upcoming May 1993 Defense Acquisition Board review for low rate initial production.

See comment 3.

* * * * *

Enclosure/3

Now on p. 4.

See comment 3.

Now on p. 4.

See comment 3.

RECOMMENDATIONS

- **RECOMMENDATION**: The GAO recommended that the Under Secretary of Defense for Acquisition direct that an updated or new Cost and Operational Effectiveness Analysis be completed to support full-rate production of the Joint Surveillance Target Attack Radar System. (p. 8/GAO Draft Report)

  DoD RESPONSE: Partially Concur. The Defense Acquisition Board will review the need for updating the 1985 Cost and Operational Effectiveness Analysis at the low rate initial production reviews in May 1993, and will advise the Under Secretary of Defense for Acquisition. To direct an updated or new Cost and Operational Effectiveness Analysist prior to the Board's review would be premature.

- **RECOMMENDATION**: The GAO recommended that the Under Secretary of Defense for Acquisition direct that the scope of the Cost and Operational Effectiveness Analysis be determined by March 1994 -- in order to allow adequate time for the evaluation, without impacting the Joint Surveillance Target Attack Radar System acquisition plan. (p. 8/GAO Draft Report)

  DoD RESPONSE: Concur. The direction to the Army and the Air Force to perform further cost and operational effectiveness analysis is expected to be provided in the acquisition decision memorandum, following the upcoming May 1993 review by the Defense Acquisition Board. Whatever analyses are determined necessary will be completed in time to permit adequate evaluation, without adversely impacting the Joint Surveillance and Target Attack System acquisition plan.

Enclosure/4

The following are GAO's comments on the Department of Defense's letter dated March 5, 1993.

GAO Comments

1. We do not believe that changes since the 1985 COEA have rendered interim analyses useless. Rather, we believe that the interim analyses provide additional data to reevaluate the cost and operational effectiveness of the system and enhance any new modeling.

2. We are encouraged that DOD recognizes that because of significant changes in threat, the analytical rationale for the Joint STARS may have to be updated. DOD's 1993 annual report to the Congress states that the United States no longer faces the threat of global war beginning in Europe, but still faces serious regional contingencies. However, the report also states that a new regional strategy means that the force structure can be reduced and reshaped. For example, it notes that efforts are underway to eliminate one-third of the Army's active divisions, one-fifth of the Navy's ships, and 10 Air Force fighter wing equivalents. The forces that remain are being restructured under new warfighting doctrines. Our point is that the threat has been substantially reduced, resulting in reductions in U.S. forces. These impacts should be considered in a new or updated COEA.

3. DOD's plan to have the Defense Acquisition Board's reviews of the E-8 and the ground station determine what additional analyses are needed is consistent with our recommendations. We will continue to monitor DOD, Army, and Air Force actions to implement our recommendations.

4. A February 1985 Joint Services Operational Requirement document noted that a joint system operational concept would be developed by the Air Force and Army and would detail all aspects of joint operations. The May 1985 COEA referenced a draft Joint Systems Operational Concept and identified a single joint operational and organizational plan. As late as November 1989, the U.S. Air Force and Army in Europe were working to resolve Joint STARS use issues and develop a more detailed concept of operations. In 1990, the Air Force and Army published a joint concept of operations that would also serve as the operational reference for the development of three theater-specific operational plans and concepts.

We recognize that Desert Storm may have provided an opportunity for a nondoctrinal employment of theater assets by the theater commander-in-chief. However, user/operator comments in an Army Operational Evaluation Command summary report on Operation Desert

Storm reflect different opinions on the utility of Joint STARS as a corps versus theater asset and continuous surveillance versus selected missions. After continued analysis, these data could affect the number of Joint STARS orbits needed or the number of aircraft needed per orbit. We have added data to appendix II to reflect these comments.

5. We have added data to explain the number of ground stations.

Major Contributors to This Report

National Security and International Affairs Division, Washington D.C.	Bruce H. Thomas, Evaluator
New York Regional Office	William L. Wright, Assistant Director
Boston Regional Office	Paul G. Williams, Evaluator-in-Charge Thornton L. Harvey, Evaluator

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