

May 1991

STRATEGIC BOMBERS

Updated Status of the B-1B Recovery Program





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

National Security and
International Affairs Division

B-206613

May 9, 1991

The Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate

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

The Honorable Les Aspin
Chairman, Committee on Armed Services
House of Representatives

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

The National Defense Authorization Act for Fiscal Years 1990 and 1991 requires the Comptroller General to actively monitor and provide you periodic reports on the progress being made to correct problems associated with the B-1B bomber's defensive avionics system. The Air Force's efforts in that regard are known as the B-1B Recovery Program. This is our second report under the act. Our first report was classified and was issued to your Committees on October 12, 1990.

This report is based, in part, on our work that resulted in testimony before the Legislation and National Security Subcommittee, House Committee on Government Operations, on March 6, 1991.¹ In our testimony, we discussed concerns about the B-1B's engine and anti-icing system in addition to the Recovery Program.

Background

The Recovery Program was initiated in 1988 because the B-1B's defensive avionics system (ALQ-161A) had design deficiencies and did not have the capability to defend against enemy threats to the extent required. The Recovery Program is intended to improve the capability of the ALQ-161A to the extent possible within current design limitations.

¹Strategic Bombers: Issues Related to the B-1B Aircraft Program (GAO/T-NSIAD-91-11)

The B-1B defensive avionics system consists of (1) a receive function, which should warn crew members if they are being tracked by enemy radars; (2) a jammer, which ideally would prevent a radar-guided missile from being launched or, if a missile is launched, should prevent the missile from hitting the aircraft; (3) expendable countermeasures, consisting of chaff and flares, that are intended to decoy radar and infrared-guided missiles; (4) a tail warning function, which is expected to provide detection of a missile behind the aircraft and to activate an eject signal to chaff and/or flare dispensers; (5) a radio frequency signal management system, which prevents offensive and defensive avionics interference; (6) the Central Integrated Test System, a diagnostic system intended to monitor the defensive system's performance and identify equipment failures; and (7) controls and displays that are supposed to provide the defensive system operator with information needed to locate threats.

In this report, we discuss the status of the Recovery Program in terms of (1) the CORE program, (2) the addition of a radar warning receiver, and (3) an improved antenna for jamming some radars. Under the CORE program, changes have been made to the defensive avionics system in an attempt to improve its performance. The specific objectives of the CORE program are to install the tail warning function on the aircraft; put a commonly configured defensive avionics system into all aircraft in the B-1B fleet; improve the Central Integrated Test System; complete logistic support efforts; and improve the reliability of the defensive system's receive and jam capabilities against the top Soviet threats.

Results in Brief

Laboratory and flight testing of the changes to the defensive avionics system under the CORE program have been completed. The laboratory test results and preliminary analysis of flight test data indicate that the defensive system will meet the current contract specifications with a few exceptions, which the Air Force does not consider significant. As required by legislation, an independent analysis of the defensive system's capabilities will be presented to the Congress later this year.

On March 8, 1991, the Air Force terminated the production segment of the CORE portion of the Recovery Program due to lack of funds. This termination could have an adverse effect on maintenance requirements and planned improvements to the defensive system's receive and jam capabilities. Also, some aircraft will have no defensive avionics equipment.

The other two portions of the Recovery Program — the addition of a radar warning receiver and a new antenna — have not been funded by the Congress. The Air Force's fiscal year 1992 budget request includes \$16.4 million for these two additions.

CORE Portion of Recovery Program

Laboratory and flight testing of the defensive avionics system under the CORE program have been completed. The laboratory test results indicate that the defensive avionics system will meet the current contract specifications with a few exceptions. For example, testing has shown that under certain conditions the system could interfere with some on-board offensive avionics systems. The Air Force does not consider this interference to be a significant problem.

The actual capabilities of the system can be demonstrated only through flight testing. Flight testing of the system started on September 26, 1990, but was interrupted twice for about 2 months while the B-1B fleet was grounded due to engine problems. At the end of February 1991, the CORE flight testing was completed. However, it will take several months for the test data to be analyzed. According to the Air Force, a preliminary analysis is confirming the results of the laboratory testing.

Although the CORE program testing has been completed, a software fix to the controls and displays system still has to be flight tested. These tests are scheduled from July 26, 1991, through December 28, 1991, and the software is scheduled to be released to the Strategic Air Command by mid-February 1992.

The National Defense Authorization Act for Fiscal Years 1990 and 1991 requires that after completing the defensive avionics system test program, the Secretary of Defense will provide for an independent assessment of the capabilities of the B-1B aircraft. The Institute for Defense Analysis is currently assessing the test results under the CORE program. The results of that assessment are expected to be provided to the Congress during the summer of 1991.

Effects of Termination of CORE Production Contract

On March 8, 1991, the Air Force terminated the production portion of its contract with the AIL Division of the Eaton Corporation, who was to develop and produce the defensive avionics system. The Air Force terminated the contract because of a lack of funds. The Air Force said that it had planned, as in the past, to use funds from expired accounts to

fund CORE production costs. However, according to the Air Force, as a result of recent legislation (P.L. 101-510, Nov. 5, 1990), the funds it planned to use were no longer available. The Air Force chose not to reprogram funds from other programs or request a supplemental appropriation. According to program office officials, the termination of the CORE contract will have the following adverse effects:

- The Central Integrated Test System will not be improved as planned. This on-board, diagnostic system monitors and measures the performance of the ALQ-161A by indicators such as temperature, pressure, and voltage. ALQ-161A system failures are recorded in flight and translated on the ground to maintenance work orders for repair of the system. According to Air Force documents, an improved Central Integrated Test System is essential to maintaining the ALQ-161A. Without the planned improvements to the test system, day-to-day maintenance of the ALQ-161A will be a slow, time-consuming process.
- Planned reliability improvements to the defensive avionics system's receive and jam capabilities will not be done.
- Thirteen aircraft will have no defensive avionics equipment. The equipment from these aircraft was used for the CORE testing program. Because this equipment has been upgraded with CORE hardware modifications, it is not common with the rest of the B-1B fleet and never will be, unless the CORE production and retrofit effort is restarted in the future. Restarting the CORE production contract may require re-competiting the contract, according to Air Force officials. The contractor estimates that restarting the contract could cost between \$150 million and \$170 million over and above the \$298 million estimated for the completion of the contract before it was canceled. The Air Force is currently preparing its estimate of costs to restart the contract.

According to the Air Force, the other portions of the CORE contract—installing the tail warning function, bringing aircraft 2 through 19 to the same configuration of defensive avionics as the rest of the fleet, and completing logistic support efforts—will be accomplished notwithstanding the termination of the CORE production contract.

RadAR Warning Receiver and Improved Antenna

The addition of a radar warning receiver, the second part of the Recovery Program, is expected to increase the number of threat radar systems the aircraft will be able to detect in carrying out its mission. No work is currently being done to add the receiver to the B-1B because Congress has not yet funded the effort. The estimated cost of adding a

receiver is at least \$489 million. In the fiscal year 1992 budget, the Air Force is requesting \$7.8 million to do installation studies.

The improved antenna, the final segment of the Recovery Program, is intended to provide increased frequency coverage. Development has been completed, and the estimated cost of producing and installing the new antenna is about \$50.7 million, of which \$8.6 million is included in the Department of Defense's fiscal year 1992 budget request.

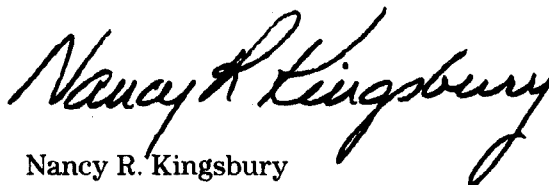
The operational effectiveness of the ALQ-161A without the CORE effort, the radar warning receiver, and the improved antenna is discussed in our October 12, 1990, classified report on the B-1B Recovery Program.

Scope and Methodology

We interviewed officials responsible for the Recovery Program and reviewed program documents at the B-1B System Program Office, Wright-Patterson Air Force Base, Ohio. We also reviewed available test reports and discussed flight test results with program officials.

We did not obtain written agency comments on this report. However, we discussed the results of our work with Department of Defense and Air Force program officials. We performed our review from January 1991 through March 1991 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Secretaries of Defense and the Air Force. Please contact me at (202) 275-4268 if you or your staff have any questions concerning this report. The major contributors to this report are listed in appendix I.



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