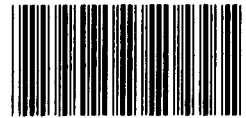


September 1990

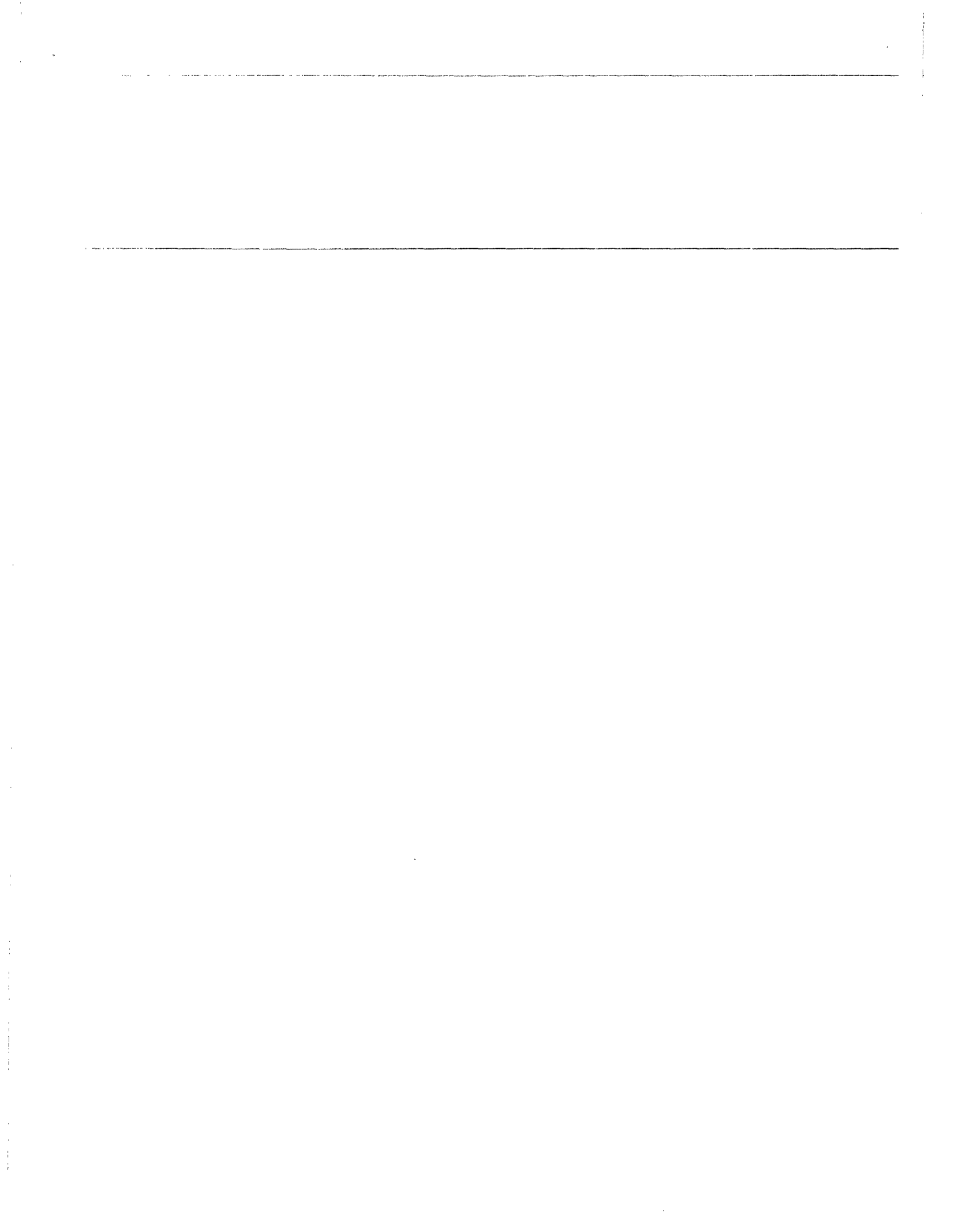
B-2 BOMBER

Initial Flight Tests



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

**National Security and
International Affairs Division**

B-240879

September 4, 1990

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

Section 113 of the fiscal year 1990 Authorization Act requires us to review the Department of Defense's test reports and evaluation documents for the B-2 aircraft program and provide periodic reports on our findings to the Congress. This unclassified summary discusses our evaluation of the initial flight worthiness testing of the B-2, known as Block 1 flight testing.

We are sending copies of this summary to the Ranking Minority Members of your committees; other appropriate congressional committees; the Secretaries of Defense and the Air Force; and the Director, Office of Management and Budget. We will also make copies available to others.

This summary was prepared under the direction of Nancy R. Kingsbury, Director, Air Force Issues, who may be reached on (202) 275-4268 if you or your staff have any questions concerning this summary. Other major contributors to this summary are Robert D. Murphy, Assistant Director, National Security and International Affairs Division, Washington, D.C.;

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Frank C. Conahan

Frank C. Conahan
Assistant Comptroller General

Summary

Purpose

The B-2 bomber is one of the most costly Department of Defense programs. Its high cost, unique design, and highly classified nature have made it the subject of considerable controversy.

The fiscal year 1990 Defense Authorization Act requires the Department of Defense to accomplish certain flight tests before fiscal year 1990 B-2 procurement funds are obligated. The act also requires GAO to review the Department of Defense's test reports and evaluation documents on the B-2 aircraft program and submit periodic reports to the Congress on the results of the review. Specifically, GAO's reports are to evaluate (1) the rigor, realism, and adequacy of the test and evaluation activities, (2) whether testing complied with the full performance matrix, which compares planned test progress with program milestones, and (3) whether threat data as agreed with the U.S. intelligence community were fully used in the test process. This summary discusses GAO's evaluation of the initial series of flight tests, known as Block 1.

Background

The fiscal year 1990 Defense Authorization Act established that the following requirements must be met before the Department of Defense could obligate fiscal year 1990 B-2 procurement funds.

- Block 1 flight testing has been completed.
- Block 1 flight test data have been reviewed by the Department of Defense's Director of Operational Test and Evaluation, and a report on the results of the review has been submitted to the Secretary of Defense.
- The Secretary of Defense has certified that Block 1 tests identified no major flight worthiness problems.
- A second series of tests, known as Block 2, to assess low observable technologies, flying qualities, and performance has begun.

The Block 1 test program was designed to demonstrate basic B-2 flying and ground handling qualities, takeoff and landing characteristics, and aerial refueling. The primary test objective was to demonstrate B-2 flight worthiness at the speeds and altitudes needed to conduct early Block 2 flight tests later in 1990.

The Block 1 tests were completed on June 13, 1990, and the Secretary of Defense certified on August 2, 1990, that no major aerodynamic or flight

worthiness problems were identified during those tests. The Secretary stated that the primary test objective was satisfactorily achieved. The certification was supported by the Director of Operational Test and Evaluation's report, which stated that flying qualities, takeoff performance, and initial air refueling performed close to specifications and were successfully demonstrated.

Results in Brief

The Block 1 tests met the objectives of demonstrating the B-2's basic flight worthiness but were not a rigorous demonstration of the B-2's full performance capabilities. The tests did not attempt to simulate a realistic mission environment or a series of realistic operational flight profiles. Accordingly, threat data were not used in the tests.

Principal Findings

Testing Adequate to Achieve Limited Test Objectives

Testing was adequate to initially demonstrate basic flight capabilities of the B-2 in the limited conditions planned and tested. The act included an estimate that Block 1 testing would consist of approximately 75 hours of flight tests and 15 flights. The tests included 67 hours of flight tests and 16 flights, which is approximate to the estimate in the act. Seven pilots that flew the aircraft commented favorably about its flying qualities.

The Block 1 tests are only part of the test results needed to comply with the full performance matrix. The tests comprised less than 2 percent of the estimated 3,600-hour flight test program and measured the aircraft's capabilities in a limited number of flight conditions.

Initial low observable tests, to be accomplished as part of Block 2 testing, are also required to achieve the first milestone in the full performance matrix.

Rigorous Tests of Full B-2 Performance Not Intended

Block 1 tests were not intended to be a rigorous demonstration of the B-2's full capabilities. For example, the tests were planned to explore the aircraft's performance at medium altitudes and airspeeds and not the more demanding high speed and/or low altitude flight profiles. The aircraft took off at significantly lower weights than the maximum gross takeoff weight. Many avionics systems planned for the B-2 were not available for these initial flight tests.

**Testing in a Realistic
Operational Environment
Not Intended**

Block 1 tests were not intended to demonstrate the B-2's capabilities in a realistic mission environment or series of realistic operational flight profiles. The aircraft was flown in the area of the Air Force's Flight Test Center at Edwards Air Force Base, California, in a dry, hot climate but did not encounter other adverse temperature or humidity conditions. However, the aircraft did encounter some high crosswinds, which caused some flights to be canceled. Because the flight tests were not designed to simulate operational missions, threat data or simulations of threat systems were not used during the tests.

Recommendations

GAO's summary is not making any recommendations.

Agency Comments

GAO did not request written agency comments on this summary. However, GAO discussed a draft of this summary with Department of Defense officials and incorporate their comments where appropriate.

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