



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

National Security and
International Affairs Division

B-280323

January 28, 1999

The Honorable William S. Cohen
The Secretary of Defense

Subject: DEFENSE ACQUISITIONS: Testing of F-15 and F-16 Radomes

Dear Mr. Secretary:

During a review completed earlier this year, we received information concerning the potential for shortfalls in the performance of two radomes, one for the F-15 Eagle and one for the F-16 Falcon. The radomes, part of the aircraft's threat warning systems, are housings to protect antennas that receive radar signals. Air Force specifications detail what is required of the radomes so they do not distort radar signals. At issue is whether replacement radomes, bought for spares and supplied by vendors other than the original manufacturer, met the specifications for the original radomes. The purpose of this letter is to provide you information developed during our work and to alert you to those issues that warrant further review.

With the cooperation of the Air Force and the Defense Logistics Agency, we arranged for L3 Communications, Randtron Antenna Systems to test one spare F-15 radome and one spare F-16 radome against the Air Force specifications. This firm is the manufacturer of the F-15 and F-16 antennas protected by the two radomes and is responsible for testing the radomes from the original manufacturer before they are installed on new aircraft. The test data, provided to us in October 1998, showed that the spare F-15 radome met its specification, while the spare F-16 radome did not. Specifically, the test data suggest that for certain radar frequencies and for certain angles between the radome and the source of the radar signal, the F-16 radome reduces the strength of the radar signal that reaches the antenna below the limits stated in the specification. As a baseline, the firm also tested two radomes of original manufacture for the same antennas and both met specifications. Detailed information on the F-16 radome tested and the specification used is included in appendix I. We forwarded you the test report prepared by L-3 Communications under separate cover on January 6, 1999.

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GAO/NSIAD-99-43R F-16 Radomes

While the test results on the F-16 radome warrant concern, they do not, by themselves, warrant a conclusion on the seriousness of the shortcoming. Since only one radome was tested, the shortcoming could be an isolated incident. Even if it is not isolated, the shortcoming could be judged to be insignificant. On the other hand, if the shortcoming is not isolated and is significant, the spare radome could affect the threat warning system's ability to detect a radar contact. Moreover, if the shortcoming is the result of a process that is used to buy spare radomes from vendors other than the original manufacturer, then the concern may apply to other radomes purchased through a similar process.

On October 16, 1998, we shared this information with representatives from your office and the Air Force. They agreed that (1) the test results had potential safety implications that warranted further review and (2) the Department of Defense would accept responsibility for such a review. We noted that if the Department determines the radome's shortcoming is significant, further review may be necessary on (1) the possible testing of additional radomes from the same inventory, (2) the proper disposition of the remaining radome inventory, and (3) the potential for the procedures followed in acquiring the radomes for allowing a similar situation to occur with other spare parts bought through a similar process. On January 12, 1999, we received official comments from the Department, which concurred with a draft of this letter and agreed to undertake further review of the test data on the F-16 radome. The Department plans to complete this review by March 31, 1999, and to take any resulting actions by June 30, 1999 (see app. II). Accordingly, we plan no further work on this matter.

We conducted this review from October 1997 to October 1998 in accordance with generally accepted government auditing standards. In conducting our review, we met with officials from the office of the Deputy Under Secretary of Defense (Logistics), Air Force Headquarters, the Defense Logistics Agency, and the Air Force F-16 Directorate, Hill Air Force Base, Utah. We also held discussions with officials from the Warner Robbins Air Force Base, Georgia. L3 Communications conducted the radome tests with the laboratory facilities and equipment at its plant in Menlo Park, California. We obtained the radomes for testing through contacts with Defense Logistics Agency officials located in Columbus, Ohio, and Richmond, Virginia. We returned the F-15 radome to the Defense District Depot in Mechanicsburg, Pennsylvania, and the F-16 radome to Air Force Headquarters in Washington, D.C.

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During the course of our work, we obtained a significant amount of additional data that we would be happy to share with the Department to assist its review. The major contributors to this letter were Allan Roberts, Alan Goldberg, and Paul Francis. If you have any questions about this letter, please contact me on (202) 512-4841.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Katherine V. Schinasi". The signature is written in a cursive, somewhat stylized font.

Katherine V. Schinasi
Associate Director
Defense Acquisitions Issues

DETAILS ON THE F-16 RADOME TESTEDDESCRIPTION

The radome has a tear-drop shape, measures approximately 16 inches by 5 inches, and is made from composite materials. Both the antennas and the radome are components of the ALR-69 Threat Warning System.

IDENTIFICATION NUMBERS

The part number is 62463/24499-8. The Defense Logistics Agency's stock number is 1560012776738. The radome tested is designated with cage code number 62463. The cage code identifies the manufacturer of the individual radome. Air Force procurement officials at Hill Air Force Base informed us that this vendor is no longer in business.

PURCHASE INFORMATION

The radome was acquired in January 1991 by Hill Air Force Base under Air Force contract F4260090C1543. Under that contract, 290 radomes were bought at a unit cost of \$684.00.

TEST SPECIFICATION

The Air Force specification for testing the electrical properties of radomes from the original aircraft manufacturer for installation on new aircraft is number 16ZE054A, "Critical Item Development Specification for Radome Group, Radar Warning-ELIN A008." This is the specification used in testing the performance of the spare F-16 radome. We did not assess whether the specification used to purchase radomes for spare parts differed from the specification that applied to the original production radomes.

ACQUISITION AND
TECHNOLOGY

OFFICE OF THE UNDER SECRETARY OF DEFENSE

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JAN 12 1999

(L/MDM)

Ms. Katherine V. Schinasi
Associate Director, Defense
Acquisition Issues
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Ms. Schinasi:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "Testing of F-15 and F-16 Radomes," dated December 9, 1998 (GAO Code 707303), OSD Case 1721.

The DoD concurs with the draft report. The Department of the Air Force and the Defense Logistics Agency will undertake further review of the test data on the F-16 radome. We estimate that review will be completed by March 31, 1999, and that any required actions identified as a result of that review will be completed by June 30, 1999.

The Department appreciates the opportunity to comment on the draft.

Sincerely,

A handwritten signature in black ink, appearing to read "Roger W. Kallock".

Roger W. Kallock
Deputy Under Secretary
of Defense (Logistics)

(707303)

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GAO/NSIAD-99-43R F-16 Radomes

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