



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

112418

Handwritten initials

PROCUREMENT AND SYSTEMS
ACQUISITION DIVISION

B-198928

JUNE 2, 1980

The Honorable Harold Brown
The Secretary of Defense



112418

Attention: Assistant for Audit Reports
Room 3A336
ASD (Comptroller)

Dear Mr. Secretary:

Subject: The [High Altitude, High Speed Target Program
Should Either Be Modified to Realistically
Simulate the Threat or Be Killed] (PSAD-80-52)

The High Altitude, High Speed Target (HAHST) program has several critical shortcomings that warrant your immediate attention. Because HAHST is not being developed to meet several of the approved operational requirements, it will not provide a threat-representative target to effectively evaluate our air defense weapons. Therefore, we believe that continuing the current HAHST program with these shortcomings is not justified.

HAHST is needed to simulate high speed, high altitude enemy bombers, fighters, and cruise missiles at speeds from Mach 1.2 to Mach 4.0 and at altitudes from 35,000 to 100,000 feet for testing weapon systems. HAHST will be used as a target to evaluate air defense missiles over the next 20 years. These air defense missiles will be using either radar sensor systems or infrared sensor systems to locate and destroy the targets. Therefore, HAHST must provide realistic radar and infrared signatures together with countermeasures which the enemy will use to interfere with the missiles' sensor systems. It also needs a scoring system to provide the information needed to determine warhead performance. Without these features, HAHST will not be an effective target for testing air defense missiles.

Handwritten number 10597

(951530)

The HAHST program is a continuation of the Sandpiper and High Altitude Supersonic Target programs that began in 1966 and 1970, respectively. In December 1979 the Air Force awarded a full-scale engineering development contract to Teledyne Ryan. The basic contract is a 4-year, \$38 million effort to develop the flight vehicle. The contract also has options for developing a point-source radar augmentation system and a scalar-scoring system for HAHST. These contract options, which must be exercised by June 10, 1980, will cost the Air Force an additional \$2.1 million. However, these options will not provide HAHST with the capabilities it must have to simulate the various threats realistically.

The point-source radar augmentation planned for HAHST will make the subscale target look bigger, but it will not replicate other threat characteristics (glint, scintillation, and jet engine modulation) that adversely affect the missile system's sensor, guidance, and fuzing performance. To do this, HAHST needs an all-aspect radar augmentation system. We discussed the feasibility of developing such a system with current and past HAHST development contractors. They said an all-aspect radar augmentation system was developed for the High Altitude Supersonic Target program during advanced development, and one contractor believes that it could be modified as necessary to go on HAHST. Apparently the primary reason the point-source radar augmentation system was chosen instead of an all-aspect system was Air Force funding problems.

Although the scalar-scoring system planned for HAHST will determine how close a missile comes to the target, this miss distance is only one factor in determining the probability of kill. The probability of kill can be determined only by knowing the missile's vector and the distance between the target and the missile at the time of fuzing. Therefore, target users must have missile vector data to evaluate warhead fuzing and weapon system lethality. A cooperative vector-scoring system would provide this information; and, according to the contractors, a cooperative vector scorer can be used with HAHST. It would require that a device the size of a cigarette package be placed in the missile being tested. Teledyne believes it could develop this system within 2 years at a moderate to low risk.

Moreover, there are no plans to develop an infrared augmentation system or infrared countermeasures during the current engineering development program. Without them, HAHST will not be a threat-representative target to test

missiles which have infrared sensors. HAHST will also lack electronic countermeasures needed for realistic testing of radar guidance systems at high altitudes.

We discussed these issues with Air Force and Office of the Secretary of Defense officials. They agreed that an all-aspect radar augmentation system is needed to make HAHST threat representative and that a cooperative vector-scoring system is needed to provide data to evaluate weapon system performance. They said that studies were being made to evaluate HAHST infrared signatures. They also said that other targets could be used to test weapons against electronic countermeasures. They maintained that the lower-cost, point-source radar augmentation and scalar-scoring systems will satisfy some user requirements and that HAHST, as designed, will have sufficient payload capacity to accommodate current and future augmentation and scoring needs. Therefore, they believe that the contract options should be exercised and that the Air Force should begin a separate, parallel program to develop the augmentation and scoring systems that are needed to make HAHST more effective and threat representative.

We question whether the Air Force should proceed with the current engineering development program. To make HAHST an effective, threat-representative target, we believe that HAHST should be equipped with an all-aspect radar augmentation system, a cooperative vector-scoring system, an infrared augmentation system, and threat-representative countermeasures. Unless the current contract is modified to provide for development of these payloads, the engineering development program will not provide a threat-representative target for subsequent production. Furthermore, based on past experience, we believe that it will cost more to incorporate these critical systems after production.

We also discussed with the contractors whether the current HAHST payload volume (.85 cu. ft.) could accommodate the needed payloads. Based on the information we obtained, we concluded that some uncertainty exists about the adequacy of the current payload volume. This uncertainty should be resolved; and, if necessary, HAHST should be modified to provide any additional space needed.

RECOMMENDATIONS

Accordingly, we recommend that you direct the Secretary of the Air Force to:

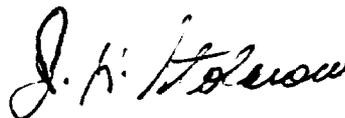
- Determine whether HAHST's limited payload capacity will accommodate the needed payloads and, if not, modify HAHST while it is still in development to provide sufficient payload space.
- Not exercise the current contract payload options and instead amend the contract to provide HAHST with needed radar and infrared augmentation, scoring, and countermeasure systems.

- - - -

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 receiving a copy of your statement when it is provided to the congressional committees.

Copies of this letter are being sent to the Director, Office of Management and Budget; the chairmen, House and Senate Committees on Armed Services and Appropriations, House Committee on Government Operations, and Senate Committee on Governmental Affairs; and the Secretaries of the Army, Navy, and Air Force.

Sincerely yours,



J. H. Stolarow
Director