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Information Management and  
Technology Division

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September 21, 1992

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

Dear Mr. Chairman:

This letter responds to your request that we review the Department of the Air Force's acquisition of the Granite Sentry system--one of five subsystems comprising the Air Force's Cheyenne Mountain Upgrade program.<sup>1</sup> Specifically, you asked that we provide cost and schedule information on Granite Sentry, as well as information on the system's ability to satisfy the Department of Defense's attack warning and attack assessment requirements. To provide this information, we obtained documentation from and interviewed program officials at the Air Force's Electronic Systems Center, Hanscom Air Force Base, Massachusetts; U.S. Space Command and Air Force Space Command, Colorado Springs, Colorado; Carnegie Mellon's Software Engineering Institute, Pittsburgh, Pennsylvania; and Mitre Corporation, Bedford, Massachusetts.

BACKGROUND

In 1981 the Air Force began several projects to replace aging and obsolete computers at Cheyenne Mountain Air Force Base. These computers are used by the North

<sup>1</sup> The five subsystems are the (1) Communications Systems Segment Replacement, (2) Space Defense Operations Center 4, (3) Command Center Processing and Display System Replacement, (4) Survivable Communications Integration System, and (5) Granite Sentry. A back-up system--the Alternate Processing and Correlation Center at Offutt Air Force Base in Nebraska--was added in 1989 to provide missile warning and air defense information should the system at Cheyenne Mountain fail.

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American Aerospace Defense Command (NORAD) to provide national decisionmakers with attack warning and assessment information should North America ever come under attack. The Granite Sentry acquisition will replace display screens on the Attack Warning and Attack Assessment System. The original Granite Sentry system design proposed providing individual as well as integrated displays of air defense, intelligence, missile warning, and space defense mission data to the Commander-in-Chief, NORAD, in very short time frames. The Air Force has since decided to use a video distribution system in lieu of a single integrated display because of the high probability that the display could become too cluttered with data and thereby decrease its usefulness. Separate video displays will now be used to display data for each mission.

GRANITE SENTRY WILL NOT  
PERFORM AS ORIGINALLY PROMISED

The Air Force expects to deliver Granite Sentry within its original \$230-million cost estimate. The system delivery schedule has been delayed from the originally scheduled fourth quarter of fiscal year 1993 to the third quarter of fiscal year 1996. The Air Force has made requirements deferrals and changes in order to stay within a 1989 Defense Acquisition Board agreement for total acquisition cost and final operational capability date. Enclosure I contains examples of some of these requirements deferrals or changes--two of which are discussed in detail below.

One of Granite Sentry's objectives was to improve critical decisionmaking data needed by the Commander-in-Chief during an attack. Granite Sentry was to improve both the quality and the timeliness of these data by providing a fully integrated view of the air defense, intelligence, missile warning, and space defense situations. By having an integrated view, the Commander-in-Chief could immediately assess all elements of an attack and decide how to respond. Granite Sentry will now be completed with four individual monitors capable of displaying multiple views of attack warning and attack assessment data.

In addition to providing integrated display capability, the Granite Sentry program was to replace NORAD's antiquated display with modern state-of-the-art three-dimensional displays. While antiquated displays have

been replaced, the Air Force has abandoned the design of three-dimensional displays and will provide individual displays of mission data using a single display component.

The Air Force has just recently changed Granite Sentry requirements and is in the process of developing updated system specifications to give to the contractor. Until the document is released, it is not possible to determine what, if any, impact these changes will have on the cost, delivery schedule, or performance of the system.

We are providing copies of this letter to the Secretary of Defense; the Secretary of the Air Force; the Director, Office of Management and Budget; appropriate House and Senate committees; and other interested parties. Copies will also be made available to others upon request. If you have any questions about this letter, please contact me at (202) 512-6240.

Sincerely yours,



Samuel W. Bowlin  
Director, Defense and Security  
Information systems

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EXAMPLES OF DEFERRALS AND REDUCTIONS IN  
SYSTEM REQUIREMENTS FOR GRANITE SENTRY

Since inception of the Granite Sentry program, the Air Force has deferred or changed defined system requirements to ensure that Granite Sentry can be built within approved program budgets and milestones. Over 35 changes have been made to the original Granite Sentry system requirements. These changes have ranged from deletion of requirements because the system could not achieve such capabilities, to deferring requirements for development until after Granite Sentry has been built and becomes operational at Cheyenne Mountain. The following table presents examples of some of the more significant requirements deferrals or changes that have been made to the Granite Sentry program.

**Table 1: Examples of Changes in System Capabilities for Granite Sentry**

System Capability	Explanation
Ability to change operational plans and deployment options	To provide the user with an ability to modify operational plans and activities in real time (as events are occurring). Delivery of this capability was expected early in the system development and was to be made available for air defense warning and tracking activities. This capability has now been deferred.
Tactical Decision Aid	The purpose of this capability is to allow the user to determine (1) optimal fighter bases for conducting intercepts, (2) when to initiate an intercept, and (3) the characteristics of the intercept profile. This capability is no longer planned to be delivered with the initial system and has been deferred to an unknown point of time in the future.
Electronic Atlas	To provide for use of commercially available electronic atlas software without impacting the use of other applications software on the same work station. This capability will not be provided until after the system has been delivered.
System response time for recalling journaled messages	To provide the user with an ability to recall prior attack warning/attack assessment messages stored by Granite Sentry. System response time for recalling journaled messages has been changed from 5 minutes to 15 minutes.