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**National Security and
International Affairs Division**

B-257974

November 30, 1994

The Honorable John P. Murtha
Chairman
The Honorable Joseph M. McDade
Ranking Minority Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

The Honorable Daniel K. Inouye
Chairman
The Honorable Ted Stevens
Ranking Minority Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

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As part of our continuing work on Department of Defense (DOD) space programs and activities, the Chairman, House Appropriations Defense Subcommittee asked that we monitor the Air Force's plans for upgrading its satellite control network and DOD's plans for achieving a common, integrated network for all DOD satellites. As a matter of priority, we concentrated on the \$60 million in fiscal year 1995 Air Force research, development, test, and evaluation funds that the House and Senate Committees on Appropriations required be withheld from obligation. The Committees' approval is needed to release the funds.

Our work indicates that the Air Force now has an adequate basis for obligating the \$60 million because the planned use of the satellite control network funds will (1) aid in establishing, refining, and validating guiding principles, evaluation criteria, and functional requirements to improve existing sub-architectures and potentially develop a future integrated architecture, (2) help overcome certain existing network deficiencies, and (3) not prematurely confine the network upgrades to a proprietary or Air Force-specific solution.

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Approved for public release;

GAO/NSIAD-95-59R DOD Satellite Control

19941213 022

However, our concern remains the same as we expressed in our August 1994 report,¹ which was that (1) greater efficiencies should be achieved by moving toward an integrated DOD satellite control network and (2) the Air Force should not unilaterally upgrade its network in a manner that would not be interoperable with the broader approach DOD is now studying. Additional assessment of these matters will be necessary when DOD provides the results of its future integrated architecture study and the Air Force provides its justification for requesting fiscal year 1996 satellite control network funds.

ADEQUATE BASIS FOR OBLIGATING
FISCAL YEAR 1995 APPROPRIATIONS

For fiscal year 1995, the Air Force requested \$101,146,000 in research, development, test, and evaluation funds for its satellite control network. The Congress appropriated \$83,000,000. In addition, the Committees on Appropriations stipulated in their September 26, 1994 conference report that (1) the Air Force must obtain prior approval from the appropriations committees before obligating any funds for enhancements or modernization of the satellite control network and (2) \$60,000,000 be withheld from obligation pending receipt of that approval. In early November 1994, the Air Force had allocated the \$83,000,000 as shown in table 1.1.

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¹National Space Issues: Observations on Defense Space Programs and Activities (GAO/NSIAD-94-253, Aug. 16, 1994)

Table 1.1: Air Force Allocations of Fiscal Year 1995 Satellite Control Network Research, Development, Test, and Evaluation Appropriations (dollars in millions)

Expenditure category	Appropriations	Allocated	Allocated pending approval
Command and control segment	\$19.91	\$2.00	\$17.91
Communications segment	16.00	5.20	10.80
Systems engineering and integration	26.00	9.70	16.30
Priority work group projects	9.94	3.60	6.34
Development support	7.25	0.60	6.65
Segment studies	0.90	0.90	--
Program office	3.00	1.00	2.00
Total	\$83.00	\$23.00	\$60.00

Our review of the Air Force's planned use of the \$83,000,000 indicated that the funds could make some needed improvements to the existing Air Force network and could provide a foundation for a future integrated DOD satellite control network. However, since DOD is still studying such an integrated network, the Air Force only has preliminary directions toward a DOD, or possibly national, network.

The command and control segment funds are for initial steps to identify ways of overcoming existing Air Force network deficiencies. Plans are for (1) developing a simplified satellite operations prototype that will identify ways to reduce the skill level required for operators and total personnel required, (2) a demonstration laboratory to assess available commercial off-the-shelf products, and (3) various related studies to better define a system to satisfy operators' needs. These efforts do not include acquiring software and hardware for direct implementation into the existing Air Force network and therefore cannot result in a direct proprietary solution to any given network problem.

Instead, the efforts serve as a means for establishing, refining, and validating evaluation criteria and functional requirements to help overcome current deficiencies in the network--which include being manually intensive, requiring a large number of highly skilled personnel, and costly to operate and maintain.

The communications segment funds are directed toward projects that would reduce operations and maintenance costs by replacing obsolete equipment. Such replacement will allow for centralizing communications management and increasing the speed of data transmissions and the capacity for data storage. The equipment replacement is also a first step toward implementing a generic communications sub-architecture that forms the basis for all communications analyses and accommodates future possible directions in networking technologies, particularly wide-area networking. As with the command and control segment, the communications projects would not prematurely lead the Air Force toward a proprietary or service-specific solution.

The system engineering and integration funds are key to identifying and making sound system architectural choices. They are for understanding network-level operational requirements and defining evolutionary system architectures. These funds would also promote system interoperability and standardization, maintain existing and future system configuration management and control, develop life cycle costs, provide risk assessments, and establish implementation schedules for alternative system designs.

The remaining funds are needed to sustain operations of the existing network, including minor modifications to network segments, analyses of these segments and interfaces, establishing guidelines for segment changes, and government program management.

ESSENTIAL RELATIONSHIP OF AIR
FORCE NETWORK UPGRADES AND DOD PLANS
FOR FUTURE INTEGRATED NETWORK

As the Air Force proceeds in fiscal year 1995 with analyzing its satellite control network requirements, addressing existing deficiencies, establishing evaluation criteria, and developing an architecture for an upgraded network, close coordination with the U.S. Space Command and other government agencies will be essential. In our August 1994 report, we disclosed that a January 1994

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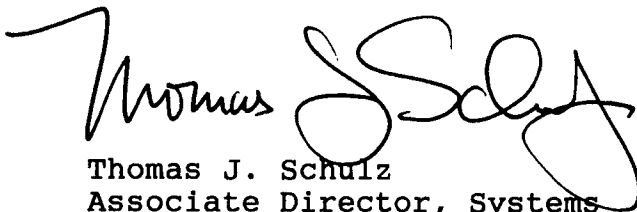
Command report recommended merging Air Force and Navy satellite control network operations to achieve improvements in efficiency and effectiveness. The Command's ongoing review, called the Future Integrated Telemetry, Tracking, and Commanding Architecture Study (FITAS) is not expected to be approved by the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence until January 1995. This study is expected to include satellite control information on National Reconnaissance Office, National Aeronautics and Space Administration, and National Oceanic and Atmospheric Administration networks.

Considering the potential benefits of consolidation, ensuring greater interoperability, and/or sharing resources among these networks, the Air Force's efforts need to be compatible with broader government interests. An assessment of the relationship between the Air Force's individual efforts and the opportunity for an integrated DOD, or national, network will be essential when the Air Force submits its fiscal year 1996 budget.

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We are sending copies of this letter to the Secretary of Defense and Secretary of the Air Force. We will also make copies available to others upon request.

Please contact me or Homer H. Thomson, Project Director, at (202)512-4841 if you have any questions concerning this letter. Major contributors to this letter were Arthur Gallegos, Keith A. Rhodes, Frederick G. Day, and Maricela Camarena.



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