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National Security and
International Affairs Division

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February 6, 1995

The Honorable C.W. Bill Young
Chairman
The Honorable John P. Murtha
Ranking Minority Member
Subcommittee on National Security
Committee on Appropriations
House of Representatives

This letter responds to the House Appropriations Committee's request[1] for the General Accounting Office to comment on the feasibility and cost-effectiveness of the Department of Defense (DOD) transferring two Defense Meteorological Satellite Program (DMSP) satellites to the Department of Commerce's (DOC) National Oceanic and Atmospheric Administration (NOAA).

DOD and NOAA each operate polar-orbiting meteorological satellite systems. The satellites are built by the same contractor and contain some common components. In September 1993, the Committee suggested that two DMSP satellites be transferred to meet NOAA's interim requirements, pending a fully integrated, governmentwide, meteorological satellite architecture. In May 1994, the President signed a directive requiring DOD and the DOC to integrate their separate satellite systems into a single, converged, national system. At that time, DOD had nine and NOAA had six satellites that were either built or being procured.[2] The prevailing view was that the unequal number of satellites between the two agencies could complicate a timely and orderly transition to the converged system. DOD and NOAA representatives stated, however, that the imbalance in the inventory of satellites is manageable, and there are no plans to transfer any satellites.

Our assessment is that transferring DMSP satellites to NOAA would not be beneficial to the government. Although the satellites have similarities, previous

[1]Contained in the Committee's June 27, 1994 report (103-562) accompanying the fiscal year 1995 Department of Defense Appropriations Bill, p. 42.

[2]Since that time, DOD and NOAA have launched one satellite each, reducing these numbers to eight and five, respectively.

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estimates of a high degree of commonality included component parts that were functionally common, but not directly interchangeable. Thus, the inference that DOD satellites could be easily transferred to NOAA was incorrect. If the transfer were to occur, the government would lose the use of two satellites that are currently in production, resulting in unusable, residual parts valued at $230 million.

TRANSFERRING DOD SATELLITES TO NOAA WOULD NOT BE BENEFICIAL TO THE GOVERNMENT

Meteorological satellites consist of two integrated segments–mission sensors and a platform that supports the sensors, which is also referred to as a bus. Over the years, various statements have been made about the high degree of commonality between DMSP and NOAA satellite platforms. For example, in 1987, DOD officials stated that bus parts were about 70 percent common.[3] In 1993, NOAA officials stated that close cooperation between DOD and NOAA on their meteorological satellite programs had resulted in a high degree of commonality in the spacecraft bus, and that "parts commonality has reached 75-80%."[4]

However, information that we recently obtained from contractor and program officials indicates that the degree of commonality, when measured in terms of interchangeable components, is much smaller than earlier estimates suggested. The specific satellites that were under consideration for transfer are now in production and are the last two in DOD's current contract. Our analysis of the information showed that each satellite has 63 platform components. Of these, only 15 components (24 percent), such as the inertial measurement unit and earth and sun sensing equipment, could be used on NOAA satellites without modifications. Another 13 components (21 percent), such as the power supply electronics, battery charge assembly, and solar array electronics, could be used if they were modified, at additional cost. The remaining 35 components (55 percent) are either substantially different or unique and have no value to NOAA. Additionally, the DMSP mission sensors could not be used because they are unique and would not satisfy NOAA's requirements.

According to contractor representatives, previous statements regarding a high degree of commonality included "functionally equivalent" components that had a common development lineage. However, such components that performed similar functions, for example thermal control and communications, were not necessarily

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[3]Weather Satellites: Economies Available by Converging Government Meteorological Satellites (GAO/NSIAD-87-107, Apr. 23, 1987), p. 21.

[4]Hearings before the House Appropriations Subcommittee on the Departments of Commerce, Justice, and State, The Judiciary, and Related Agencies, Apr. 27, 1993, 103rd Congress, First Session, Part 1B, Department of Commerce, pp. 601-2.

interchangeable between DOD and NOAA satellites. In addition, contractor representatives informed us that the number of interchangeable components has decreased with the introduction of the newest generation of satellites. For example, in the mid-1980s, NOAA decided to increase the size of its satellites to take advantage of the increased capabilities of a different launch vehicle. In contrast, DOD retained its existing, basic design, resulting in structural components that are no longer common with the larger NOAA satellite.

According to agency representatives, each DMSP satellite costs about $130 million, or $260 million for two, and each NOAA satellite costs about $120 million. The transferrable common components on the two DMSP satellites are valued at $30 million. If the transfer were to occur, DOD's net loss would be $230 million from residual parts that could not be used by NOAA. NOAA's cost for two satellites would be $240 million and would include the $30 million in parts supplied by DOD. Thus, the estimated cost to the government for two operational satellites would be $470 million ($230 million plus $240 million). If the transfer did not occur, the estimated cost to the government for four operational satellites would be $500 million ($260 million plus $240 million).

In addition, if the transfer were to occur, the reduction in the total number of available government satellites may necessitate an earlier delivery of the first, fully converged satellite. According to agency representatives, the planned delivery date for this satellite is 2004, but transferring two DMSP satellites to NOAA may require that delivery be accelerated to as early as 2001. The representatives stated that such an action would increase both technical and schedule risks and require substantial increases in the convergence program's near-term budget.

Moreover, as part of the convergence effort, NOAA is negotiating with a European consortium to obtain services from two "pre-convergence" satellites. According to NOAA representatives, this will help manage the imbalance in the inventory of U.S. satellites. They stated that the services from these satellites are key to the overall convergence effort, and they are optimistic that the negotiations will succeed.

CONVERGENCE MATTERS THAT NEED TO BE ADDRESSED

As part of our ongoing work on DOD space programs and activities, we have identified several matters related to convergence of meteorological satellites that still need to be addressed. With convergence milestones scheduled for 1995 and 1996, these matters will require resolution and decisions by the National Polar-Orbiting Operational Environmental Satellite System integrated program office with assistance from DOD, DOC, and the National Aeronautical and Space

Administration (NASA). Our 1994 report[5] highlighted some of these matters including (1) substantiation of short- and long-term cost savings, (2) timely completion and approval of integrated operational requirements, (3) completion and approval of agency management plans, (4) establishment of a joint budgeting and funding process, (5) resolution of European participation relative to the use of satellites to meet the 2004 convergence time frame and the execution of data denial requirements, and (6) a plan to proceed with the transfer of DMSP's satellite control functions to NOAA.

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We are sending copies of this letter to the Chairmen and Ranking Minority Members of the House Appropriations Subcommittee on Commerce, Justice, State, Judiciary, and Related Agencies; House Committee on National Security; House Committee on Science; Senate Appropriations Subcommittee on Defense; Senate Appropriations Subcommittee on Commerce, Justice, State, and Judiciary; Senate Committee on Armed Services; and Senate Committee on Commerce, Science, and Transportation. We will also send copies to the Secretaries of Defense, Air Force, and Commerce, and the Administrator of NASA. We will make copies available to others upon request.

Please contact me or Homer H. Thomson, Project Director, on (202) 512-4841 if you have any questions concerning this letter. Major contributors to this letter were Rahul Gupta, Steve Martinez, and James P. Tallon.

Thomas J. Schulz
Associate Director, Systems
Development and Production Issues

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[5]National Space Issues: Observations on Defense Space Programs and Activities (GAO/NSIAD-94-253, Aug. 16, 1994), pp. 28-9.

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