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**OVERSIGHT HEARING ON THE
NATIONAL POLAR-ORBITING OPERATIONAL
ENVIRONMENTAL SATELLITE SYSTEM**

**BEFORE THE
COMMITTEE ON COMMERCE, SCIENCE, AND TECHNOLOGY
SUBCOMMITTEE ON DISASTER PREVENTION AND PREDICTION
U.S. SENATE**

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Chairman DeMint, Senator Nelson, and Committee members, I appreciate the opportunity to discuss with you the National Polar-orbiting Operational Environmental Satellite System (NPOESS). I am Gregory W. Withee, Assistant Administrator for Satellite and Information Services, within the National Oceanic and Atmospheric Administration's (NOAA's) National Environmental Satellite, Data, and Information Service (NESDIS).

NOAA's Satellite Programs

Satellites provide an unparalleled capability to take images and precise measurements of many aspects of vast areas of the land, sea, and air in very rapid succession. Data obtained from these observing systems are essential to our ability to understand and predict changes in the Earth's environment, and to conserve and manage coastal and marine resources. These data are key enablers to NOAA in meeting its public safety, economic, and environmental mission requirements.

NOAA currently manages two major satellite programs: the Geostationary Operational Environmental Satellite (GOES) and Polar-orbiting Operational Environmental Satellite (POES) programs. GOES satellites provide the kind of continuous monitoring critical to our short-range weather forecasts and increase our ability to monitor and predict extreme weather events, including tropical and severe storms. GOES satellites orbit the Earth in a geosynchronous orbit, which means they orbit the Earth at a speed matching the Earth's rotation. This orbit allows them to provide continuous coverage over the western hemisphere. POES satellites orbit over the poles of the Earth, providing global imagery and atmospheric measurements several times a day. Polar data are used around the world for weather monitoring and prediction and are the foundation for global weather models needed for longer-range forecasts. Data and information products from both the GOES and POES programs have many applications contributing to societal benefits, including disaster prevention, prediction, and monitoring, global vegetation

analysis, and climate and ocean research. Both types of satellites also help to save lives by receiving and relaying search and rescue beacon signals to appropriate emergency and search and rescue officials.

What is the National Polar-orbiting Operational Environmental Satellite System (NPOESS)?

Since the early 1960s, the United States has maintained two distinct polar satellite programs, one for military use and one for civilian use. While data from both programs were exchanged, each program operated independently. In 1994, after a multi-year review concluded that civilian and military requirements could be satisfied by a single polar satellite program, President Clinton directed the merger of the two programs into one – NPOESS. This program was designed as a series of six satellites, with a maximum of three operating at any given time (one in an early morning orbit, one in a mid morning orbit, and one in an early afternoon orbit). Under the NPOESS program, 13 different instruments will be placed in various configurations depending on the satellite's designated orbit. Several of these sensors represent significant advances when compared to current technology.

The new NPOESS sensors will provide higher quality data, increase our ability to see through clouds, and beam the information back more often than current polar satellites. Satellites provide over 90 percent of the data used in weather forecasting models. The new NPOESS sensors will translate into more sophisticated weather models, which will lead to better forecasts and warnings. NPOESS will also enhance the data and products used for climate and ocean research and operations as well as monitoring space weather.

The program also includes a risk reduction component – the NPOESS Preparatory Project (NPP). The NPP was designed to test several of the new sensors in space and to ensure that the ground control systems work properly before launch of the first operational NPOESS satellite. Additionally, the NPP should allow us time to assimilate the new data sets into the computer weather models and other applications before NOAA needs to use them operationally. Finally, the NPP should ensure continuity of certain climate records as some of the satellites maintained by the National Aeronautics and Space Administration (NASA) reach the end of their end of lives. As planned, NASA acquires and builds the NPP spacecraft, launch vehicle and one of the four sensors. The NPOESS program provides the other three sensors, the ground system, and the data archive capability.

How is NPOESS Managed?

Per a Presidential Decision Directive and the resultant Memorandum of Agreement among DOC, Department of Defense (DOD), and NASA, NPOESS is managed jointly by these three agencies, with direct funding provided by DOC and DOD. At the senior level, this program is overseen by an Executive Committee (EXCOM). On this committee, Vice Admiral Conrad C. Lautenbacher, Jr., Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator represents DOC; Dr. Ronald Sega, Under Secretary of the Air Force, represents DOD; and Dr. Michael Griffin, NASA Administrator, represents NASA. The EXCOM meets several times a

year to review progress towards achieving cost, schedule, and performance baselines. The EXCOM also approves program plans, budgets, and policies and ensures agency funding commitments are equitable and sustained.

To assist the EXCOM, a Tri-agency Steering Committee consisting of individuals from the three agencies, meets monthly. This group acts on our behalf as a senior level management review body, recommends actions to the EXCOM, and provides guidance to the Integrated Program Office (IPO). A Senior Users Advisory Group (SUAG), comprised of primary United States government users, operates independently of the IPO and reviews, adjudicates, and recommends NPOESS requirements for agency validation and subsequent Joint Agency Requirements Council (JARC) approval.

The IPO, under the direction of a System Program Director, is responsible for the planning, budgeting, development, acquisition, launch operation and management of the NPOESS program. NPOESS is principally being acquired using DOD acquisition authorities, and the main U.S. Air Force contract is managed by the IPO. In 2002 Northrop Grumman Space Technology (NGST) was selected as the NPOESS prime contractor for spacecraft development, ground systems, sensor integration, and operations. Contracts for some sensors were awarded before the prime contract but were subsequently transitioned to Northrop Grumman.

Recent History of NPOESS

NPOESS likely is the most complex environmental satellite program ever developed. The NPOESS program presents numerous technical, developmental, integration, and management challenges.

The ground system is on budget and on schedule.

Technical challenges have occurred in several of the sensor development efforts. Of the sensors, the two that have experienced the most serious development and manufacturing problems are the Conical Microwave Imager/Sounder (CMIS) and the Visible Infrared Imager Radiometer Suite (VIIRS).

CMIS will provide all-weather sounding and imaging capability to see through the clouds. While work continues on CMIS, it is still in its initial design phase. Early problems included meeting design performance within weight constraints. We believe these technical issues are being resolved. Furthermore, we are incorporating the lessons learned from the VIIRS experience into our management approach to CMIS.

VIIRS will provide the information used in many of the critical environmental data records and is the key imaging sensor delivering most of the atmospheric cloud and surface information products needed by weather forecasters. In mid-2004 during the initial testing phases, we encountered significant problems that showed potential design deficiencies and manufacturing process shortfalls. In late 2004, a cooling unit on the sensor, which is critical to its operation, failed during testing. These problems prompted a complete review of the sensor design,

development, and management. At the time, we believed the cost and schedule delays would be limited to NPP.

On March 31, 2005, however, NGST communicated to the IPO that it would not be able to meet overall NPOESS cost and schedule baselines due to the problems encountered with the development of VIIRS. NGST formally notified the government by letter on May 19, 2005.

Actions the Government has taken to address the problems

The problems facing NPOESS are serious and we are working to contain cost growth, limit schedule delays, and reduce risk. Significant changes have been made in the overall management of the NPOESS program to improve the effectiveness of both government and contractor oversight.

Since the resignation of the NPOESS System Program Director in September 2005, Brigadier General (select) Sue Mashiko served as interim System Program Director. She has been reviewing the IPO staffing to ensure that it matches the program's needs for management and engineering oversight of the program and NPOESS contractors. Additionally, she developed an Interim Program Plan for FY 2006 which included changing the development cycle of the VIIRS Engineering Data Unit and Flight Unit from concurrent to serial and rebaselined milestones. Funding has been allocated among key development efforts (VIIRS, Conical Scanning Microwave Imager/Sounder, Spacecraft, etc.), in accordance with the new milestones. Colonel Dan Stockton was approved by the EXCOM as permanent System Program Director on March 14, 2006.

The IPO has maintained an on-site presence at the contractor's facilities and at Raytheon (the subcontractor for VIIRS) since the VIIRS problems were discovered. In terms of personnel, NGST has assigned a new NPOESS Program Manager, and Raytheon has brought in a new senior team for sensor management.

The EXCOM initiated two independent reviews of the program, one to look at the problems of VIIRS impacting NPP and another, the Independent Program Assessment (IPA), to examine the overall NPOESS program. These review teams helped us to better understand what has gone wrong with the program and more fully explore the various options for moving forward. The review teams explored reducing sensor requirements, reducing the number of NPOESS satellites and relying on other satellite systems to provide some of the requirements. At the same time, the EXCOM worked with the SUAG to understand how any changes made to capabilities might impact users.

In addition to the independent program reviews, the EXCOM asked the DOD's Cost Analysis and Improvement Group (CAIG) to provide an independent analysis of several IPA cost and schedule estimates. This group is made up of acquisition and technical experts who can help provide further confidence in the cost estimates that are being discussed for both the current NPOESS program and other options.

Nunn-McCurdy Process

In September, reviews and preliminary cost estimates led the Administration to conclude that there was a reasonable expectation that the cost to produce each satellite unit was likely to rise at least 15 percent. This triggered the notification requirement in the Nunn-McCurdy Amendment. Then Acting Secretary of the Air Force, Pete Geren, notified Congress on September 28 that the 15 percent threshold had been breached. Subsequent to that notification, the Administration continued to work to bring the program and cost growth under control.

In accordance with Title 10 USC § 2433 (“Nunn-McCurdy”) and based upon information received from the interim NPOESS System Program Director, Secretary of the Air Force Michael Wynne notified Congress on January 11, 2006, that he had reasonable cause to believe the NPOESS Program Acquisition Cost (PAUC) and Acquisition Procurement Unit Cost (APUC) will exceed the 25 percent certification threshold against its Acquisition Program Baseline.

The Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) has directed a full Nunn-McCurdy review requiring the NPOESS program to receive a written certification to be presented to Congress. The certification must answer positively to the following questions:

1. Is the acquisition program essential to national security?
2. Are there no alternatives to such acquisition program which will provide equal or greater military capability at less cost?
3. Are the new estimates of the program acquisition unit cost or procurement unit cost reasonable?
4. Is the management structure for the acquisition program adequate to manage and control the program, acquisition unit cost, and procurement unit cost?

Under the leadership of USD(AT&L), DOD has convened four working groups to address these criteria. NOAA and NASA have accepted the invitation to participate as full partners in all four working groups. All of the previous products and program reviews have been made available to the Nunn-McCurdy working groups for their consideration. NOAA, NASA, and DOD have all made staff available to assist in the expeditious conclusion of this process, which can be no later than June 2006.

Conclusion

NPOESS is a very complex acquisition program that will greatly enhance and increase our Nation’s capabilities in weather forecasting and in other important environmental research areas. We are working very hard to overcome the technical and management challenges that have occurred, and we believe that viable options to rationalize the program and move forward exist.

Before we make any major decisions, however, we expect to have the information from the ongoing Nunn-McCurdy process no later than June 2006.

Thank you for the opportunity to speak with you today. I am prepared to answer any questions you have.