

Restructuring the National Polar-orbiting Operational Environmental Satellite System

February 1, 2010

The President's FY2011 budget contains a major restructuring of the National Polar-orbiting Operational Environmental Satellite System (NPOESS) in order to put the critical program on a more sustainable pathway toward success. The satellite system is a national priority -- essential to meeting both civil and military weather-forecasting, storm-tracking, and climate-monitoring requirements. However, the program is behind schedule, over budget, and underperforming. Independent reports and an administration task force have concluded that the current program cannot be successfully executed with the current management structure, and with the current budget structure. These challenges originate in large part because of a combination of management deficiencies that result from conflicting perspectives and priorities among the three agencies who manage the program. Serious lapses in capabilities loom as a result.

Background

NPOESS is a tri-agency program with the Department of Commerce (specifically the National Oceanic and Atmospheric Administration, or NOAA), the Department of Defense (DOD, specifically the Air Force), and the National Aeronautics and Space Administration (NASA) designed to merge the civil and defense weather satellite programs in order to reduce costs and to provide global weather and climate coverage with improved capabilities above the current system.

In 2002, the NPOESS program was estimated to cost approximately \$6.5B (for development and operations through FY2018) and consisted of an initial NASA satellite to test the new sensors (the NPOESS Preparatory Project – NPP - to be launched in early 2006) and six NPOESS platforms in three orbits, the first of which (C-1) was to be launched in early 2009. The program encountered numerous technical and management challenges, which led to restructuring of the NPOESS program in 2006 due to cost over-runs that triggered Congressionally-mandated recertification. The restructured program reduced the scale of the program from six main satellites (in three orbits) to four satellites (in two orbits). (The U.S. will rely on European satellites for operational weather observations from the remaining orbit.) The NPP launch has been delayed to 2011, and the launch of the first NPOESS platform (C-1) was expected to be in late 2014. (These would each be delays of five years from the original plan.) At that time the new life-cycle cost estimate (through FY2024 due to delays) was approximately \$12B for this reduced capability. The current official baseline life-cycle cost estimate is approximately \$13.9B.

A new direction for ensuring continuity of polar-orbiting satellite measurements:

After reviewing options, including those suggested by an Independent Review Team (IRT) and Congressional Committees, the President's FY2011 budget takes significant new steps. Today the White House is announcing that NOAA and the Air Force will no longer continue to jointly procure the polar-orbiting satellite system called NPOESS. This decision is in the best interest of the American public to preserve critical operational weather and climate observations into the future.

- The three agencies (DOD, NOAA and NASA) have and will continue to partner to ensure a successful way forward for the respective programs, while utilizing international partnerships to sustain and enhance weather and climate observation from space.
- The major challenge of NPOESS was jointly executing the program between three agencies of different size with divergent objectives and different acquisition procedures. The new system will resolve this challenge by splitting the procurements. NOAA and NASA will take primary responsibility for the afternoon orbit, and DOD will take primary responsibility for the morning orbit. The agencies will continue to partner in those areas that have been successful in the past, such as a shared ground system. The restructured programs will also eliminate the NPOESS tri-agency structure that has made management and oversight difficult, contributing to the poor performance of the program.

- NOAA and the Air Force have already begun to move into a transition period during which the current joint procurement will end. A detailed plan for this transition period will be available in a few weeks. The agencies will continue a successful relationship that they have developed for their polar and geostationary satellite programs to date. NOAA's portion will notionally be named the "Joint Polar Satellite System" (JPSS) and will consist of platforms based on the NPP satellite.
- In addition, these Agencies have a strong partnership with Europe through the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) that will continue to be a cornerstone of our polar-orbiting constellation, and will ensure our ability to provide continuous measurements.
- These changes to the NPOESS program will better ensure continuity of crucial civil climate and weather data in the future. Decisions on future satellite programs will be made to ensure the best plan for continuity of data.
- While the Air Force continues to have remaining Defense Meteorological Satellite Program (DMSP) polar-orbiting satellites available for launch for the next few years, NOAA launched its final polar-orbiting satellite in February 2009. Given that weather forecasters and climate scientists rely on the data from NOAA's current on-orbit assets, efforts will focus development of the first of the JPSS platforms on ensuring both short- and long-term continuity in crucial climate and weather data.
- NASA's role in the restructured program will be modeled after the procurement structure of the successful POES and GOES programs, where NASA and NOAA have a long and effective partnership. Work is proceeding rapidly with NOAA to establish a JPSS program at NASA's Goddard Space Flight Center (GSFC).
 - The NASA developed and operating Earth Observing System (EOS) Aqua satellite and ground system are very similar in scope and magnitude to the proposed JPSS program.
 - NOAA and NASA will strive to ensure that all current NPOESS requirements are met on the most rapid practicable schedule without reducing system capabilities.
 - NASA program and project management practices have been refined over decades of experience developing and acquiring space systems and NASA anticipates applying its current practices to JPSS. NASA program and project management processes will include thorough and ongoing review and oversight of project progress. Cost-estimates will be produced at or close to the 80% confidence level.
- DOD remains committed to a partnership with NOAA in preserving the Nation's weather and climate sensing capability. For the morning orbit, the current DOD plan for deploying DMSP satellites ensures continued weather observation capability. The availability of DMSP satellites supports a short analysis (in cooperation with the partner agencies) of DOD requirements for the morning orbit and solutions with the start of a restructured program in the 4th quarter of fiscal year 2011. While this study is being conducted, DOD will fully support NOAA's needs to ensure continuity of data in the afternoon orbit by transitioning appropriate and relevant activities from the current NPOESS effort.
- We expect much of the work being conducted by Northrop-Grumman and their subcontracts will be critical to ensuring continuity of weather observation in the afternoon orbit. DOD will work closely with the civil partners to ensure the relevant efforts continue productively and efficiently, and ensure the requirements of the national weather and climate communities are taken into consideration in building the resultant program for the morning orbit.

Additional Points:

- Observations of the Earth's environment, both from space and on the surface, are a priority for this Administration. Information about the planet is vital to our ability to plan, predict, respond, and protect our citizens and infrastructure. The nation's system of polar-orbiting environmental satellites is essential for supporting climate research as well as operational weather and storm forecasting for civil, military, and international partners.
- For this reason, maintaining a capable, operational environmental satellite system is vitally important, and a primary focus of this effort remains on the continuity of the polar-orbiting satellite data that system users - both civil and defense - have come to rely on.
- The NPOESS program was designed to deliver improved capabilities above the current system of civil and defense weather satellites. The U.S. leadership in this area over the last three decades will continue into the future. The partner agencies (DOD, NOAA and NASA) are committed to maintaining collaborations towards the goal of continuity of earth observations from space, and minimizing - if not eliminating - potential gaps in data.
- The NPOESS program has experienced several challenges to date, including schedule delays and cost increases. Recent reports have illustrated the difficulties the program has experienced, and the Administration has closely examined the findings in these reports.
- Since August, an Executive Office of the President (EOP) Task Force (with participation from OSTP, OMB and NSC), working in close cooperation with the partner agencies, has been investigating various options for how to go forward with the NPOESS program.
- The Task Force performed a careful and in-depth analysis of NPOESS management challenges, agency requirements, and potential options for strengthening the program. A primary goal of the interagency discussions has been to provide a more robust operational satellite system, with specific attention on the need for ensuring continuity in the environmental measurements.
- Although challenges remain, development of NPOESS assets has continued through this process. Significant progress has been made with the NPP, now with a realistic and achievable launch date of September 2011. A key instrument, the Visible Infrared Imager Radiometer Suite (VIIRS), has been tested and shipped from the developers to NPP and can now be integrated onto the spacecraft. The Ozone Mapping and Profiler Suite (OMPS) has been developed, integrated onto the NPP spacecraft, and tested for flight. The Advanced Technology Microwave Sounder (ATMS) has been integrated and fully tested for flight. NOAA and NASA have taken advantage of the NPP opportunity to add the Clouds and the Earth's Radiant Energy System (CERES) instrument to NPP. This instrument has been integrated onto the spacecraft and tested for flight, thus ensuring the continuity of this critical data set beyond the NASA EOS (Terra and Aqua) missions.
- Partnerships are the key to our ability to provide continuous polar-orbiting measurements. NOAA, NASA, and the DOD/Air Force have had a very productive relationship in polar observations; sharing data, coordinating user needs, and operating satellites. This cooperative relationship is essential and will continue for years to come. Likewise, partnerships with Europe through EUMETSAT will continue to be a strong part of our polar-orbiting constellation.