



# Report In Brief

MAY 28, 2015

## Background

NOAA's GOES have provided data for weather observation, research, and forecasting since 1975. The GOES-R series of satellites will incorporate the first technological advance in GOES instrumentation since the launch of the GOES I-M series, which began in 1994—and will have a longer expected operational life of a minimum of 8 years, versus 5 years for previous GOES series. GOES-R's life-cycle cost is \$10.8 billion through FY 2036; it, along with NOAA's other major satellite programs, comprise the Department's largest investments, accounting for more than 20 percent of its \$9.8 billion FY 2016 budget request.

## Why We Did This Review

The overall GOES-R program is managed by NOAA with two integrated NOAA/National Aeronautics and Space Administration (NASA) offices—the ground segment project and the flight segment project—as well as integrated supporting offices such as program systems engineering and program contracts. In September 2014, at a joint NOAA/NASA Program Management Council (PMC) meeting, NOAA leadership approved delaying the first GOES-R satellite's launch date from October 2015 to March 2016, due to late delivery of some flight segment components, and authorized the program to enter into the system assembly, integration and test, launch phase.

Our objectives were to assess the adequacy of GOES-R development activities as the program completes the ground system and fabrication of flight instruments and the spacecraft, and transitions to system integration and test, per NOAA and NASA standards. We also monitored NOAA's progress in developing and vetting with stakeholders a comprehensive set of trade-off approaches to mitigate launch delays and its oversight of GOES-R systems engineering.

## NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

### Audit of the Geostationary Operational Environmental Satellite–R Series: Leadership Must Proactively Address Integration and Test Risks to Maintain Revised Launch Schedule

OIG-15-030-A

## WHAT WE FOUND

We found that

*A GOES-R launch delay has increased length of potential on-orbit backup satellite gap for the GOES constellation.* The lag in progress during the development of the first GOES-R satellite prompted NOAA and NASA officials to postpone the launch date from October 2015 to March 2016. The revised launch schedule will still pose a challenge for the program to meet, due to past schedule performance and a complex integration and test process. The delay could leave the GOES on-orbit constellation without a backup satellite for 29 months out of a 33-month period from April 2015 to January 2018.

*The ground segment project initially lacked experienced lead engineering managers and consistent contracting office support.* Experienced engineers were not hired for key positions until late in the development effort, which contributed to schedule delays and core ground system contract cost increases. In addition, there has been historically inconsistent and inadequate contracting office support, which can decrease NOAA's effectiveness in negotiating changes for a complex, more than \$1.0 billion core ground system.

*Planning and communications deficiencies forced two costly re-plans of core ground system development.* Development is in the midst of a second costly re-plan—because of past problems with flight and ground dependencies, technical communications between flight and ground engineers, and overly optimistic task durations. While the ground segment is not currently on the program's critical path to launch, significant testing remains during integration that involves the flight and ground segments. NOAA and its contractor must manage integration and test schedule progress to avoid repeating previous problems that resulted in two costly core ground system contract re-plans.

## WHAT WE RECOMMEND

We recommend that the NOAA Administrator

1. Establish a communications mechanism among Department of Commerce, NASA, and GOES-R spacecraft and ground system contractors' leadership, to foster rapid identification and resolution of system integration and test issues that could impact the GOES-R launch date.
2. Establish a communications process that ensures stakeholders (including Congress) are provided with current GOES-R product availability schedules, leading up to and after launch.
3. Ensure that future National Environmental Satellite, Data and Information Service (NESDIS) programs leverage NASA, or other organizations', ground systems engineering expertise early in the development cycle.
4. Direct NOAA's Acquisition and Grants Office (AGO) to provide reporting metrics regarding GOES-R ground segment contracting actions or changes at monthly joint NOAA/NASA Program Management Council meetings.
5. Direct NESDIS and NOAA AGO to re-examine GOES-R contracting division staffing approach effectiveness.
6. Ensure that future NESDIS acquisition programs have consistent and adequate contracting officer and specialist support.
7. Direct NESDIS to provide reporting metrics regarding core ground system schedule delays at monthly joint NOAA/NASA Program Management Council meetings.