September 2013

GEOSTATIONARY WEATHER SATELLITES

Progress Made, but Weaknesses in Scheduling, Contingency Planning, and Communicating with Users Need to Be Addressed

GAO Highlights

Highlights of GAO-13-597, a report to the Committee on Science, Space, and Technology, House of Representatives

Why GAO Did This Study

NOAA, with the aid of the National Aeronautics and Space Administration (NASA), is procuring the next generation of geostationary weather satellites. The GOES-R series is to replace the current series of satellites (called GOES-13, -14, and -15), which will likely begin to reach the end of their useful lives in 2015. This new series is considered critical to the United States' ability to maintain the continuity of satellite data required for weather forecasting through 2036.

GAO was asked to evaluate GOES-R. GAO's objectives were to (1) assess GOES-R progress and efforts to address key cost and schedule risks; (2) evaluate efforts to manage changes in requirements and whether any significant changes have recently occurred; and (3) evaluate the adequacy of GOES-R contingency plans. To do so, GAO analyzed program and contractor data, compared GOES-R schedules, requirements changes, and contingency plans to best practices by leading organizations, and interviewed officials at NOAA, NASA, and at other federal agencies that rely on GOES.

What GAO Recommends

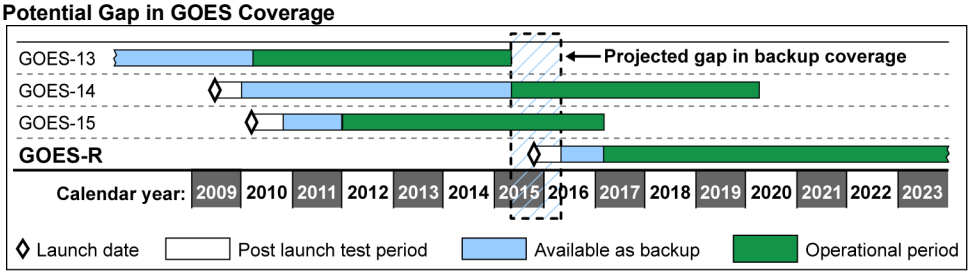
GAO is recommending that NOAA address weaknesses in managing reserves and scheduling, improve communications with satellite data users, and address shortfalls in contingency planning. NOAA concurred with GAO's recommendations and identified steps it is taking to implement them.

View GAO-13-597. For more information, contact David Powner at (202) 512-9286 or pownerd@gao.gov.

What GAO Found

The National Oceanic and Atmospheric Administration (NOAA) has completed the design of its Geostationary Operational Environmental Satellite-R (GOES-R) series and made progress in building flight and ground components. While the program reports that it is on track to stay within its $10.9 billion life cycle cost estimate, it has not reported key information on reserve funds to senior management. Also, the program has delayed interim milestones, is experiencing technical issues, and continues to demonstrate weaknesses in the development of component schedules. These factors have the potential to affect the expected October 2015 launch date of the first GOES-R satellite, and program officials now acknowledge that the launch date may be delayed by 6 months. A launch delay would increase the time that NOAA is without an on-orbit backup satellite. It would also increase the potential for a gap in GOES satellite coverage should one of the two operational satellites (GOES-14 or -15) fail prematurely (see graphic)—a scenario given a 36 percent likelihood of occurring by an independent review team.

Potential Gap in GOES Coverage



Source: GAO analysis of NOAA data.

While the GOES-R program has established a process for managing requirements changes, it has not effectively involved key satellite data users. Since 2007, the GOES-R program decided not to develop 31 of the original set of GOES products and modified specifications on 20 remaining products. For example, NOAA decreased the accuracy requirement for the hurricane intensity product and decreased the timeliness of the lightning detection product. However, key satellite data users were not fully informed about changes and did not have a chance to communicate their concerns about the impact of these changes on their operations. Until NOAA improves its communication with external satellite data users, obtains input from the users, and addresses user concerns when considering product changes, its changes could cause an unexpected impact on critical user operations.

NOAA has established contingency plans for the loss of its GOES satellites and ground systems that are generally in accordance with best practices; however, these plans are missing key elements. For example, NOAA did not work with the user community to address potential reductions in capability under contingency scenarios or identify alternative solutions for preventing a delay in the GOES-R launch date. Until NOAA addresses the shortfalls in its contingency plans and procedures, the plans may not work as intended in an emergency and satellite data users may not obtain the information they need to perform their missions.