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Office of Inspector General

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NASA OVERSIGHT HEARING

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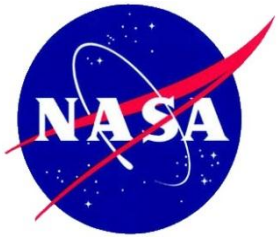

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Chairman Culberson, Ranking Member Fattah, and Members of the Subcommittee:

The Office of Inspector General (OIG) is committed to providing independent, aggressive, and objective oversight of the National Aeronautics and Space Administration (NASA). Thank you for the opportunity to appear before the Subcommittee today to discuss our view of the major management and performance challenges facing NASA.

Over the past few months, NASA has advanced its space exploration and science missions with a successful December test flight of the Orion Multi-Purpose Crew Vehicle (Orion) and the January launch of the Soil Moisture Active-Passive (SMAP) mission. Unfortunately, the Agency also experienced some disappointments, most prominently the October failure of an Orbital Sciences Corporation (Orbital) resupply mission to the International Space Station (ISS or Station) that destroyed the company's rocket, capsule, and all NASA cargo aboard and caused at least $15 million of damage at the Wallops Flight Facility.

Prior to the failure, Orbital had five more cargo resupply flights scheduled: two in 2015 and three in 2016. After the mishap, the company proposed to fulfill its remaining contractual obligations to NASA in four resupply flights rather than five – a proposal to which NASA recently agreed. As a follow-up to our previous work on NASA's management of its commercial cargo program, we are examining the ramifications of the launch failure on the Agency's efforts to resupply the ISS and the challenges facing Orbital and NASA as the company seeks to meet its obligations under the resupply contract.

Moving forward, NASA's ability to sustain its ambitious exploration and science programs will be driven in large measure by whether it can adequately fund and manage such high-profile initiatives as the Space Launch System (SLS) rocket, Orion capsule, and related launch infrastructure at Kennedy Space Center (Kennedy); James Webb Space Telescope; Mars 2020 Rover; and its commercial cargo and crew programs. In a November 2014 report, we identified seven top challenges facing NASA:

- Managing NASA's Human Space Exploration Programs: the ISS, Commercial Crew Transportation, and the SLS
- Managing NASA's Science Portfolio
- Ensuring Continued Efficacy of the Space Communications Networks
- Overhauling NASA's Information Technology Governance Structure
- Ensuring the Security of NASA's Information Technology Systems
- Managing NASA's Infrastructure and Facilities
- Ensuring the Integrity of the Contracting and Grants Processes and the Proper Use of Space Act Agreements

A copy of our full report is appended to this statement.

In my prepared testimony, I will highlight three issues: (1) securing commercial transportation for astronauts to low Earth orbit; (2) developing the SLS, Orion, and Ground Systems Development and Operations (GSDO) Programs; and (3) managing NASA's Science Portfolio.

Commercial Crew Transportation

Since the end of the Space Shuttle Program in 2011, the United States has lacked a domestic capability to transport astronauts to the ISS. Between 2012 and 2017, NASA will pay Russia over $2.1 billion to ferry 36 NASA astronauts and international partners to and from the Station at prices ranging from $47 million to more than $76 million per round trip.[1] To address the lack of U.S. capacity, NASA has provided approximately $1.6 billion in funding since 2010 to several commercial spaceflight companies to spur development of a domestic crew transportation capability. The Agency originally hoped commercial flights would be operating by 2016, but later adjusted this goal to late 2017.

NASA is closing out the third phase of the Commercial Crew Program in which it worked with three companies – The Boeing Company (Boeing), Space Exploration Technologies (SpaceX), and Sierra Nevada Corporation – using a combination of funded Space Act Agreements and more traditional FAR-based contracts to develop commercial crew transportation capabilities. Both Boeing and SpaceX completed Critical Design Reviews for their systems in 2014.[2]

The fourth and final phase of the Program began in September 2014 with award of $6.8 billion in firm-fixed-price contracts to Boeing ($4.2 billion) and SpaceX ($2.6 billion) to complete development of and certify for operation the companies' spaceflight systems and provide NASA with up to six flights each to the Station.

The OIG reviewed NASA's management of the Commercial Crew Program in 2013 and identified a number of challenges facing the Agency, including unstable funding, providing timely requirement and certification guidance, and effective coordination with other Federal agencies.[3] Since that time, funding for the Program has increased with an appropriation of $805 million in fiscal year 2015 and a proposal for $1.24 billion in the President's fiscal year 2016 budget. We are planning to open a follow-on review of the Program later this year.

Space Launch System, Orion, and Ground Systems Development and Operations

Whatever its destination, successful development of the SLS, NASA's new heavy lift rocket, the accompanying Orion crew capsule, and related launch infrastructure remain critical to the overall success of NASA's human exploration effort. While I earlier mentioned a successful December test flight of Orion, NASA's current goal is to achieve first flight of an integrated SLS rocket and Orion capsule no later than November 2018.

NASA is designing the SLS with an evolvable architecture that can be tailored to accommodate progressively longer and more ambitious missions. Initial versions of the vehicle will be capable of lifting 70-metric tons, with later versions designed to lift 130-metric tons and include an upper stage to travel to deep space. Orion will be mounted atop the SLS and serve as the crew vehicle for up to four astronauts.

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[1] NASA recently announced its intention to purchase six additional seats from the Russians for round-trip flights in 2018 and 2019 as a back-up capability to the Commercial Crew Program.

[2] NASA did not fund Sierra Nevada to complete a full Critical Design Review. A fourth company, Blue Origin, is conducting developmental work under an unfunded Space Act Agreement.

[3] NASA OIG, "NASA's Management of the Commercial Crew Program" (IG-14-001, November 13, 2013).

To support the SLS and Orion, NASA's GSDO Program is modifying launch infrastructure at Kennedy formerly used for the Space Shuttle. For example, the Program is refurbishing the crawler-transporter that will transport the SLS to the launch pad and modifying the mobile launcher and tower (originally built for the Constellation Program's Ares I rocket), the Vehicle Assembly Building, and Launch Pad 39B. The OIG is in the final stages of an audit examining the GSDO Program's progress and will be issuing our findings in March.

One of NASA's challenges in this area is managing the concurrent development of a launch system and crew vehicle while modifying necessary supporting ground systems. Coordinating and integrating development of three individual programs to meet a common milestone date presents a challenge since NASA historically has used a single program structure to manage similar efforts such as the Apollo and Space Shuttle Programs.

Moreover, the SLS and its associated Programs continue to face challenging budget scenarios. For example, the Orion Program anticipates receiving a flat budget of approximately $1.1 billion per year into the 2020s. Given this budget profile, NASA is using an incremental development approach under which it allocates funding to the most critical systems necessary to achieve the next development milestone, rather than developing multiple systems simultaneously as is common in major spacecraft programs. Prior work by the OIG has shown that delaying critical development tasks increases the risk of future cost and schedule problems.[4] NASA Program officials admit that this incremental development approach is not ideal, but contend that it is the only feasible option given current funding levels.

As we reported in August 2013, even after the SLS and Orion are fully developed and ready to transport crew NASA will continue to face significant challenges concerning the long-term sustainability of its human exploration program.[5] For example, unless NASA begins a program to develop landers and surface systems its astronauts will be limited to orbital missions of Mars. Given the time and money necessary to develop these systems, it is unlikely that NASA would be able to conduct any manned surface exploration missions until the late 2030s at the earliest.

NASA's Science Portfolio

With a relatively constant annual budget of approximately $5 billion since fiscal year 2009, NASA's Science Mission Directorate oversees more than 100 projects and programs in various phases of development and operation. In addition to the SMAP mission, other highlights over the past year include launch of the Global Precipitation Mission and the Orbiting Carbon Observatory-2, successful insertion of the Mars Atmosphere and Volatile Evolution (MAVEN) into orbit around Mars, and the Dawn, New Horizons, and Juno Missions approaching their targets of Ceres, Pluto, and Jupiter, respectively. However, NASA has an inconsistent record of keeping its science projects on budget and schedule, an issue NASA must address as it plans new missions to Europa and other destinations.

[4] NASA OIG, "NASA's Challenges to Meeting Cost, Schedule, and Performance Goals" (IG-12-021, September 27, 2012) and "Status of NASA's Development of the Multi-Purpose Crew Vehicle" (IG-13-022, August 15, 2013).

[5] "Status of NASA's Development of the Multi-Purpose Crew Vehicle," IG-13-022.

The largest program in NASA's Science portfolio is the James Webb Space Telescope (JWST). As the scientific successor to the Hubble Space Telescope, JWST is expected to be the premier space-based observatory of the next decade. Like many NASA projects, JWST has faced significant challenges meeting cost, schedule, and performance goals. Early cost and schedule estimates for the project ranged from $1 to $3.5 billion and predicted a launch date between 2007 and 2011. In contrast, when NASA last rebaselined the project in September 2011, JWST's life-cycle budget estimate had risen to $8.84 billion and the launch date was moved to October 2018.

In its fiscal year 2015 budget proposal, the Administration called for phasing out NASA's airborne observatory the Stratospheric Observatory for Infrared Astronomy (SOFIA). Congress disagreed and subsequently provided funding for SOFIA in the Agency's 2015 appropriation. In a July 2014 report, we identified several challenges NASA managers needed to address to ensure the best possible return on the Agency's investment in SOFIA. Specifically, the SOFIA Program must take steps to maintain demand for the observatory over the next two decades, ensure grants provided to researchers are sufficient to complete projects and publish results, revisit SOFIA's current requirement to fly 960 annual research hours, develop procedures to assess its scientific "return on investment," and ensure the organizational structure for SOFIA's operational phase provides adequate oversight of mission critical functions. Failure to address these issues could reduce demand for SOFIA and affect the quality of its science.

Finally, the OIG continues to monitor NASA's implementation of the 27 findings and recommendations offered by the National Academy of Public Administration in its January 2014 review of the Agency's Foreign National Access Management. Actions taken thus far include (1) creating a formal Foreign National Access Management Program, (2) hiring additional counterintelligence officers, (3) revising NASA's export control training materials, and (4) improving its identity management, credentials, and access management programs.

The OIG looks forward to continuing our cooperative working relationship with NASA and this Subcommittee.