

**Testimony before the Subcommittee on Commerce, Justice and Science, and Related Agencies
Committee on Appropriations**

United States Senate

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The National Aeronautics and Space Administration's Fiscal Year 2014 Budget Request

**Statement of
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Chairwoman Mikulski, Ranking Member Shelby, 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), and we welcome this opportunity to discuss the major challenges facing the Agency.

Over past 12 months, NASA has achieved a number of milestones that advanced its space exploration and scientific discovery goals, including a third commercial resupply mission to the International Space Station (ISS or Station) by Space Exploration Technologies Corporation (SpaceX) and the first such mission by Orbital Sciences Corporation, delivery of the final three primary mirrors for the James Webb Space Telescope, and deployment of an Earth-observing weather satellite developed jointly with the Japan Aerospace Exploration Agency.

While acknowledging these and other achievements, we believe that NASA will continue to be challenged to effectively manage its varied programs in the current budget and political environment. We agree with the observation made by the National Research Council in its 2012 report examining NASA's strategic direction and management that, in effect, too many programs are chasing too few dollars at NASA. Accordingly, we continue to view declining budgets and fiscal uncertainties as the most significant external challenges to NASA's ability to successfully move forward on its many projects and programs.

For example, the Administration's proposal to extend operation of the ISS to 2024 comes with a price tag of at least \$3 billion per year. Some space policy experts have expressed concern that NASA will not have enough money to operate the Station while concurrently developing the Space Launch System, the Orion capsule, and other components of its human exploration program. Similarly, following 18 years of development at a cost of more than \$1 billion – a 300 percent increase over initial estimates – the Stratospheric Observatory for Infrared Astronomy (SOFIA) Project achieved full operational capability in February of this year. However, the Administration – citing operational costs of approximately \$80 million per year – has proposed placing the observatory in storage during fiscal year (FY) 2015 unless NASA identifies partners willing to assume those costs. We are currently conducting audits examining both NASA's plans to extend the life of the ISS and its management of the SOFIA Program.

In our most recent report on the Top Management and Performance Challenges facing NASA, we identified nine issues:

- Considering Whether to Further Extend the Life of the International Space Station (ISS)
- Developing the Space Launch System and its Component Programs
- Securing Commercial Crew Transportation Services
- Maintaining Cost and Schedule for the James Webb Space Telescope
- 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

The report appended to this statement provides a detailed description of these challenges and the work conducted by our office in each area. In this statement, I will highlight three issues: (1) securing commercial crew transportation services, (2) ensuring continued efficacy of the space communications networks, and (3) overhauling NASA's information technology governance structure.

Commercial Crew Transportation Services

In November 2013, NASA celebrated the 15th anniversary of the ISS. Since retirement of the Space Shuttle Program in July 2011, the United States has lacked the domestic capability to transport crew to and from the Station. Consequently, NASA has relied on the Russian Federal Space Agency (Roscosmos) for crew transportation. Between 2012 and 2017, NASA will pay Roscosmos \$1.7 billion to ferry 30 NASA astronauts and international partners to and from the ISS at prices ranging from \$47 million to more than \$70 million each trip. In addition, the recent dispute in the Ukraine and the resulting U.S. sanctions against Russia has intensified calls for NASA to end its reliance on the Russians for crew transportation.

Currently, NASA is working with three companies – The Boeing Company (Boeing), SpaceX, and Sierra Nevada Corporation (Sierra Nevada) – using a combination of funded Space Act Agreements and more traditional contracts governed by the Federal Acquisition Regulation to develop commercial crew transportation capabilities. As of August 2013, the Agency had spent \$1.1 billion on its commercial crew development efforts. NASA's goal is to secure commercial transportation for its astronauts to the ISS by 2017.

As we noted in a 2013 report, NASA's Commercial Crew Program faces multiple challenges, including (1) unstable funding, (2) integration of cost estimates with Program schedule, (3) challenges in providing timely requirement and certification guidance, and (4) coordination issues with other Federal agencies.¹

With respect to funding, NASA's Commercial Crew Program has received significantly less funding than requested over the past several years, resulting in a 2-year delay of the expected completion of the development phase of the Program. Moreover, NASA has yet to project the total amount of funding required by year, which makes it difficult for the Agency to manage its wider portfolio of spaceflight programs and reduces the transparency of the Commercial Crew Program's budget submissions.

Further, we found that the process for providing timely guidance to partners for satisfying NASA's human rating and certification requirements needs to be improved. If NASA is unable to confirm design requirements and provide certification guidance in a timely manner, NASA's partners companies could face costly and time-consuming redesign work late in system development. Finally, coordination of important safety issues with the Federal Aviation Administration (FAA) and the U.S. Air Force is progressing but has yet to be fully resolved. Resolution of issues such as approval processes for in-flight changes and reentry and emergency diversions require formal agreement between NASA, FAA, and the Air Force.

¹ NASA OIG, "NASA's Management of its Commercial Crew Program" (IG-14-001, November 13, 2013).

Failure to resolve the challenges facing NASA's Commercial Crew Program could significantly delay the availability of commercial transportation services and further extend U.S. reliance on the Russians for crew transportation to the ISS.

The Space Communications Networks

NASA's Space Communications and Navigation (SCaN) Program is responsible for providing communications, navigation, and delivery of scientific data to space flight missions. SCaN is comprised of three networks: (1) the Near Earth Network, which covers low Earth orbit and portions of geosynchronous orbit; (2) the Space Network, which controls the Tracking and Data Relay Satellites (TDRS) through a network of geographically diverse ground systems; and (3) the Deep Space Network, which covers NASA mission needs beyond geosynchronous orbit. Without SCaN services, NASA could not receive data transmission from its satellites and robotic missions or control such missions from Earth, and space hardware worth tens of billions of dollars would be little more than orbital debris. While NASA has provided these services for over 30 years, many of its current satellite communications systems are aging and increasingly difficult to repair.

The OIG is examining the SCaN Program in a series of audits. In the first of these reviews released earlier this week, we assessed NASA's efforts to maintain, replenish, and modernize the Space Network.² The Network, which currently consists of a constellation of nine geosynchronous tracking and data relay satellites and three ground stations, plans to perform more than 175,000 hours of tracking to support 25 to 30 missions in FY 2014. We found that key components of NASA's satellite and ground system projects are not meeting planned cost, schedule, and performance goals. Taken together, these delays and cost growth increase the risk that the Space Network will be unable to continue to provide adequate communication services to NASA and the other Government agencies and private entities that rely on Network services. Further, because of budget reductions and the loss of other expected revenue, the Space Network has a projected \$63 million budget shortfall in FY 2016 and even larger estimated shortfalls in subsequent years that will make it difficult for the Network to meet all planned service commitments.

We recommended that NASA (1) require a revised cost estimate for its ground system project and, based on those results, make necessary adjustments to its baseline commitment; (2) make the appropriate reports to Congress regarding the ground system project; (3) ensure the ground system project passes a termination review before re-baselining; and (4) examine options to increase funding for the Space Network.

² NASA OIG, "Space Communications and Navigation: NASA's Management of the Space Network" (IG-14-018, April 29, 2014).

NASA's Information Technology Governance Structure

Information technology (IT) plays an integral role in every facet of NASA's operations. The Agency spends more than \$1.4 billion annually on a portfolio of IT assets that includes approximately 500 information systems used to control spacecraft, collect and process scientific data, and enable NASA personnel to collaborate with colleagues around the world. Hundreds of thousands of individuals, including NASA personnel, contractors, members of academia, and the public, rely on these IT systems every day.

For more than 2 decades, NASA has struggled to implement an effective IT governance approach that appropriately aligns authority and responsibility commensurate with the Agency's overall mission. Since at least 1990, the OIG and the Government Accountability Office have highlighted a series of challenges stemming from the limited authority of NASA's Chief Information Officer (CIO), decentralization of Agency IT operations, ineffective IT governance, and shortcomings in the Agency's IT security. Because IT is intrinsic and pervasive throughout NASA, the Agency's IT governance structure directly affects its ability to attain its strategic goals. For this reason, effective IT governance must balance compliance, cost, risk, security, and mission success to meet the needs of internal and external stakeholders.

In June 2013, the OIG reported that the decentralized nature of NASA's operations and its longstanding culture of autonomy hinder its ability to implement effective IT governance.³ Specifically, we found that the NASA CIO has limited visibility and control over a majority of the Agency's IT investments, operates in an organizational structure that marginalizes the authority of the position, and cannot enforce security measures across NASA's computer networks. Moreover, the current IT governance structure is overly complex and does not function effectively. As a result, Agency managers tend to rely on informal relationships rather than formalized business processes when making IT-related decisions. While other Federal agencies are moving toward a centralized IT structure under which a senior manager has ultimate decision authority over IT budgets and resources, NASA continues to operate under a decentralized model that relegates decision making about critical IT issues to numerous individuals across the Agency, leaving such decisions outside the purview of the CIO.

With mission critical assets at stake and in an era of shrinking budgets, NASA must take a holistic approach to managing its portfolio of IT systems. To overcome the barriers that have resulted in the inefficient and ineffective management of the Agency's IT assets, we made a series of recommendations to NASA to overhaul its IT governance structure to centralize IT functions and establish the Agency CIO as the top management official responsible for its entire IT portfolio, including empowering the Agency CIO to approve all IT procurements over a monetary threshold that captures the majority of IT expenditures. We also recommended that the Administrator reevaluate the relevancy, composition, and purpose of NASA's primary IT governance boards in light of the changes made to the governance structure and require the use of reconstituted governance boards for all major IT decisions and investments. Finally, we suggested that the NASA Administrator reevaluate the resources of the OCIO to ensure that the Office has the appropriate number of personnel with the appropriate capabilities and skill sets.

³ NASA OIG, "NASA's Information Technology Governance" (IG-13-015, June 5, 2013).

Effective implementation of our recommendations requires a cultural shift and significant changes to the Agency's IT management decision-making regime, including the realignment of authority and responsibilities. NASA management has acknowledged a need for such change and, in our view, is taking a measured approach to address our recommendations. NASA has requested and we have granted extensions for all of the report recommendations, and NASA anticipates implementing corrective actions by the end of 2014.

In conclusion, the OIG looks forward to continuing our cooperative working relationship with NASA, this Subcommittee, and other congressional committees as we conduct audits and investigations that focus on the Agency's top management and performance challenges.