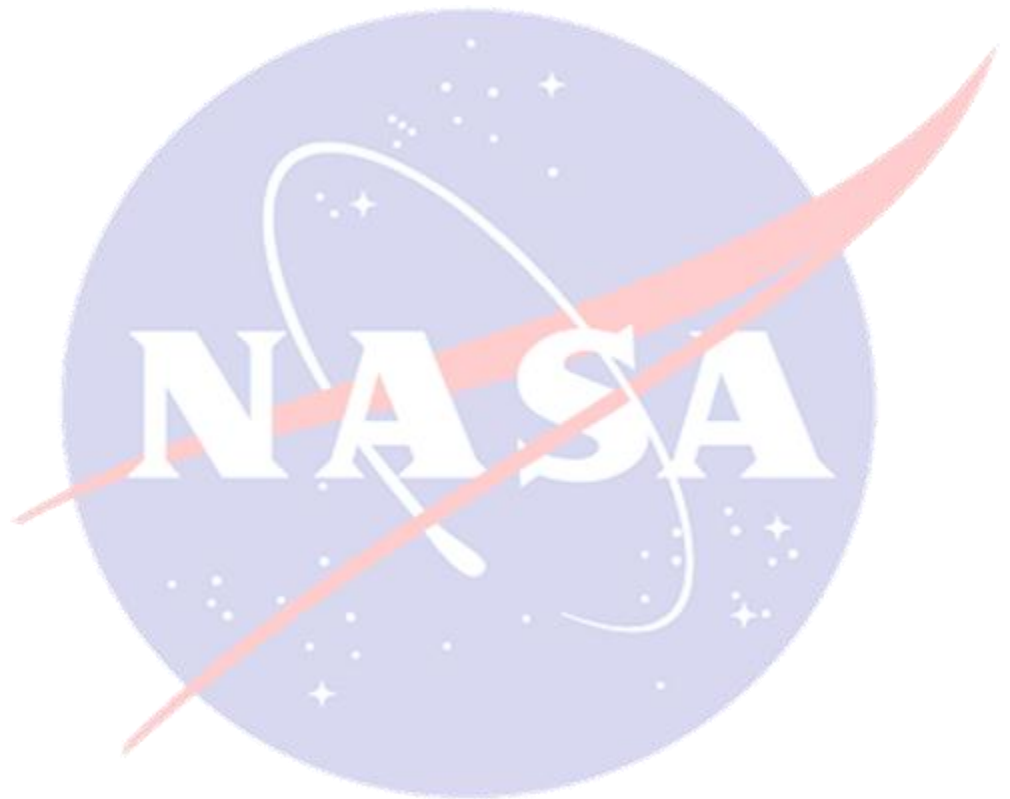




National Aeronautics and Space Administration

OFFICE OF INSPECTOR GENERAL

**NASA's Use of Space Act
Agreements**



OFFICE OF AUDITS

AUDIT REPORT
JUNE 5, 2014

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Final report released by:



Paul K. Martin
Inspector General

Acronyms

DARPA	Defense Advanced Research Projects Agency
FAR	Federal Acquisition Regulation
FY	Fiscal Year
GAO	Government Accountability Office
ISS	International Space Station
OCFO	Office of the Chief Financial Officer
OIG	Office of Inspector General
SAA	Space Act Agreement
SAAM	Space Act Agreement Maker
SAP	Systems Applications Products
SIERA	System for International External Relations Agreements

OVERVIEW

NASA'S USE OF SPACE ACT AGREEMENTS

The Issue

The National Aeronautics and Space Act (Space Act) grants NASA broad authority to enter into agreements with diverse groups of people and organizations in both the private and public sectors to advance its wide-ranging mission and program objectives. These agreements include traditional contracts, leases, and cooperative agreements, but also “other transactions” commonly referred to as Space Act Agreements (SAA).

NASA enters into reimbursable, nonreimbursable, funded, and international SAAs. SAAs establish a set of legally enforceable promises between NASA and a second party, requiring a commitment of Agency resources, including personnel, funding, services, equipment, expertise, information, or facilities. The purpose of SAAs is to enhance NASA's ability to advance cutting-edge science and technology and to stimulate industry to start new endeavors. In addition, SAAs can entice companies to work with NASA that traditionally have not pursued more conventional forms of agreements, such as contracts and grants, because of the complexity of applicable regulatory requirements and the associated costs.

Since NASA's inception, the Agency has entered into thousands of SAAs for such varied purposes as obtaining fundamental research to nurturing the development of commercial launch vehicles. While NASA has limited records showing how the Agency used its Space Act authority in the early years, our analysis of recent data shows that the number of SAAs increased by more than 29 percent between fiscal years (FY) 2008 and 2012. Reimbursable SAAs experienced the largest percentage growth at 41 percent. In addition, during this period NASA entered into 13 funded SAAs worth \$1.8 billion to support the development of commercial cargo and crew spaceflight capabilities.¹ NASA officials attributed the increase in SAAs during this 5-year period to termination of the Space Shuttle Program, which freed up portions of the Agency workforce and facilities. According to these officials, NASA often pursued SAAs with other Government agencies and commercial partners to help offset facility maintenance costs until the Agency needed them in the future.

¹ As of FY 2014, NASA has entered into 15 funded SAAs worth more than \$2.2 billion.

SAAs are not typical contracts subject to the Federal Acquisition Regulation (FAR) or other Federal procurement statutes and, consequently, NASA and partners have considerable latitude in negotiating their terms. NASA officials believe this enhanced flexibility helps promote creativity and have found SAAs to be more cost-effective than contracts. On the other hand, NASA's use of SAAs has the potential to result in fewer overall protections for the Agency as well as decreased accountability of taxpayer funds.

In this audit, we examined NASA's management and use of SAAs. Specifically, we assessed whether NASA effectively (1) advertised opportunities for outside parties to utilize capabilities the Agency makes available through SAAs, (2) identified the full costs of work it performed under reimbursable SAAs and properly billed partners, (3) ensured that the Agency received fair and reasonable benefits from partners in nonreimbursable SAAs, and (4) determined whether reimbursable and nonreimbursable SAAs align with NASA's missions. We also assessed the benefits and limitations of funded SAAs. Details of the audit's scope and methodology are in Appendix A.

Results

We found that NASA could better ensure equal access to its facilities and capabilities and potentially increase the number of parties interested in entering into SAAs by expanding the Agency's efforts to solicit interest in its facilities and resources. We also found that NASA cannot identify the costs incurred or effectively measure the benefits derived from nonreimbursable SAAs; has unclear guidance regarding when it is appropriate to use SAAs and the manner in which reimbursable and nonreimbursable SAAs must align with Agency missions; and cannot readily separate amounts billed and collected from reimbursable SAAs from proceeds received from other types of reimbursable agreements. In addition, we question the Agency's decision to refrain from including more specific information about its objectives and key safety elements in funded SAAs. Finally, we found little formal guidance relating to the administration of funded agreements in current Agency policy.

NASA Could Do More to Ensure Potentially Interested Parties Are Aware of Space Act Agreement Opportunities. NASA policy stresses the importance of providing outside parties with equal access to NASA's capabilities, expertise, and facilities. However, we sampled 95 SAAs between NASA and non-Federal partners and found the Agency had solicited potential interest or otherwise advertised the opportunity for only 5 SAAs.

Although we recognize it is not practical to advertise all SAA opportunities, in our judgment, NASA could increase awareness among industry, academia, and researchers of opportunities to collaborate with the Agency and utilize its capabilities, facilities, and expertise by being more proactive in this area. For example, we found that Centers rarely

issue Requests for Information, public notices, press releases, or use other mechanisms to highlight particular areas of collaboration in which NASA is interested in supporting or identifying specific capabilities and facilities available to outside parties. However, when Centers did use such mechanisms, they reported increased interest.

Increasing efforts to ensure that more groups are aware of and have the opportunity to participate in SAAs could help avoid perceptions of favoritism when commercial entities stand to gain from their relationships with the Agency. Moreover, increasing awareness of NASA's capabilities could help the Agency defray the costs of maintaining underutilized facilities and capabilities. Such initiatives, in turn, would also provide greater transparency into the Agency's SAA formulation process.

NASA Cannot Identify Costs Associated With or Benefits Derived from Nonreimbursable Space Act Agreements. While nonreimbursable SAAs are structured so that each party bears the cost of their participation without an exchange of funds, NASA nevertheless incurs costs associated with any personnel, facilities, expertise, or equipment it contributes. We found that NASA Centers generally do not track the costs specific to each nonreimbursable SAA and therefore cannot identify how much they spend on these agreements.

Of the 49 nonreimbursable SAAs we sampled, NASA could only provide cost data for 4 SAAs. NASA officials explained that Centers or programs typically do not track such costs because they are normally insignificant and accounted for within the project or program budget associated with the agreement. However, we found that the aggregate costs for nonreimbursable SAAs are significant – at least \$96 million from FYs 2008 to 2012. In addition, by failing to account for these costs, NASA cannot readily perform a cost-benefit analysis to assess the value nonreimbursable SAAs bring to the Agency and the broader aeronautical, scientific, and space exploration communities.

We also found that because it lacks a “close-out” process or similar mechanism to document and record the outcomes and results of nonreimbursable SAAs, NASA has difficulty identifying how it or the broader scientific community benefitted from the agreements. This is in contrast to the process used for grants and cooperative agreements in that final progress reports and documentation of results are required to provide evidence of the value of the sponsored research and ensure proper stewardship of public funds. In our judgment, gathering similar information regarding nonreimbursable SAAs would help NASA evaluate the value of these agreements and provide greater transparency and accountability regarding their use.

Interpretation of “Mission Requirement” for Space Act Agreements Varies Among Centers. Although NASA policy requires that SAAs be “consistent with” or “further” Agency missions, we found that Centers and Mission Directorates have differing interpretations of this requirement that result in widely differing applications. Most have interpreted the policy to mean that the activity covered by the SAA must directly relate to a NASA mission – for example, aeronautics research conducted by a commercial business in a NASA wind tunnel. However, some Centers have taken the position that as

long as the proceeds from a SAA help to maintain a needed NASA facility or capability the actual activity performed under the agreement need not directly relate to a NASA mission. Under this interpretation of the policy, between FYs 2008 and 2012, the Kennedy Space Center entered into 14 reimbursable SAAs for an estimated \$392,000 under which NASCAR and other automotive racing teams and manufacturers utilized its Shuttle Landing Facility for straight-line vehicular aerodynamics testing. Similarly, Michoud Assembly Facility entered into 13 reimbursable SAAs for an estimated \$2.9 million under which movie production studios, engineering firms, manufacturing companies, and other private entities with no direct connection to NASA missions utilized excess office and warehouse space at the facility. Both the Kennedy Space Center and Michoud Assembly Facility used the proceeds from these SAAs to reduce operating costs.

As we pointed out in a 2012 report, while using SAAs to help offset operations and maintenance costs for underutilized assets can benefit NASA, the Agency must be careful not to use such arrangements to maintain facilities and capabilities it no longer needs.² In our judgment, improved guidance regarding the manner in which SAAs must align to NASA missions and the appropriate circumstances in which to use SAAs or other types of agreements, such as leases, would ensure Centers use the most appropriate vehicle when entering into partnerships with other entities for use of NASA facilities and resources.

NASA Cannot Readily Identify Amounts Billed or Collected From Reimbursable Space Act Agreements. In addition to SAAs, NASA collects proceeds from outside entities under a variety of other types of reimbursable agreements.³ Although the Agency has a process in place to account for and recoup these proceeds as a whole, we found that NASA cannot readily identify amounts associated with reimbursable SAAs because its accounting system does not have a common identifier to separate SAAs from other types of reimbursable activity.

To address this and other issues, NASA formed the Reimbursable Process Team to develop solutions to improve the tracking and accounting of proceeds from all types of reimbursable agreements. The team is developing a four-phase approach to integrate data between Agency databases that contain information about SAAs and the Agency's accounting and reporting systems. As of February 2014, NASA was developing a schedule to complete this process, at which time Agency officials expect to be able to use NASA's accounting systems to generate comprehensive reports that include both financial and nonfinancial data. Having this capability should provide additional insight and enable the Agency to better identify, track, and account for the nearly \$540 million of annual reimbursable activity generated by SAAs.

² NASA Office of Inspector General, "An Assessment of the Agency's Real Property Leasing Practices" (IG-12-020, August 9, 2012).

³ NASA's reimbursable activities can occur under numerous authorities, including the Space Act, Economy Act, Commercial Space Launch Act, Commercial Space Competitiveness Act, Intergovernmental Personnel Act, Enhanced Use Lease Authority, and Host-Tenant Agreements.

NASA Provided Limited Information About Agency Objectives and Safety Requirements in Commercial Crew Funded Space Act Agreements. Although the Space Act does not explicitly prohibit NASA from using its “other transactions” authority to acquire goods or services, it has taken the position that the Federal Grant and Cooperative Agreement Act of 1977 and other Federal laws and regulations require the use of contracts when the purpose of an agreement is to purchase goods or services intended for the direct benefit of NASA.⁴ Accordingly, in its commercial cargo program the Agency used funded SAAs to foster development efforts followed by FAR-based contracts to acquire actual resupply missions to the International Space Station. Similarly, NASA began crew development efforts using SAAs to nurture commercial capabilities, entered into FAR-based contracts as it moved toward certifying vehicles, and will use additional contracts to procure actual crew transportation missions.

Consistent with this policy and to maintain a clear distinction between SAAs used to develop commercial capabilities and contracts to acquire services, NASA refrained from providing specific guidance regarding Agency objectives and safety requirements to its commercial crew partners as part of Agency funded SAAs. For example, none of the 281 technical and safety requirements the Commercial Crew Program identified were included in the SAAs. Rather, NASA published the requirements 22 months after initiation of the Program in a separate, nonbinding document after the partners were well into the design phase of their efforts. In contrast, under a typical FAR-based contract many of these requirements would have been included in solicitation and contract documents. As we have discussed in previous reports, the absence of requirements in funded SAAs increases the risk that spaceflight systems developed pursuant to these agreements may not meet Agency’s requirements or require extensive and costly redesign to do so. Accordingly, we believe NASA should consider being more prescriptive when using funded SAAs to develop spaceflight technology by identifying and including in the agreements high-level program objectives and key safety elements.

Management Approach for Administering Funded Space Act Agreements is Not Governed by NASA Policy. Although the milestone approach to managing cost, schedule, and performance for funded SAAs appears to have worked well for NASA in the commercial cargo and crew programs, this and related procedures are not codified in formal NASA guidance. Without codifying the current milestone management procedures and other management tools that have worked well for funded SAA programs to date, it will be more challenging for Agency officials to ensure the consistent administration of future development programs that use such agreements.

⁴ The Federal Grant and Cooperative Agreement Act of 1977, 31 U.S. Code § 6303 (1977), states “An executive agency shall use a procurement contract as the legal instrument reflecting a relationship between the United States Government and a State, a local government, or other recipient when – (1) the principal purpose of the instrument is to acquire (by purchase, lease, or barter) property or services for the direct benefit or use of the United States Government; or (2) the agency decides in a specific instance that the use of a procurement contract is appropriate.”

Conclusion

Throughout its history, SAAs have provided NASA a valuable means to advance science and technology and to stimulate research in aeronautics and spaceflight. In recent years, NASA has turned to SAAs to stimulate the private sector to develop spaceflight systems for commercial cargo and crew transportation and to help offset the cost of maintaining underutilized facilities following the end of the Space Shuttle Program.

However, unlike traditional government contracts, grants, or cooperative agreements, SAAs are not subject to the FAR or other Federal laws and regulations intended to ensure that costs are allowable and prices fair and reasonable. Accordingly, NASA's use of SAAs has the potential to result in fewer overall protections for the Agency as well as decreased transparency and accountability regarding how the Agency is using taxpayer funds.

We believe NASA could better ensure equal access to its facilities and capabilities and potentially increase the number of parties interested in entering into SAAs by expanding its efforts to advertise or solicit interest in its facilities and resources. In addition, NASA needs to improve its internal controls over SAAs to identify costs incurred and benefits derived from nonreimbursable SAAs; agree on a clear and consistent understanding regarding when it is appropriate to use SAAs versus other types of lease agreements and the manner in which reimbursable and nonreimbursable SAAs must align with Agency missions; and develop the ability to separate proceeds from reimbursable SAAs from those derived from other types of reimbursable agreements. We also believe NASA could promote better outcomes when using funded SAAs to develop new space technologies if it included more information about Agency objectives and key safety elements in the agreements. Finally, NASA should codify the milestone management procedures it used for its cargo and crew development efforts to ensure consistent administration of future development programs that use funded SAAs.

Management Action

In order to increase transparency, accountability, and oversight of NASA's use of SAAs, we recommended NASA's Associate Administrator for Mission Support establish policy and procedures to increase awareness of NASA's SAA opportunities, revise Agency policies to clarify when it is appropriate to use SAAs, and establish a close-out process, or similar mechanism, to track the costs and benefits of nonreimbursable SAAs. In addition, we recommended NASA's Chief Financial Officer complete and implement the Reimbursable Process Team's recommendations to improve the reimbursable process and establish policy and procedures to account for the costs of NASA's nonreimbursable SAAs. We also recommended NASA's Associate Administrator for Human Exploration and Operations consider identifying and including high-level program objectives and key safety elements when using future funded SAAs and codify milestone management procedures into a NASA directive, requirements document, or guide.

In response to a draft of this report, NASA's Associate Administrator for Mission Support concurred with our recommendations to increase awareness of NASA's SAA opportunities, revise Agency policies to clarify when it is appropriate to use SAAs, implement the Reimbursable Process Team's recommendations, include high-level program objectives and key safety elements in future funded SAAs, and codify milestone management procedures. He partially concurred with our recommendations to establish a close-out process and policies and procedures to account for the costs of NASA's nonreimbursable SAAs, stating that NASA's accounting systems are not set up to track costs for nonreimbursable activity. Therefore, in lieu of establishing a new process to account for the costs, he plans to revise the process for reviewing nonreimbursable agreements to include the establishment of Estimated Price Reports with annual validations of estimated costs. He also plans to develop a close-out process, however, that process will not capture overall costs to the Agency for particular nonreimbursable SAAs.

We consider the Associate Administrator's comments to be responsive to our recommendations and will close the recommendations upon completion and verification of the proposed corrective actions. However, while we support NASA's efforts to estimate costs and develop a close-out process for nonreimbursable SAAs, we encourage the Agency to continue to work toward developing a process to fully account for these costs and incorporate them into their close-out process in the future. Establishment of further guidance and processes to increase awareness of SAA opportunities, determine the appropriateness of their use, account for their costs and benefits, and increase oversight are all positive steps that will provide greater transparency and accountability into the Agency's use of the agreements.

We incorporated management's technical comments on our draft into the final report as appropriate. Management's full response to the draft report is reprinted in Appendix B.

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INTRODUCTION

Background

Pursuant to its authorizing legislation – the National Aeronautics and Space Act (Space Act) – NASA may “enter into and perform such contracts, leases, cooperative agreements, or other transactions as may be necessary in the conduct of its work and on such terms as it may deem appropriate”⁵ These agreements may be with other Federal agencies, states, individuals, firms, associations, corporations, educational institutions, or foreign governments and entities.⁶

NASA refers to agreements conducted under the Space Act’s “other transactions” authority as Space Act Agreements (SAA) and to the public and private signatories to the SAAs as partners. Over the past 50 years, NASA has entered into SAAs with diverse groups of people and organizations in the private and public sectors to advance a variety of mission and program objectives. SAAs establish a set of legally enforceable promises between the Agency and its partners and typically involve a commitment of personnel, funding, services, equipment, expertise, information, or facilities from both the Agency and its partners. According to Agency officials, SAAs enhance NASA’s ability to advance cutting-edge science and technology and are an effective means to stimulate industry to initiate new endeavors. In addition, SAAs can entice parties to work with NASA that traditionally have not pursued other types of agreements, such as contracts and grants, because of the complexity of applicable regulatory requirements and the associated cost.

Types of Space Act Agreements. NASA has entered into four types of SAAs – reimbursable, nonreimbursable, funded, and international – as described below.

In *reimbursable SAAs*, the partner reimburses NASA’s costs associated with the SAA in full or in part. NASA often enters into reimbursable SAAs when it has equipment, facilities, or services it is not fully utilizing. Examples include partners using Agency wind tunnels and rocket engine test stands for aeronautics testing and propulsion development or calling on the technical expertise of Center personnel for such scientific endeavors as development of modular robotic vehicles or storage of thermal energy. NASA reimbursable SAAs have ranged in value from hundreds of dollars for a facility the U.S. Coast Guard occupied at the Michoud Assembly Facility (Michoud) to \$950 million for a collaborative effort with the Federal Aviation Administration to develop the Next Generation Air Traffic Control System.

⁵ 51 U.S.C. § 20113(e) (2010).

⁶ 51 U.S.C. § 20102(d)(7) and § 20115 provide NASA with authority relating to foreign governments and entities.

Each reimbursable SAA involves a transfer of funds or other financial obligations from the partner to NASA, and the Agency requires that such agreements be consistent with and not interfere with Agency missions. The terms, conditions, and schedule of performance for reimbursable SAAs are negotiable, but NASA requires payment in advance from non-Federal partners for each stage of the effort. If NASA is obtaining rights to intellectual property, data, or some other benefit, the Agency may accept reimbursement for less than the full cost of the activities it performs under the agreement. In such cases, NASA refers to the SAAs as partially reimbursable. For partially reimbursable SAAs, NASA must determine whether the proposed partner contribution is fair and reasonable given the resources committed, program risks, and corresponding benefits to the Agency.

Nonreimbursable SAAs involve NASA and one or more partners in a mutually beneficial activity that furthers an Agency mission. Generally, NASA enters into nonreimbursable SAAs to conduct collaborative research and development. NASA has used nonreimbursable SAAs to conduct aeronautics and Earth sciences research, develop and test space instrumentation and propulsion technologies, and for education and outreach activities. For each agreement, the Agency contributes equipment, expertise, information, facilities, personnel, or support services. Both NASA and its partner bear the cost of their individual participation and exchange no funds between them. Because nonreimbursable SAAs involve the commitment of NASA resources, the Agency must determine whether the partner's proposed contribution is fair and reasonable when compared to the use of NASA resources, potential program risks, and corresponding benefits to the Agency.

Funded SAAs are agreements under which NASA transfers appropriated funds to a domestic agreement partner to undertake activities consistent with NASA's missions. Under Agency-developed policy, NASA may only use funded SAAs when it cannot accomplish its objectives using a contract, grant, or cooperative agreement. NASA's use of funded SAAs is a relatively recent occurrence and to date most funded SAAs have related to the Agency's efforts to develop commercial spacecraft capable of transporting cargo and crew to the International Space Station (ISS or Station). Since 2006, NASA has entered into 15 funded SAAs with eight private companies ranging in value from \$1.4 million to \$480 million, with a total value of more than \$2.2 billion. Before NASA may enter into a funded SAA, it must develop a cost estimate of the funding anticipated along with the value of any Agency resources it will commit to the project to determine whether the proposed partner's contribution is fair and reasonable.

International SAAs may be reimbursable or nonreimbursable. NASA uses these agreements to establish bilateral or multilateral arrangements with foreign governmental entities, international organizations, foreign commercial entities, and foreign persons. A large number of NASA's international SAAs are associated with ISS or involve collaboration on space and Earth science research. Generally, nonreimbursable international SAAs are governed by international law and reimbursable international SAAs by Federal law. Under Agency rules, all international reimbursable SAAs must benefit NASA or the broader U.S. interests.

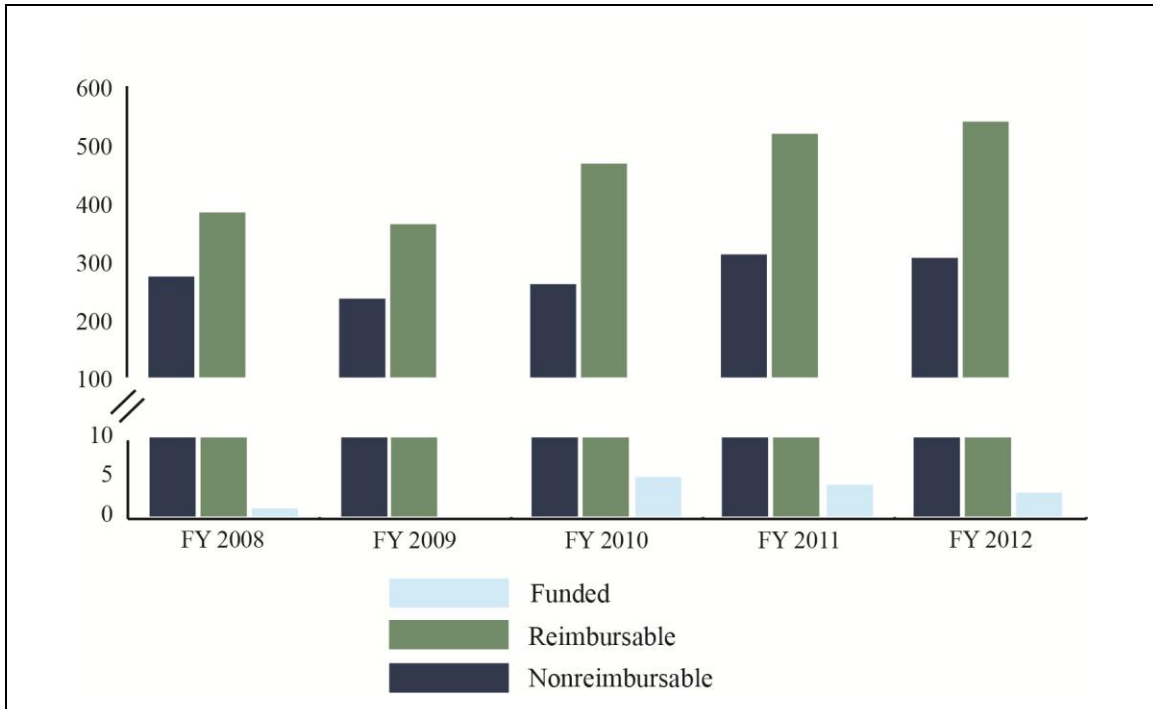
History of NASA’s Use of Space Act Agreements. With passage of the Space Act in 1958, NASA was the first Federal agency to receive “other transactions authority.” Although NASA has limited records regarding its use of this authority in the early years, long-time NASA officials stated that the authority was initially used to further the United States’ space race with the Soviet Union and enable as many entities as possible to assist in the design and production of associated technology.

Given the lack of records, it is difficult to determine how much NASA’s use of SAAs has grown since passage of the Space Act. Prior to 2007, the Agency maintained only paper records of SAAs at the originating Centers or Mission Directorates, and over the years many of these records have been lost or misplaced. In 2007, NASA established an electronic database known as the Space Act Agreement Maker (SAAM). SAAM is the official repository for storing all SAAs except those with international partners, which the Agency tracks in a separate database called the System for International External Relations Agreements (SIERA).

Using these two databases, we performed a trend analysis of NASA’s use of SAAs for fiscal years (FY) 2008 through 2012. Our analysis shows that overall the number of SAAs increased more than 29 percent during this 5-year period. As shown in Figure 1, reimbursable SAAs experienced the largest percentage growth at 41 percent. In addition, during this period NASA entered into 13 funded SAAs worth \$1.8 billion to support its commercial cargo and crew development efforts.⁷ NASA officials tie the increased number of SAAs during this 5-year period to termination of the Space Shuttle Program, which freed up portions of the Agency workforce and facilities previously dedicated to that Program. According to these officials, NASA programs and Centers often pursued SAAs to make underutilized resources available to other Government agencies and commercial partners and to offset maintenance costs for these resources until the Agency needs them in the future.

⁷ As of FY 2014, NASA has entered into 15 funded SAAs worth more than \$2.2 billion.

Figure 1: Space Act Agreements, FYs 2008 through 2012

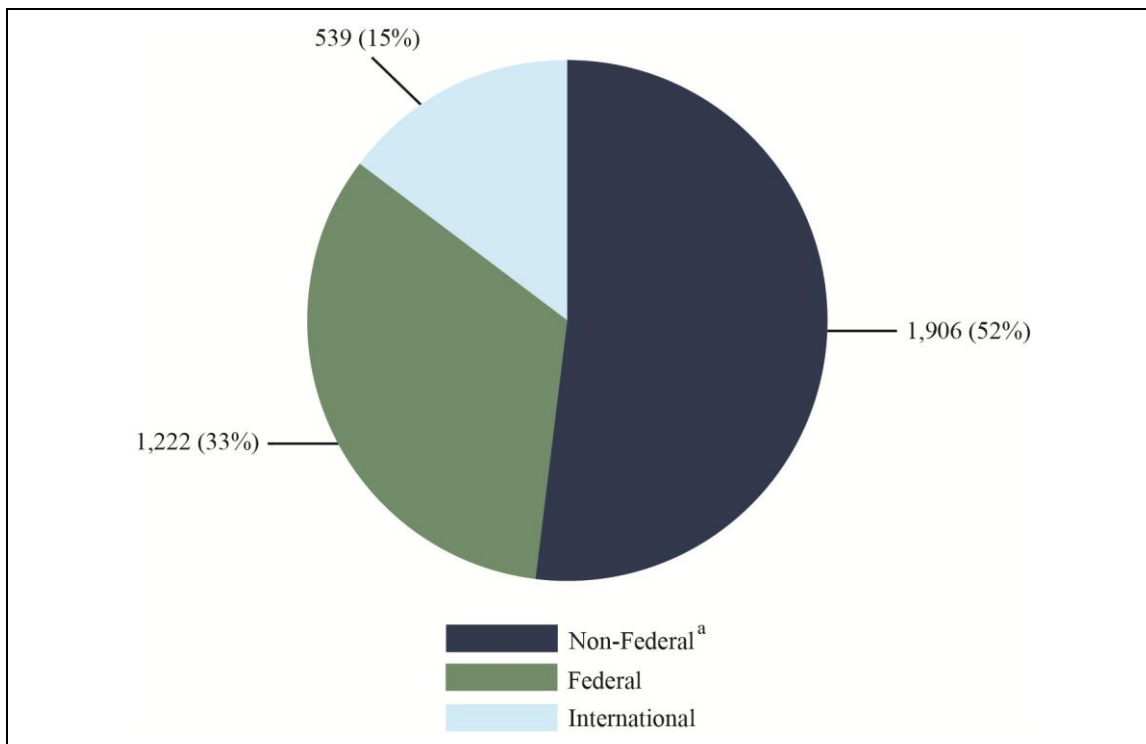


Note: Totals for reimbursable and nonreimbursable amounts include domestic and international SAAs.

Source: NASA OIG.

In total, NASA entered into 3,667 SAAs between FYs 2008 and 2012. The average length of those agreements was 2 years for domestic SAAs and 4 years for international SAAs. As shown in Figure 2, 52 percent of the agreements were with non-Federal partners, 33 percent with other Federal agencies, and 15 percent with international partners.

Figure 2: Space Act Agreements by Partner, FYs 2008 through 2012

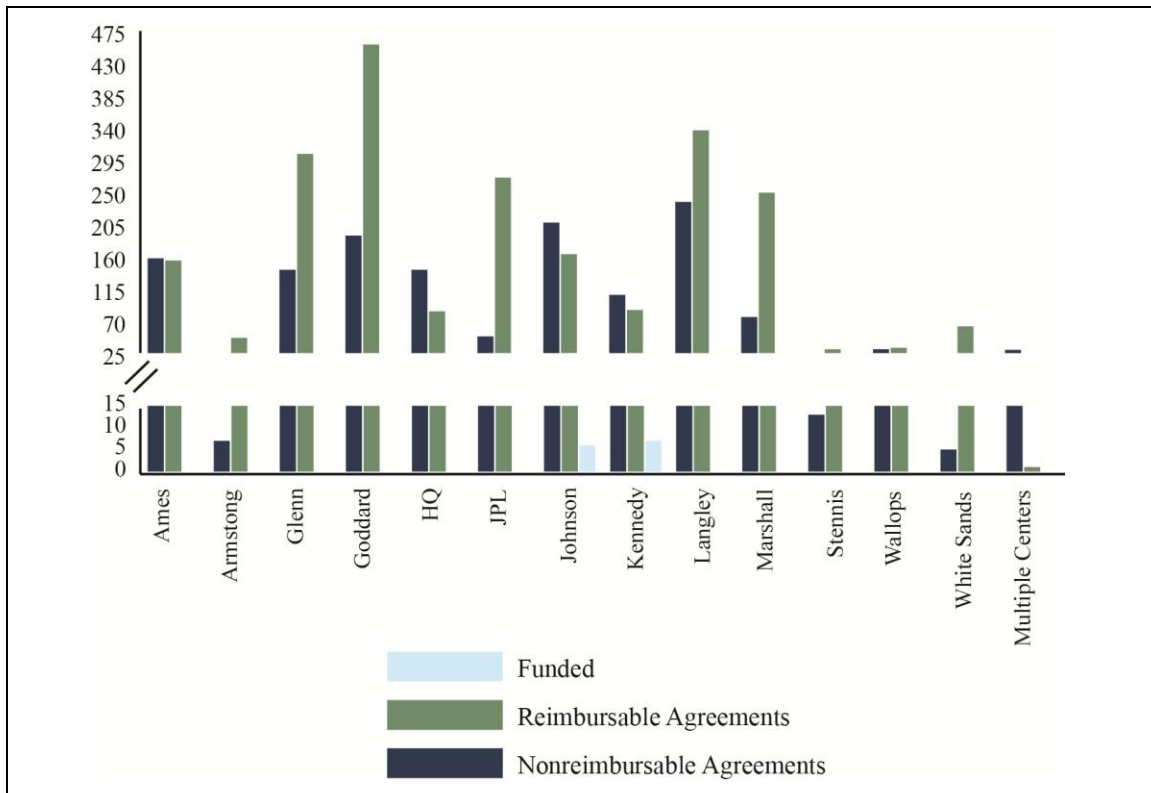


^a Non-Federal partners include academic institutions, nonprofit organizations, state and local governments, and commercial entities.

Source: NASA OIG.

When sorted by type of agreement, NASA entered into 1,384 nonreimbursable SAAs, 2,270 reimbursable SAAs, and 13 funded SAAs during this 5-year period (see Figure 3). Langley Research Center (Langley) entered into the largest number of nonreimbursable SAAs with 236, followed by Johnson Space Center (Johnson) and Goddard Space Flight Center (Goddard) with 207 and 189, respectively. The majority of Langley’s nonreimbursable SAAs related to aerospace testing and research with other Federal agencies and private sector companies. Johnson’s nonreimbursable work primarily involved educational agreements with schools and universities. Goddard’s nonreimbursable SAAs were primarily for earth and space science research with universities and subject matter experts. Goddard also entered into the largest number of reimbursable SAAs with 456, followed by Langley with 336 and the Glenn Research Center (Glenn) with 303. Goddard’s reimbursable SAAs were largely with other Federal agencies to perform joint research. Langley and Glenn’s reimbursable SAAs were primarily for use by outside parties of Center testing and laboratory facilities and consultation with Center subject matter experts. Finally, Johnson and Kennedy Space Center (Kennedy) entered into the 13 funded SAAs, with 6 and 7 agreements, respectively.

Figure 3: Space Act Agreements by Center, FYs 2008 through 2012

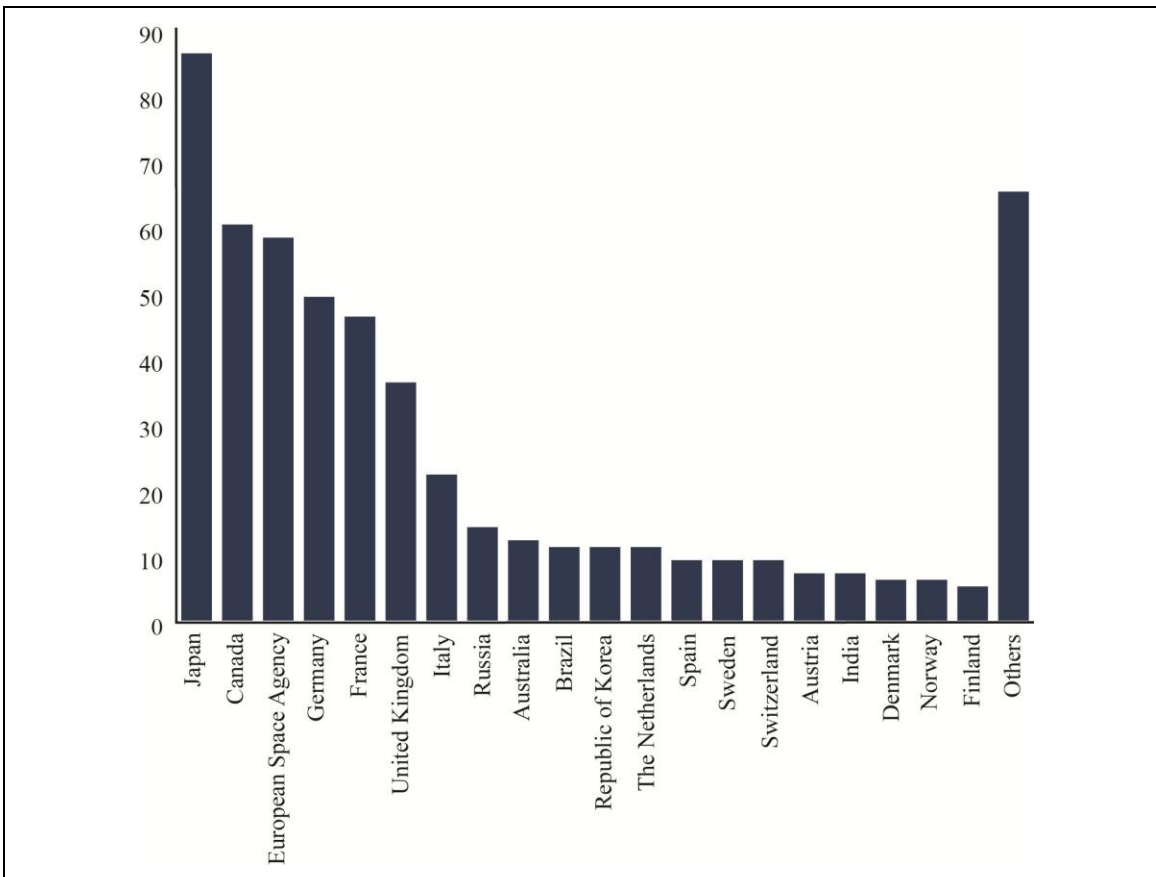


Note: Total for reimbursable and nonreimbursable amounts include domestic and international SAAs.

Source: NASA OIG.

NASA also entered into 539 international SAAs between FYs 2008 and 2012 (see Figure 4). Roughly half of the agreements were with foreign space agencies; 22 percent with academic institutions; 20 percent with nonprofit organizations, research institutes, and other Government agencies; and the remaining 7 percent with commercial partners. The agreements were primarily focused in the areas of science, human exploration, and aeronautics. Under 45 of the agreements, researchers from countries such as France, Germany, and South Korea visited and performed research at NASA Centers. Japan, Canada, and the European Space Agency were NASA’s most frequent international partners, accounting for 38 percent of all international SAAs in the 5-year period. A large number of the international SAAs were with NASA’s ISS partners for crew support and experiments. NASA also entered into 65 agreements with a wide range of other countries, including Belgium, the Czech Republic, Chile, Colombia, Algeria, Cape Verde, Bangladesh, and the Philippines primarily for collaboration on Earth science research.

Figure 4: Space Act Agreements with International Partners, FYs 2008 through 2012



Source: NASA OIG.

Advantages to Using Space Act Agreements. SAAs are not subject to the Federal Acquisition Regulation (FAR) or other Federal statutes and thus enable NASA and its partners to develop flexible arrangements tailored to their specific needs. For funded agreements NASA officials believe that this greater flexibility helps promote creativity and can be more cost effective than using traditional contracts. For example, through funded SAAs, NASA has incentivized two companies – Space Exploration Technologies (SpaceX) and Orbital Sciences Corporation (Orbital) – to develop U.S. domestic cargo space transportation capabilities. NASA estimates that by using funded SAAs to stimulate the development of SpaceX’s commercial vehicle, the Agency saved between \$1.4 and \$4 billion and could realize similar savings with the Orbital vehicle.⁸

⁸ Additional savings occurred because SpaceX and Orbital provided over 50 percent of the funding for commercial cargo development. Savings are from an OIG analysis of information provided in NASA’s Commercial Market Assessment for Crew and Cargo Systems dated April 27, 2011, and NASA’s Falcon 9 NAFCOM cost estimate overview, dated August 2011.

Reimbursable SAAs are a mechanism through which NASA can offset overhead costs for underutilized facilities and labor. For example, in 2009, Glenn and Lockheed Martin entered into a reimbursable SAA allowing the company to use the Center's 10-foot-by-10-foot Supersonic Wind Tunnel. As a result, Glenn received nearly \$2.8 million in reimbursement to offset the Center's costs. Similarly, in 2008, Stennis Space Center entered into a reimbursable SAA with Orbital allowing the company to use the Center's E-3 rocket engine test stand, an agreement that resulted in nearly \$7.8 million in reimbursement to offset the Center's costs. Overall, NASA officials told us that reimbursable SAAs play an indispensable role in assisting Centers in sustaining underused but needed capabilities and facilities.

Agency officials also said that nonreimbursable SAAs benefit NASA through collaborative research activities and can act as a mechanism for transferring NASA-developed technology to industry.⁹ Overall, NASA officials pointed to the important role that nonreimbursable SAAs can play in reducing the Agency's research and development costs through collaborations with partners in industry, other Federal agencies, and universities. For example, a nonreimbursable SAA between Langley and The Boeing Company (Boeing) for a combined \$9.8 million in resource commitments – an estimated \$2.2 million contributed by NASA – facilitated research with the potential to reduce aircraft fuel use, emissions, and noise.

Risks to Using Space Act Agreements. Over the past decade, the Government Accountability Office (GAO), Congressional Research Service, and external think tanks such as RAND Corporation have examined Federal agencies' use of other transactions authority. In general, these organizations found that because SAAs entered into under this authority are not subject to the FAR (for contracts) or regulations governing Federal grants and cooperative agreements, partners are not required to follow Federal Cost Accounting Standards and other provisions intended to ensure that costs are allowable and prices fair and reasonable. Absent these checks and balances, NASA's use of SAAs has the potential to result in fewer overall protections for the Agency and decreased accountability for taxpayer funds.

Congress has also expressed concerns about NASA's use of SAAs. For example, at a March 2013 hearing, members of the House of Representatives Committee on Science, Space, and Technology voiced concerns about NASA's ability to ensure fair competition; increase public awareness; and prevent fraud, waste, and abuse when using SAAs. In addition, in April 2014, the Committee proposed legislation that would require NASA to make all new SAAs available for public notice and comment at least 30 days before final signature; list all current SAAs on its website in a searchable format; and report to

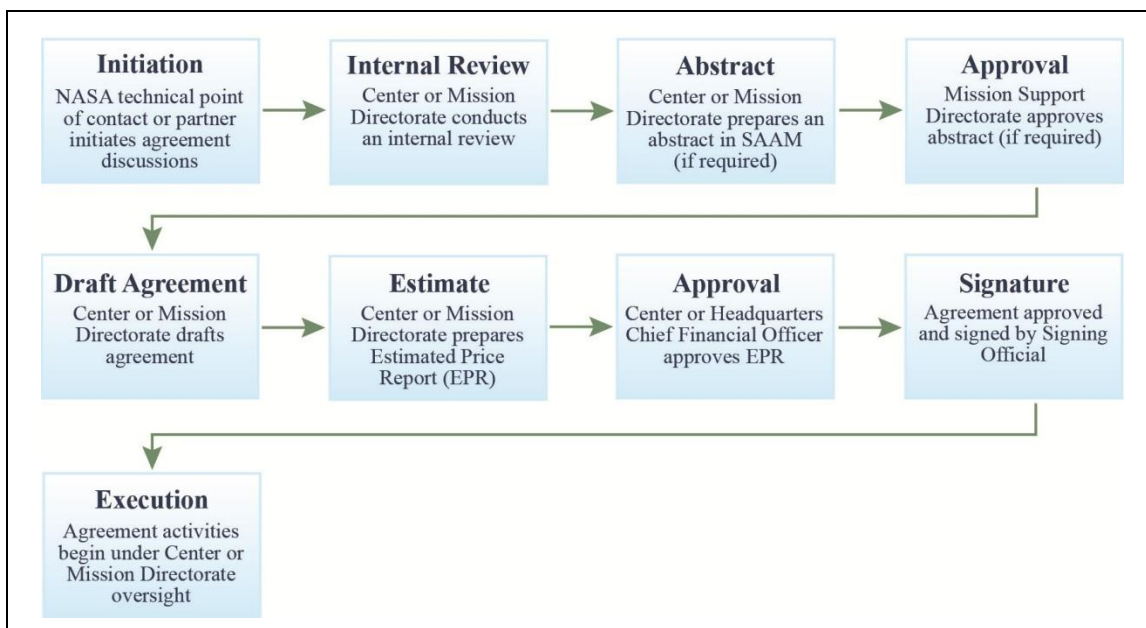
⁹ One of NASA's strategic objectives is to ensure that technologies developed for its missions are available to the public, including private companies.

Congress annually regarding the number, types, descriptions, and total value of such agreements.¹⁰

Formulation and Administration of Space Act Agreements. NASA has developed policies for formulating and approving SAAs, and maintains the Space Act Agreements Guide (Guide).¹¹ The Guide serves as an Agency-wide instruction manual for entering into SAAs.

Domestic SAAs generally follow one of two paths depending on whether the agreement will have “a significant impact.” Pursuant to the Guide, SAAs that involve foreign entities, other Federal agencies, state and local governments, classified material, NASA aircraft, use of the NASA insignia, or modifications to Center facilities; generate media attention; are unusual or controversial; or involve substantial resources are considered to have significant impact. Centers and Mission Directorates may negotiate SAAs that do not have significant impact directly with partners, while SAAs with significant impact require Headquarters review and approval. See Figure 5 for NASA’s SAA formulation and approval process.

Figure 5. NASA’s Space Act Agreement Formulation and Approval Process



Source: NASA OIG.

Initiation. Most SAAs result from informal interactions between NASA scientific and technical personnel and their counterparts in industry and other Federal agencies or

¹⁰ “National Aeronautics and Space Administration Authorization Act of 2014,” H.R. 4412, 113th Congress. (2014).

¹¹ NASA Advisory Implementing Instruction (NAII) 1050-1C, “Space Act Agreements Guide,” February 25, 2013.

because outside parties interested in utilizing NASA facilities or personnel proactively approach the Agency. Occasionally, NASA will issue advertisements or solicitations to attract interest in particular facilities or capabilities. For example, Johnson has issued Requests for Information seeking prospective partners to utilize Center structural test capabilities, expertise, tools, laboratories, and facilities on a reimbursable basis.¹² The Guide suggests using a competitive process when an agreement will involve “exclusive arrangements,” which the Guide defines as arrangements that involve limited NASA resources or capabilities whose use by one party would preclude use by other interested parties.

Internal Review. The initiating Center or Mission Directorate reviews proposed SAAs to assess appropriateness, cost, mission relation, and impact on Agency operations. Several Centers have established boards or panels to perform these reviews. For example, Marshall Space Flight Center (Marshall) screens proposed SAAs through a review board known as the Partnership Working Group, Johnson uses its Strategic Development Panel, and Armstrong Flight Research Center (Armstrong) its Tactical Management Board.

Abstract. For SAAs deemed to have a significant impact, the originating Center or Mission Directorate prepares for submission to Headquarters an “abstract” or summary of the proposed activities, financial and resource commitments, milestones, applicable data rights provisions, and a description of how the activities support a NASA mission. Abstracts also provide Agency-wide notice of proposed agreements. NASA’s Mission Support Directorate manages the abstract process, which involves reviews by the Agency’s Office of the General Counsel, Office of Chief Technologist, and other Headquarters offices to determine the legality of the proposed activities, their connection or relationship with NASA’s mission, and whether they will interfere with other Agency needs.

Draft Agreement. Once a proposed SAA has cleared internal reviews and the abstract process (if required), the originating Center or Mission Directorate implements the negotiated framework of the agreement directly with the partner. This process typically includes identifying each party’s responsibilities, terms, milestones, pricing, and data and intellectual property rights. Agency technical points of contact and project managers negotiate draft agreements in conjunction with officials from the appropriate Center or Headquarters Office of the General Counsel and Office of the Chief Financial Officer (OCFO) who review agreements for compliance with applicable regulations. In addition, each SAA has a designated Agreement Manager whose primary responsibility is to oversee the formulation and approval process. NASA has 29 agreement managers at various Centers and Mission Directorates.

¹² NASA uses Requests for Information to solicit input from industry or other outside parties about potential SAA opportunities.

Estimated Price Report. NASA requires Centers and Mission Directorates to develop an Estimated Price Report for all reimbursable and funded SAAs. Estimated Price Reports are estimates of the Agency's costs (e.g., labor, travel, procurement, utilities, etc.) required to perform work for a partner, including accounting for any waived or excluded costs. Each report must be reviewed and approved by the Center OCFO (for Center agreements) or Headquarters Director for the Office of Budget Management and System Support (for Headquarters agreements) to ensure sufficiency of funds, that the full costs to perform services are charged, and to document the rationale for any cost waivers. For nonreimbursable SAAs, NASA requires only a general estimate of the value of Agency resources that will be committed.

Signature. Work can commence under an SAA once the NASA signing official signs the final SAA certifying proper review and consistency with Agency policies and guidelines. Signing officials are the only individuals permitted to commit the Agency to SAAs. In general, signing officials are Center Directors, Associate Administrators, or their designees, which may include individuals with management responsibility for projects or activities supported by the agreements.

Execution. Following signature, work on SAA activities begins with oversight provided by the initiating NASA Center or Mission Directorate. Oversight generally includes tracking agreement terms, milestones, outputs, and costs and is performed primarily by technical points of contact and project managers in conjunction with the Center or Headquarters OCFO. OCFOs track incurred costs in the Agency's accounting system, monitor agreement costs and funding balances, and identify agreements eligible for closeout. The NASA Shared Services Center handles billing and collections for reimbursable SAAs.

Objectives

Our overall objective was to examine NASA's use of SAAs. Specifically, we assessed whether NASA effectively (1) advertised opportunities for outside parties to utilize capabilities the Agency makes available through SAAs, (2) identified the full costs of work it performed under reimbursable SAAs and properly billed partners, (3) ensured that the Agency received fair and reasonable benefits from partners in nonreimbursable SAAs, and (4) determined whether reimbursable and nonreimbursable SAAs align with NASA's missions. We also assessed the benefits and limitations of funded SAAs. See Appendix A for details of the audit's scope and methodology, our review of internal controls, and a list of prior coverage.

INCREASED AWARENESS AND ADDITIONAL CONTROLS WOULD ENHANCE TRANSPARENCY AND ACCOUNTABILITY OF NASA'S SPACE ACT AGREEMENTS

We found that NASA could better ensure equal access to its facilities and capabilities and potentially increase the number of parties interested in entering into SAAs by expanding its efforts to solicit interest in its facilities and resources. We also found that NASA cannot identify the costs it incurs or effectively measure the benefits derived from nonreimbursable SAAs; has unclear guidance regarding when it is appropriate to use SAAs and the manner in which reimbursable and nonreimbursable SAAs must align with the Agency's missions; and cannot readily separate amounts billed and collected from reimbursable SAAs from proceeds received from other types of reimbursable agreements. In addition, we question the Agency's decision to refrain from including more information about Agency objectives and key safety elements in funded SAAs. Finally, we found little formal guidance relating to the administration of funded agreements in current Agency policy.

NASA Could Do More to Ensure Potentially Interested Parties Are Aware of Space Act Agreement Opportunities

The Space Act Agreements Guide (Guide) stresses the importance of providing outside parties with equal access to NASA's capabilities, expertise, and facilities.¹³ However, we sampled 95 SAAs between NASA and non-Federal partners and found the Agency had solicited potential interest or otherwise advertised the opportunity for only 5 SAAs. NASA officials acknowledged that in most cases reimbursable and nonreimbursable SAAs come about as a result of existing contacts between NASA personnel and their counterparts in industry and other Federal agencies or when interested parties proactively approach NASA rather than through advertising or other types of solicitation by the Agency.

Although we recognize it is not practical for NASA to advertise all SAA opportunities, in our judgment, the Agency could increase awareness among industry, academia, and researchers of opportunities to collaborate with and utilize its capabilities, facilities, and expertise by being more proactive in this area. We found that although most Centers display on their websites general information regarding partnership opportunities, they rarely issue Requests for Information, public notices, and press releases, or use other mechanisms to highlight particular areas of collaboration in which NASA is interested in supporting or identify specific capabilities and facilities available to outside parties. We also found that when Centers do employ such mechanisms, they report increased interest.

¹³ NASA Advisory Implementing Instruction (NAII) 1050-1C, "Space Act Agreements Guide," February 25, 2013.

For example, in October 2012, Johnson issued a Request for Information describing Center structural test capabilities, expertise, tools, labs, and facilities available to prospective partners on a reimbursable basis. Johnson officials told us that this announcement increased the number of interested parties approaching the Center seeking SAA opportunities.

Many of NASA's reimbursable and nonreimbursable SAAs involve the development of technologies that could potentially be commercialized by private entities. For example, we reviewed an SAA in which Goddard contributed an estimated \$363,000 in NASA resources to a private company's effort to develop light-weight mirror technology and a Glenn SAA for which the Center contributed an estimated \$703,000 in NASA resources to another company's effort to improve aerodynamic performance and design optimization of supersonic aircraft. Increasing efforts to ensure that more entities are aware of and have the opportunity to participate in SAAs with NASA could help avoid perceptions of favoritism when commercial entities stand to gain from their relationships with the Agency. Moreover, increasing awareness of NASA's capabilities could help the Agency defray the costs of maintaining underutilized facilities and capabilities. Such initiatives would also provide greater transparency into the Agency's SAA formulation process.

NASA Cannot Identify Costs Associated With or Benefits Derived from Nonreimbursable Space Act Agreements

We found that NASA cannot identify its costs or effectively measure the benefits derived from nonreimbursable SAAs. NASA generally utilizes nonreimbursable SAAs for collaborative research and development projects. Although these agreements involve no exchange of funds, NASA nevertheless bears the expense associated with any personnel, facilities, expertise, or equipment it contributes. We found that NASA Centers generally do not track these costs and therefore cannot identify how much they spend on such SAAs.

Of the 49 nonreimbursable SAAs we sampled, NASA could provide cost data for only 4 SAAs. NASA officials explained that Centers or programs typically do not track costs associated with nonreimbursable SAAs because such costs are usually insignificant and accounted for within the project or program budget associated with the agreement. However, we found that the aggregate costs associated with nonreimbursable SAAs are significant. To examine this issue in greater depth, we reviewed NASA's SAAM database, which contained cost estimates for approximately one third of the nonreimbursable SAAs NASA entered into between 2008 and 2012. Using these estimates, we calculated the Agency incurred at least \$96 million in costs associated with nonreimbursable SAAs, with some individual agreements totaling in the millions of dollars. By not tracking these costs, NASA cannot readily perform a cost-benefit analysis to assess the value SAAs bring to the Agency and the broader aeronautical, scientific, and space exploration communities.

We also found that NASA has difficulty identifying how the Agency or broader scientific community benefitted from research obtained from nonreimbursable SAAs. We asked NASA officials to describe and provide support for the benefits derived from a sample of 29 concluded nonreimbursable SAAs. For 19 of the 29 agreements, the officials had difficulty identifying or demonstrating benefits. In some instances, the officials could not provide the requested information because researchers with knowledge of the SAA activities were no longer available and there was no documentation regarding benefits derived from the agreement. In other cases, SAA activities did not take place, partners failed to meet their responsibilities, or the desired results were not obtained. We also found instances in which the desired results had been obtained but not used by NASA because the underlying project had been cancelled or experienced funding issues. In other cases, officials could only point to general outcomes, such as the production of research papers or claims that SAA activities resulted in “increased knowledge” or that NASA “gained experience” in a particular subject area.

NASA officials had difficulty identifying benefits derived from nonreimbursable SAAs because the Agency lacks a close-out process or similar mechanism to document and record outcomes and results of the agreements. The information in the Agency’s agreement databases and the SAAs themselves describe only the purpose or expected results of the agreement and contain no information about whether the stated goals and objectives were accomplished, how the research was eventually utilized, or any assessment of the overall performance of the agreement partner. This is in contrast to the process used for grants and cooperative agreements in which final progress reports and documentation of results are required to provide evidence of the value of the sponsored research and ensure proper stewardship of public funds.¹⁴ In our judgment, gathering similar information regarding nonreimbursable SAAs would help NASA evaluate the value of these agreements.

NASA’s inability to track the total amount it spends on nonreimbursable SAAs coupled with incomplete data on the benefits derived from such agreements makes it difficult for stakeholders to objectively assess the value these agreements bring to the Agency and to the broader aeronautical, scientific, and space exploration communities. Developing policies to better identify these costs and benefits would increase transparency and accountability for these agreements.

¹⁴ Office of Management and Budget Circular A-110, “Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations,” September 1999.

Interpretation of “Mission Requirement” for Space Act Agreements Varies Among Centers



A NASCAR stock car performing a test at Kennedy's Shuttle Landing Facility.

Source: NASA.

NASA facility or capability the actual activity performed under the agreement need not directly relate to a NASA mission. Under this interpretation of the policy, between FYs 2008 and 2012 Kennedy entered into 14 reimbursable SAAs for an estimated \$392,000 under which NASCAR and other automotive racing teams and manufacturers utilized its Shuttle Landing Facility for straight-line vehicular aerodynamics testing. Kennedy entered into the agreements as part of a strategy to expand utilization of its facilities to outside entities as a means of reducing operating costs.¹⁵

NASA policy requires that SAAs be consistent with or further Agency missions.¹⁵ We found that NASA Centers and Mission Directorates have differing interpretations of this requirement, which result in widely differing applications. Most have interpreted the policy to mean that the activity covered by the SAA must directly relate to a NASA mission – for example, aeronautics research conducted by a commercial business in a NASA wind tunnel. However, some Centers have taken the position that as long as the proceeds from a SAA help to maintain a needed



A crew works to film a scene of “GI Joe: Retaliation” at Michoud.

Source: Paramount Pictures.

Similarly, Michoud entered into 13 reimbursable SAAs for an estimated \$2.9 million under which movie production studios, engineering firms, manufacturing companies, and other private entities with no direct connection to NASA missions utilized excess office and warehouse space at the facility. Michoud used the proceeds from these agreements to reduce operating costs at the site.

¹⁵ NASA Policy Directive 1050.1, “Authority to Enter into Space Act Agreements,” December 23, 2008.

¹⁶ NASA Kennedy Request for Information, “Supporting an Environmental Assessment of Commercial and Other Uses of the Shuttle Landing Facility,” September 29, 2006.

As we pointed out in a 2012 report, while using SAAs to help offset operations and maintenance costs for underutilized assets can benefit NASA, the Agency must be careful not to use such arrangements to maintain facilities and capabilities the Agency no longer needs.¹⁷ Moreover, NASA has other mechanisms to “lease” underutilized facilities that may raise more revenue. Specifically, NASA guidance and Federal law requires Centers using SAAs to recoup their full costs and to return all revenues in excess of that amount to the U.S. Treasury. In contrast, if NASA makes a facility available through an Enhanced Use Lease, the rental rate is based on fair market value and the Agency is permitted to retain all proceeds for its use.¹⁸

Center officials told us that they tend to use SAAs rather than leases because SAAs are easier to negotiate and have a more streamlined approval process. In addition, they explained that commercial entities are sometimes reluctant to accept some of the standard terms and conditions required in Government leases and that lease approval requires a sign-off by NASA Headquarters, which can be time consuming.

In our judgment, improved guidance regarding the manner in which SAAs must align to NASA missions and the appropriate circumstances in which to use SAAs or lease agreements would ensure Centers use the most appropriate vehicle when entering into partnerships with other entities for use of NASA facilities and resources.

NASA Cannot Readily Identify Amounts Billed or Collected From Reimbursable Space Act Agreements

In addition to SAAs, NASA collects proceeds from outside entities under a variety of other types of agreements.¹⁹ Although the Agency has a process in place to account for and recoup these proceeds as a whole, it cannot readily identify amounts associated with reimbursable SAAs.²⁰ NASA’s Shared Services Center bills partners for the Agency’s costs associated with each reimbursable activity. However, when we asked to review a June 2013 accounts receivable report reflecting outstanding amounts totaling \$28.9 million, NASA officials could not readily identify which of these figures related to SAAs. This occurred primarily because the Agency’s accounting system does not have a common identifier to separate SAAs from other types of reimbursable agreements.

¹⁷ NASA OIG, “An Assessment of the Agency’s Real Property Leasing Practices” (IG-12-020, August 9, 2012).

¹⁸ Beginning in FY 2008, Congress granted all NASA Centers the ability to enter into Enhanced Use Leases.

¹⁹ NASA’s reimbursable activities can occur under numerous authorities including the Space Act, Economy Act, Commercial Space Launch Act, Commercial Space Competitiveness Act, Intergovernmental Personnel Act, Enhanced Use Lease Authority, and Host-Tenant Agreements under which businesses conduct support services such as security and automated data processing.

²⁰ We found no indications during our audit work that NASA has failed to collect fees associated with its reimbursable SAAs.

NASA officials explained that the Agency’s accounting system – Systems Applications Products (SAP) – was not designed to process reimbursable activity, and therefore Centers developed offline tools for financial tracking and reporting requirements. In addition, although SAP attaches a sales order number to each reimbursable agreement as an identifier, the SAAM and SIERA systems use different identifiers. Therefore, NASA officials cannot readily link the information in SAP with the information in SAAM and SIERA.

In the fall of 2011, NASA formed the Reimbursable Process Team to review and develop solutions to improve the tracking and accounting of proceeds from all types of reimbursable agreements. The Team is developing a four-phase approach to integrate data between SAAM, SAP, Business Warehouse (the Agency’s financial reporting system), and other Center-based systems to improve tracking and reporting of reimbursable agreements. The first phase included entering all types of reimbursable agreements into SAAM and generating a number in that system as a common identifier. The Team is currently in phase 2, which involves developing a template for the nonfinancial data that will be added to the accounting system. In the project’s final two phases (phases 3 and 4), the Team plans to merge the common identifier into the accounting system and integrate the data with the SAAM system. As of February 2014, NASA was developing a schedule to complete this process, at which time Agency officials expect to be able to use NASA’s systems to generate comprehensive reports that include both financial and nonfinancial data. Having this capability should provide additional insight and enable the Agency to better identify, track, and account for the nearly \$540 million of annual reimbursable activity generated by SAAs.

NASA Provided Limited Information About Agency Objectives and Safety Requirements in Commercial Crew Funded Space Act Agreements

Like other Federal agencies, NASA enters into a procurement contract governed by the FAR when it acquires goods and services. However, as discussed earlier, NASA also has the authority to enter into “other transactions” to accomplish its mission. Since 2006, NASA has used this authority to enter into 15 funded SAAs worth a total of \$2.2 billion to stimulate development of commercial cargo and crew spaceflight capabilities (see Table 1).²¹ This successful effort led to NASA entering into FAR-based contracts with two commercial space companies – SpaceX and Orbital – for cargo delivery services to

²¹ We reviewed and made a series of recommendations to improve NASA’s commercial crew and cargo programs in three previous audit reports: NASA OIG, “NASA’s Management of the Commercial Crew Program” (IG-14-001, November 13, 2013); “Commercial Cargo: NASA’s Management of Commercial Orbital Transportation Services and ISS Commercial Resupply Contracts” (IG-13-016, June 13, 2013); and “NASA’s Challenges Certifying and Acquiring Commercial Crew Transportation Services” (IG-11-022, June 30, 2011).

the ISS. In addition, NASA is currently competing a final development and certification contract for commercial crew development and hopes to enter into service contracts with one or more commercial companies for crew transportation services to the ISS beginning in FY 2017.

Table 1: NASA Funded Space Act Agreements

Funded SAAs			
Company	Award Date	Total Value (\$ in millions)	Purpose
SpaceX	Aug. 2006	\$396.0	<i>Commercial Orbital Transportation Services</i> <ul style="list-style-type: none"> To facilitate U.S. private industry demonstration of cargo and crew space transportation capabilities with the goal of achieving safe, reliable, cost effective access to low-Earth orbit.
Orbital	Feb. 2008	288.0	
Rocketplane Kistler	Aug. 2006	32.1	
Sierra Nevada	Feb. 2010	20.0	<i>Commercial Crew Development Round 1 (CCDev1)</i> <ul style="list-style-type: none"> To provide funding to assist viable commercial entities in the development of system concepts, key technologies, and capabilities that could ultimately be used in commercial crew human space transportation systems
Boeing	Feb. 2010	18.0	
United Launch Alliance	Feb. 2010	6.7	
Blue Origin	Feb. 2010	3.7	
Paragon	Feb. 2010	1.4	
Boeing	Apr. 2011	112.9	<i>Commercial Crew Development Round 2 (CCDev2)</i> <ul style="list-style-type: none"> To continue development from CCDev1, ending in Preliminary Design Reviews
Sierra Nevada	Apr. 2011	105.6	
SpaceX	Apr. 2011	75.0	
Blue Origin	Apr. 2011	22.0	
Boeing	Aug. 2012	480.0	<i>Commercial Crew Integrated Capability (CCiCap)</i> <ul style="list-style-type: none"> To mature the design and development of transportation systems for spacecraft, launch vehicles, and ground and mission systems to achieve a company-defined Critical Design review
SpaceX	Aug. 2012	460.0	
Sierra Nevada	Aug. 2012	227.5	
Total		\$2,248.9	

Source: NASA OIG presentation of Program information.

Although the Space Act does not explicitly prohibit NASA from using its “other transactions” authority to acquire goods or services, the Agency has taken the position that the Federal Grant and Cooperative Agreement Act of 1977 and other Federal laws and regulations require the use of contracts when the purpose of an agreement is to purchase goods or services intended for the direct benefit of NASA.²² Accordingly, in NASA’s commercial cargo program the Agency used funded SAAs to stimulate commercial development efforts while simultaneously using FAR-based contracts to acquire resupply missions to the ISS. Similarly, in the Commercial Crew Program

²² The Federal Grant and Cooperative Agreement Act of 1977, 31 U.S. Code § 6303 (1977) states “An executive agency shall use a procurement contract as the legal instrument reflecting a relationship between the United States Government and a State, a local government, or other recipient when – (1) the principal purpose of the instrument is to acquire (by purchase, lease, or barter) property or services for the direct benefit or use of the United States Government; or (2) the agency decides in a specific instance that the use of a procurement contract is appropriate.”

NASA began development efforts using SAAs to nurture commercial capabilities, entered into FAR-based contracts as it moved toward certifying vehicles for NASA requirements, and will use additional contracts to procure actual crew transportation missions.

Consistent with this policy and to maintain a clear distinction between SAAs used to develop commercial capabilities and contracts to acquire services, NASA refrained from providing specific guidance about Agency objectives and safety requirements to its commercial crew partners as part of the funded SAAs. For example, none of the 281 technical and safety requirements the Commercial Crew Program identified were included in the crew agreements. Rather, NASA published the requirements 22 months after initiation of the Program in a separate nonbinding document when the partners were well into the design phase of their efforts. In contrast, under a typical FAR-based contract many of these requirements would have been included in solicitation and contract documents. As we have discussed in previous reports, the absence of requirements in funded SAAs increases the risk that spaceflight systems developed pursuant to these agreements may not meet Agency requirements or will require extensive and costly redesign to do so. In a January 2012 report, the Aerospace Safety Advisory Panel made a similar observation.²³

Moreover, omitting specific requirements increases the risk of schedule delays and other inefficiencies. Although the cargo program started initially with general goals, Program officials told us that they later added safety requirements to the SAAs for Orbital and SpaceX to ensure safe flight operations to and from the ISS. However, similar safety requirements were not included in the SAAs for the Commercial Crew Program and this caused confusion. For example, in the early phases of commercial crew development, Boeing designed a spacecraft that did not incorporate astronaut pressure suits during ascent and descent. Although Program officials said requiring pressure suits was NASA's intent all along, Boeing did not receive timely notification of this fact and had to modify its plans to include pressure suits.

According to NASA officials, the Agency chose not to specify requirements for the early phases of the Commercial Crew Program in part to avoid hindering design innovation and slowing development of the domestic commercial spaceflight industry. In addition, NASA's Office of General Counsel advised Program officials against levying specific requirements in SAAs.

²³ The Aerospace Safety Advisory Panel's report stated "The lack of the ability to incorporate firm safety requirements using an SAA procurement exposes NASA to new risks if, at the conclusion of the developmental phase, the proposed designs do not meet minimum safety requirements. In that event, NASA will have to either (1) expend additional time and money having the designs modified and retested or (2) accept the risk associated with flying its astronauts on systems that do not meet the currently articulated minimum safety requirements." Aerospace Safety Advisory Panel, "Annual Report for 2011," January 25, 2012.

We found that in contrast to NASA, the Department of Defense – which has a form of “other transactions” authority – provides more specific guidance to its partners regarding desired end products.²⁴ Often referred to as Program Objectives, Design Concepts, or System Performance Elements, this guidance occupies a middle ground between the type of detailed specifications typically found in traditional contracts and the relatively “hands-off” approach of NASA’s funded SAAs. Specifically, the Department of Defense’s Defense Advanced Research Projects Agency (DARPA) uses its “other transactions” authority to develop prototypes like the Global Hawk, an unmanned aerial vehicle that subsequently transitioned into production under a FAR-based contract. DARPA applied the lessons learned from this program to other prototyping projects by establishing goals for early development and then transitioning to more detailed requirements. DARPA used this approach in working with a private company to develop its Orbital Express spacecraft.²⁵ DARPA’s announcements for proposals include specific objectives and concepts during later phases of development.

In December 2012, NASA awarded its SAA partners FAR-based contracts pursuant to which the Agency will review the partners’ plans and provide feedback regarding NASA certification requirements. However, because the partners had completed much of their spacecraft design work prior to award of these contracts, the partners have expressed concern that NASA’s feedback may not be timely and could cause schedule delays or increased costs if design changes are required to meet the Agency’s needs.²⁶

Allowing program managers to be more specific about program objectives and key safety elements when using funded SAAs to develop space flight technologies would help ensure the money NASA invests in these development projects produces technology that will meet Agency needs and goals. Accordingly, we believe NASA should consider incorporating high-level program objectives and key safety elements when using funded SAAs to develop spaceflight technology.

²⁴ 10 U.S.C. § 2371.

²⁵ Orbital Express was the name for a DARPA prototype project that concluded in 2007 with the demonstration of an unmanned satellite servicing spacecraft and a surrogate next generation satellite.

²⁶ According to Program officials, funding shortfalls led NASA to extend its use of SAAs rather than transitioning fully to FAR-based contract vehicles. NASA’s first acquisition plan for developing the Commercial Crew Program anticipated the use of FAR-based contracts starting in late FY 2012 for the integration phase of development. During integration, NASA expected its partners to progress to a point where their system designs were mature. However, Agency officials said FY 2012 funding was insufficient to execute this plan and, as a result, NASA continued to use funded SAAs to support the companies’ development efforts.

Management Approach for Administering Funded Space Act Agreements is Not Governed by NASA Policy

Although NASA followed a specific set of procedures in managing funded SAAs in its commercial cargo and crew programs, we found little formal guidance relating to the administration of funded agreements in current Agency policy.²⁷ We acknowledge that use of funded SAAs is a relatively new approach for NASA and that space system development efforts using funded SAAs should not be governed by the same strict procedures found in NASA's current acquisition policies; however, in our judgment, developing guidelines would enable more effective administration of funded SAAs.

Lessons learned from the commercial cargo and crew programs offer a starting point for such guidance. For example, codifying the milestone management approach used during commercial spaceflight development would help guide future space projects that utilize funded SAAs.²⁸ Further, requiring the partners to contribute a portion of the funding under a fixed price agreement helped to control Program costs. Additionally, NASA teams embedded at partner facilities, coupled with quarterly program reviews, increased insight into partner activities and helped the Agency evaluate milestone accomplishments.

To date, NASA and its partners have reported no major problems with the milestone management approach. However, the Agency has not codified or explained the approach in the Space Act Agreements Guide or in its procedural requirements, directives, or as best practices. As of March 2014, the Guide simply states “[a]dditional guidance on funded SAAs is under development and will be provided at a later time.”²⁹ Without codifying the current milestone management procedures and other procedures that have worked well for funded SAA programs to date, it will be more challenging for Agency officials to ensure the consistent administration of future development programs that use such agreements.

²⁷ In a previous audit, NASA officials told us that when using SAAs they were not required to follow NASA's policies for managing space system programs and projects, and therefore management tools such as life cycle cost estimates were not required. NASA OIG, “NASA's Management of the Commercial Crew Program” (IG-14-001, November 13, 2013).

²⁸ For both the commercial cargo and crew programs, NASA managed cost, schedule, and performance goals using a unique milestone approach. Specifically, NASA and the partners agreed to a series of developmental milestones that tie payments to satisfactory completion of such events as design reviews, subsystem testing, and safety and certification reviews. As opposed to a traditional FAR-based contract in which NASA dictates the detailed requirements a company must meet, these milestones and criteria were tailored by the individual companies and negotiated with NASA. The agreed-upon payments are for a fixed price, which by design does not cover all costs – the company is expected to contribute its own funding, to include any potential cost over-runs.

²⁹ NASA Advisory Implementing Instruction (NAII) 1050-1C, “Space Act Agreements Guide,” February 25, 2013.

Conclusion

Throughout its history, SAAs have provided NASA a valuable means to advance science and technology and to stimulate research in aeronautics and spaceflight. In recent years, NASA has turned to SAAs to stimulate the private sector to develop spaceflight systems for cargo and crew and to help offset the cost of maintaining underutilized facilities following the end of the Space Shuttle Program.

However, unlike traditional government contracts, grants, or cooperative agreements, SAAs are not subject to the FAR or other Federal laws and regulations intended to ensure that costs are allowable and prices fair and reasonable. Accordingly, NASA's use of SAAs has the potential to result in fewer overall protections for the Agency as well as decreased transparency and accountability regarding how the Agency is using taxpayer funds.

We believe NASA could better ensure equal access to its facilities and capabilities and potentially increase the number of parties interested in entering into SAAs by expanding its efforts to advertise or solicit interest in its facilities and resources. In addition, NASA needs to improve its internal controls over SAAs to identify costs incurred and benefits derived from nonreimbursable SAAs, agree on a clear and consistent understanding regarding when it is appropriate to use SAAs versus other types of lease agreements and the manner in which reimbursable and nonreimbursable SAAs must align with Agency missions, and develop the ability to separate proceeds from reimbursable SAAs from those derived from other types of reimbursable agreements. We also believe NASA could promote better outcomes when using funded SAAs to develop new space technologies if it addressed high-level program objectives and key safety elements in the agreements. Finally, NASA should codify the milestone management procedures it used for its cargo and crew development efforts to ensure consistent administration of future development programs that use funded SAAs.

Recommendations, Management's Response, and Evaluation of Management's Response

In order to increase transparency, accountability, and oversight of NASA's use of SAAs, we recommended NASA's Associate Administrator for Mission Support do the following:

Recommendation 1. Establish policy and procedures to increase awareness of NASA's capabilities, expertise, and facilities for SAA opportunities.

Management's Response. The Associate Administrator concurred with our recommendation, stating that NASA will establish more explicit policy and procedural guidance by March 2015.

Evaluation of Management's Response. Management's comments are responsive; therefore, the recommendation is resolved and will be closed upon verification and completion of the proposed corrective actions.

Recommendation 2. Revise Agency policies to clarify when it is appropriate to use SAAs versus other types of lease agreements and the manner in which the agreements must align to NASA missions.

Management's Response. The Associate Administrator concurred with our recommendation, stating that NASA will establish guidance by September 2015.

Evaluation of Management's Response. Management's comments are responsive; therefore, the recommendation is resolved and will be closed upon verification and completion of the proposed corrective actions.

Recommendation 3. Establish a close-out process or similar mechanism to track the costs and benefits of nonreimbursable SAAs. At a minimum, the process should capture (a) overall costs to the Agency; (b) whether the SAA's stated goals or objectives were accomplished, including an assessment of the overall performance of the partner; and (c) how the benefits were applied or utilized.

Management's Response. The Associate Administrator partially concurred with our recommendation, stating that NASA will establish a closeout process by March 2015. However, he indicated the planned process would not capture overall costs to the Agency for particular nonreimbursable agreements.

Evaluation of Management's Response. Management's comments are responsive; therefore, the recommendation is resolved and will be closed upon verification and completion of the proposed corrective actions. However, while we support NASA's efforts to develop a close-out process for nonreimbursable SAAs, we encourage the Agency to continue to work toward incorporating overall costs in the future. In the interim, NASA should consider including the estimated costs it plans to develop in response to recommendation 5 below.

In addition, we recommended NASA's Chief Financial Officer do the following:

Recommendation 4. Complete and implement the Reimbursable Process Team's recommendations to improve the reimbursable process and correct NASA's current inability to combine financial and nonfinancial information in the Agency's accounting system.

Management's Response. Responding for the Chief Financial Officer, the Associate Administrator concurred with our recommendation, stating that NASA has developed and is implementing a reimbursable reporting process that links financial and nonfinancial data. He expects the process to be fully implemented by September 2015.

Evaluation of Management's Response. Management's comments are responsive; therefore, the recommendation is resolved and will be closed upon verification and completion of the proposed corrective actions.

Recommendation 5. Establish policy and procedures to account for the costs of NASA's nonreimbursable SAAs.

Management's Response. The Associate Administrator partially concurred with our recommendation, stating that NASA's systems are not currently set up to track costs for nonreimbursable activity. Therefore, in lieu of developing a new process to account for the costs, he plans to revise the current process for reviewing nonreimbursable agreements to include the establishment of Estimated Price Reports with annual validations of estimated costs. He expects the process to be fully implemented by September 2015.

Evaluation of Management's Response. Management's comments are responsive; therefore, the recommendation is resolved and will be closed upon verification and completion of the proposed corrective actions. However, while we support NASA's efforts to estimate the costs of nonreimbursable SAAs, we encourage the Agency to continue to work toward developing a process to fully account for the costs in the future.

We also recommended NASA's Associate Administrator for the Human Exploration and Operations Mission Directorate do the following:

Recommendation 6. Consider identifying and including high-level program objectives and key safety elements in future Announcement for Proposals when using funded SAAs to develop spaceflight capabilities.

Management's Response. Responding for the Associate Administrator for the Human Exploration and Operations, the Associate Administrator for Mission Support concurred with our recommendation, stating that NASA will include objectives and elements in future agreements as appropriate and document the decisions in Agency acquisition strategy milestones.

Evaluation of Management's Response. Management's comments are responsive; therefore, the recommendation is resolved and will be closed upon verification and completion of the proposed corrective actions.

Recommendation 7. Codify the current milestone management procedures used in the commercial cargo and crew programs into a NASA directive, requirements document, or guide.

Management's Response. The Associate Administrator concurred with our recommendation, stating that NASA plans to develop a best practices guide for the management of funded SAAs. He expects the guide to be complete by June 2015.

Evaluation of Management's Response. Management's comments are responsive; therefore, the recommendation is resolved and will be closed upon verification and completion of the proposed corrective actions.

Scope and Methodology

We performed this audit from February 2013 through June 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We reviewed Federal and NASA policies, regulations, and instructions to determine the requirements and criteria for entering into and executing SAAs. The documents we reviewed include “National Aeronautics and Space Act,” Title 51 United States Code § 20113, December 18, 2010; “Commercial Space Launch Activities of 2010,” Title 51 United States Code § 50901 et seq., December 18, 2010; “Economy Act,” Title 31 United States Code § 1535, February 14, 1984; NASA Policy Directive 1050.1I “Authority to Enter into Space Act Agreements,” December 23, 2008; NASA Advisory Implementing Instruction 1050-1A “Space Act Guide,” August 15, 2008; and NASA Procedural Requirements 9090.1A “Reimbursable Agreements,” February 25, 2013.

To gain a general understanding of the execution and management of SAAs we interviewed officials from NASA’s Mission Support Directorate, Office of the General Counsel, OCFO, and Office of International and Interagency Relations. We also interviewed agreement managers and other officials responsible for executing SAAs at all 10 NASA Centers and the NASA Shared Services Center.

We relied on SAA data provided by NASA from the Agency’s SAAM and SIERA systems for the period FYs 2008 through 2012. We used the data to identify and examine trends in the Agency’s use of SAAs over the 5-year period. We also used the data to identify a universe of SAAs and to select a sample of agreements for our review.

We judgmentally selected a sample of 155 SAAs NASA entered into between FYs 2008 and 2012. The sample included 101 reimbursable SAAs, 48 nonreimbursable SAAs, and 6 international SAAs that were signed at Headquarters and 10 Centers – Ames, Armstrong, Glenn, Goddard, Jet Propulsion Laboratory, Johnson, Kennedy, Langley, Marshall, and Stennis. We distributed questionnaires to Headquarters and the Centers to obtain information on the SAA’s formulation, accounting, and relationships to NASA’s missions. For reimbursable SAAs, we used the information provided to determine if the Agency is recovering full cost for the work that was performed. For nonreimbursable SAAs, we examined how the Agency accounts for their costs and benefits. For both types of agreements, we assessed how the Agency creates awareness of opportunities to participate, and how the agreements relate to NASA’s missions.

For Funded SAAs, we partially relied on interviews and analyses we conducted during previous audits on NASA's Commercial Cargo and Crew Programs. We also conducted additional follow-up interviews, reviews of applicable documents, and legal reviews provided by the OIG Counsel. Moreover, to ensure that NASA's Office of General Counsel's views were fully understood, we conducted several meeting sessions and fully considered the documents they submitted for consideration.

Use of Computer-Processed Data. To identify our audit universe, we used computer-processed data from the SAAM and SIERA systems. We obtained the data for the period of October 2007 through September 2012. We did not validate the accuracy of the data in the systems, and the data is only as accurate as that entered by the agreement managers.

Review of Internal Controls

We reviewed and evaluated the internal controls associated with the execution and management of SAAs. The control weaknesses we identified are discussed in the Results section of this report. Our recommendations, if implemented, will correct the identified control weaknesses.

Prior Coverage

During the last 12 years, NASA OIG, the GAO, the Congressional Research Service, and the RAND Corporation have issued seven reports of particular relevance to the subject of this report. Unrestricted reports can be accessed over the Internet at <http://oig.nasa.gov/> (NASA OIG), <http://www.gao.gov> (GAO), <http://www.crs.gov> (Congressional Research Service), and <http://www.rand.org> (RAND).

NASA Office of Inspector General

“NASA's Management of the Commercial Crew Program” (IG-14-001, November 13, 2013)

“Commercial Cargo: NASA's Management of Commercial Orbital Transportation Services and ISS Commercial Resupply Contracts” (IG-13-016, June 13, 2013)

Government Accountability Office

“Key controls NASA Employs to Guide Use and Management of Funded Space Act Agreements Are Generally Sufficient, but Some Could Be Strengthened and Clarified” (GAO-12-230R, November 17, 2011)

“Reimbursable Space Act Agreements: NASA Generally Adhering to Fair Reimbursement Controls, but Guidance on Waived Cost Justifications Needs Refinement” (GAO-11-553R, May 26, 2011)

“Training Necessary to Address Data Reliability Issues in NASA Agreement Database and to Minimize Potential Competition with Commercial Sector” (GAO-11-552R, May 26, 2011)

Congressional Research Service

“Other Transaction Authority” (July 15, 2011)

RAND Corporation

“Assessing the Use of “Other Transactions” Authority for Prototype Projects” (2002)

MANAGEMENT COMMENTS

National Aeronautics and Space Administration
Headquarters
Washington, DC 20546-0001



MAY 29 2014

Reply to Attn of: Mission Support Directorate

TO: Assistant Inspector General for Audits
FROM: Associate Administrator for Mission Support
SUBJECT: Response to OIG Draft Report, "Audit of NASA's Use of Space Act Agreements" (Assignment A-13-007-00)

The Mission Support Directorate (MSD) appreciates the opportunity to review your draft report entitled "Audit of NASA's Use of Space Act Agreements" (Assignment A-13-007-00), dated May 2, 2014.

In the report the OIG makes seven recommendations intended to increase transparency, accountability, and oversight of Space Act Agreements (SAAs). Specifically, the OIG makes three recommendations addressed to the Associate Administrator for Mission Support, two recommendations addressed to the Chief Financial Officer, and two recommendations addressed to the Associate Administrator for Human Exploration and Operations. NASA's response to the recommendations, including planned corrective actions, follows:

The OIG recommends that the Associate Administrator for Mission Support:

Recommendation 1: Establish policy and procedures to increase awareness of NASA's capabilities, expertise, and facilities for SAA opportunities.

Management's Response: Concur. As mentioned in the draft audit report, NASA's *Space Act Agreements Guide* (SAAG) stresses the importance of providing outside parties with equal access to NASA's capabilities, expertise, and facilities. MSD will coordinate with the Centers, Headquarters (HQ) stakeholder offices, and the NASA Partnership Council to re-emphasize this important consideration through more explicit policy and procedural guidance as necessary. We will also stress this important consideration and facilitate the sharing of best practices on this topic through the Agency's various partnerships discussion and training forums. Specifically, we will ensure that this topic is addressed through the Agency's Partnership Agreements Community of Practice (PACoP) forums, including the PACoP annual meeting which was conducted at NASA Headquarters May 20-21, 2014, as well as to the Agency legal community

through guidance provided by the Office of General Counsel. Estimated completion date: March 30, 2015.

Recommendation 2: Revise Agency policies to clarify when it is appropriate to use SAAs versus other types of lease agreements and the manner in which the agreements must align to NASA missions.

Management's Response: Concur. We will incorporate into existing policy guidance (e.g., the SAAG) or establish new guidance to clarify when it is appropriate to use SAAs and the manner in which the agreements must align to NASA missions. We anticipate that such guidance will be implemented by September 30, 2015.

Recommendation 3: Establish a close-out process or similar mechanism to track the costs and benefits of non-reimbursable SAAs. At a minimum, the process should capture: (a) overall costs to the Agency, (b) whether the SAA's stated goals or objectives were accomplished, including an assessment of the overall performance of the partner; (c) how the benefits were applied or utilized.

Management's Response: Partially concur. MSD will work with the Agency partnerships community and stakeholder offices to establish a close-out process for non-reimbursable agreements. The process to be created will be able to capture whether the agreement's stated goals or objectives were accomplished, and how the benefits were applied or utilized and the overall performance of the partner. However, it will not be possible to fully capture actual overall costs to the Agency for a particular agreement for the reasons explained in the response to recommendation five below. We anticipate that the closeout process will be implemented by March 31, 2015.

The OIG recommends that the Chief Financial Officer (CFO):

Recommendation 4: Complete and implement the Reimbursable Process Team's recommendations to improve the reimbursable process and correct NASA's current inability to combine financial and nonfinancial information in the Agency's accounting system.

Management's Response: Concur. Over the last year NASA has improved its reimbursable agreement tracking by developing a reimbursable reporting process which began implementation in March 2014. This reporting process includes the linking of financial and nonfinancial data using the Agency's reporting system. The reporting process is expected to be fully implemented by September 30, 2015.

Recommendation 5: Establish policy and procedures to the account for the costs of NASA's non-reimbursable SAAs.

Management's Response: Partially concur. NASA's systems are not currently set up to track costs for non-reimbursable activity as proposed by OIG. While these costs are subsumed and managed within overall project budgets, NASA appreciates that there is significant interest in the non-reimbursable activities. Given the complexity and variety of these arrangements, specific data on non-reimbursable activities has not been systematically or consistently captured. Accordingly, NASA will revise its processes for reviewing non-reimbursable arrangements by extending the existing requirement for formal Estimated Price Reports (EPRs) and Center CFO approval to non-reimbursable agreements. Additionally, an annual revalidation of these cost estimates will be required. These improvements will be fully implemented by September 30, 2015.

The OIG recommends that the Associate Administrator for the Human Exploration and Operations Mission Directorate (HEOMD):

Recommendation 6: Consider identifying and including high-level program objectives and key safety elements in future Announcements for Proposals when using funded SAAs to develop spaceflight capabilities.

Management's Response: Concur. HEOMD will consider identifying high-level program objectives and key safety elements in future Announcements for Proposals where appropriate. Specifics regarding whether to include program objectives and key safety elements will be driven by the overall purpose of the future Agreements and decisions will be documented in Agency acquisition strategy milestones.

Recommendation 7: Codify the current milestone management procedures used in the commercial cargo and crew programs into a NASA directive, requirements document, or guide.

Management's Response: Concur. NASA agrees that the milestone procedures used in the Commercial Orbital Transportation Services (COTS) project and the Commercial Crew Program (CCP) are a valuable management tool when implementing funded Space Act Agreements. However, SAAs provide an extremely flexible partnership tool that could be negatively impacted by mandating specific procedures where not appropriate. Thus, the HEOMD Commercial Spaceflight Development Division is planning to develop a Best Practices Guide for the management of funded Space Act Agreements, based on our experiences with COTS and CCP and will discuss the milestone procedures used by those programs, as well as other best practices. The Guide will be available for future NASA programs using funded Space Act Agreements. The Guide should be completed in approximately 12 months and we believe this meets the intent of the OIG recommendation.

We have reviewed the draft report for information that we believe should not be publicly released, and have not identified any concerns regarding public release of the draft report.

Again, thank you for the opportunity to review and comment on the subject draft report. If you have any questions or require additional information regarding this response, please contact Joe Kroener, Mission Support Directorate Partnership Office, at (202) 358-2558.



Richard J. Keegan, Jr.

cc:

Chief Financial Officer/Dr. Robinson

Associate Administrator for Human Exploration and Operations Mission Directorate/Mr. Gerstenmaier

General Counsel/Mr. Wholley

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