GAO
Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

May 26, 2011

Congressional Requesters

Subject: *Reimbursable Space Act Agreements: NASA Generally Adhering to Fair Reimbursement Controls, but Guidance on Waived Cost Justifications Needs Refinement*

Over the last few years, the National Aeronautics and Space Administration (NASA) has increasingly relied on its authority under the Space Act of 1958 to enter into agreements, commonly referred to as Space Act agreements (SAA), to stimulate private sector development of systems capable of transporting cargo and crew to the International Space Station and to assist partner firms in developing their technologies.[1] Reimbursable Space Act agreements involve the use of NASA's facilities, personnel, or equipment primarily for the benefit of the agreement partner. NASA undertakes reimbursable work when it has unique goods, services, or facilities which can be made available to another party in a manner that does not interfere with NASA mission requirements and is consistent with the agency's mission. According to NASA guidance, the agency generally collects full reimbursement for costs associated with a reimbursable agreement. These types of agreements are known as fully reimbursable SAAs. However, NASA can accept less than full reimbursement in certain instances, such as when the reimbursement is fair and reasonable when compared to the benefits NASA receives from the work. When NASA waives costs under a reimbursable SAA, NASA guidance refers to this as a partially reimbursable SAA. At the time of our review, NASA had established internal controls to help ensure it is obtaining fair reimbursement under these agreements and partners' activities do not interfere and are in alignment with the agency's mission. These controls included developing a cost estimate, obtaining required approvals from financial and legal officials, documenting the rationale for waiving costs, inserting a non-interference clause in all agreements, and describing in the purpose section of each fully reimbursable agreement how the work to be performed aligns with NASA's mission.

In response to your request, we reviewed reimbursable agreements to identify the internal controls NASA has in place and assess the extent to which the agency is adhering to its controls related to 1) fair reimbursement from agreement partners and 2) ensuring partner use is consistent with NASA's mission and reimbursable Space

[1]The National Aeronautics and Space Act of 1958, Pub. L. No. 85-568.

Act agreements do not interfere with NASA's use of its facilities.[2] We provided your offices a draft copy of the enclosed briefing on April 26, 2011. This letter formally transmits the detailed briefing slides (see encl. I) prepared in response to your request.

Scope and Methodology

To identify controls in place and assess the extent to which NASA is adhering to controls related to fair reimbursement, we analyzed all 44 partially reimbursable agreements awarded in fiscal years 2009 and 2010 as identified in the Space Act Agreement Maker (SAAM) database, including the agreement, estimated price report, and justification for waived costs. These agreements were located at five NASA centers (Glenn, Johnson, Kennedy, Langley, and Marshall). We reviewed estimated price reports for each partially reimbursable agreement, but did not validate the inputs to the cost estimate, including labor and indirect cost rates. To identify controls in place and assess the extent to which NASA is adhering to controls to help ensure alignment with NASA's mission and to minimize interference, we reviewed laws and strategic planning documents and analyzed all 34 fully reimbursable agreements awarded in fiscal year 2010 that involved the use of facilities at three NASA centers (Ames, Glenn, Marshall) and one test facility (White Sands Test Facility) as identified in the SAAM database. These centers and test facility were selected because they accounted for the highest dollar value for this type of agreement. For both objectives, we also reviewed NASA policies and procedures for reimbursable SAAs, conducted site visits to three NASA centers, and interviewed NASA officials. Additional information on our scope and methodology is provided on pages 8 to 10 of the enclosed briefing slides.

We conducted this performance audit from July 2010 to May 2011 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.

Summary

At the time of our review, NASA had requirements and controls in place related to fair reimbursement on Space Act agreements and was generally adhering to those controls. Unclear guidance in place at the time of our review, however, may have contributed to variation in the level of detail and format for waived cost rationales. In December 2010, NASA published an interim directive that increased oversight and provided additional guidance for determining when it is appropriate to waive costs. Partner activities appear to be consistent with NASA's mission and NASA is adhering

[2]As part of this review, we identified two other issues that were not directly related to our audit objectives and have included a discussion of those issues in a separate management letter to NASA. See GAO, *Training Necessary to Address Data Reliability Issues in NASA Agreement Database and to Minimize Potential Competition with Commercial Sector*, GAO-11-552R (Washington, D.C.: May 26, 2011).

to its internal controls to prevent interference with NASA's mission activities. Several other factors, such as a small amount of partner work at top utilized facilities and relatively open schedules to accommodate partner work at most facilities we reviewed, also help to ensure that Space Act agreement activities do not interfere with NASA work.

Although NASA is generally adhering to its requirements and internal controls regarding fair reimbursement, alignment with NASA's mission, and preventing interference, the policy in place at the time of our review and the interim directive do not specify the type of information to include in the waived cost rationale or justification. In the current fiscal environment, it is important to fully and consistently document the rationale for waiving costs associated with work for NASA partners. This could help the agency ensure, in all cases, that waiving costs is fair and reasonable when compared to the benefits NASA is receiving. Although the existing mission and interference controls appear to be effective under the current state of demand placed on NASA facilities, should the level of demand materially change, NASA may have to re-evaluate its approach to managing partners' use of its facilities. We are recommending that the Administrator of NASA refine the agency's interim directive to clearly define the type of information that is required to support the waived cost rationale or justification. This type of information may include documenting that there is a clear and demonstrated benefit to NASA and quantifying the benefit to the extent practicable.

Agency Comments

We provided a copy of the draft report to the National Aeronautics and Space Administration for comment and the agency agreed with our overall findings and concurred with our recommendation. In its comments, the agency stated that it is in the process of reviewing procedural requirements, including refining reporting requirements to better support the rationale or justification for waived costs in the estimated price reports. The agency also provided technical comments which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees. We are also sending a copy to the NASA Administrator. This report will also be available at no charge on the GAO Web site at http://www.gao.gov. Should you or your staff have any questions concerning this report, please contact me at (202) 512-4841 or chaplainc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report.

Key contributors to this report include Shelby S. Oakley, Assistant Director; Jeffrey Hartnett; Morgan Delaney Ramaker; Laura Greifner; Jean McSween; Megan Porter; Andrew Redd; Swati Thomas; and Alyssa Weir.

Cristina T. Chaplain
Director
Acquisition and Sourcing Management

Enclosures-2

The Honorable Kay Bailey Hutchison
Ranking Member
Committee on Commerce, Science, and Transportation
U.S. Senate

The Honorable Bill Nelson
Chairman
Subcommittee on Science and Space
Committee on Commerce, Science, and Transportation
U.S. Senate

The Honorable Ralph M. Hall
Chairman
The Honorable Eddie Bernice Johnson
Ranking Member
Committee on Science, Space, and Technology
House of Representatives


GAO
Accountability • Integrity • Reliability
Reimbursable Space Act Agreements: NASA Generally Adhering to Fair Reimbursement Controls, but Guidance on Waived Cost Justifications Needs Refinement
Briefing to Congressional Committees
May 26, 2011
For more information, contact Cristina Chaplain; 202-512-4841; chaplainc@gao.gov
Page 1


GAO
Accountability * Integrity * Reliability
Contents
• Introduction
• Reporting Objectives
• Background
• Scope and Methodology
• Summary
• Objective 1 – Fair Reimbursement
• Objective 2 – Mission and Interference
• Conclusions
• Recommendations for Executive Action
Page 2

Introduction

- Over the last few years, the National Aeronautics and Space Administration (NASA) has increasingly relied on its authority under the Space Act of 1958 to enter into agreements, commonly referred to as Space Act agreements (SAA), to stimulate private sector development of systems capable of transporting cargo and crew to the International Space Station and to assist partner firms in developing their technologies.[1]
- Reimbursable Space Act agreements involve the use of NASA's facilities, personnel, or equipment primarily for the benefit of the agreement partner. NASA undertakes reimbursable work when it has unique goods, services, or facilities which can be made available to another party in a manner that does not interfere with NASA mission requirements and is consistent with the agency's mission.
- Agreement partners are usually required to reimburse NASA for the full cost of these services. However, NASA can accept less than full reimbursement in certain instances, such as when the reimbursement is fair and reasonable when compared to the benefits NASA receives from the work.
- NASA has established internal controls to help ensure it is obtaining fair reimbursement under these agreements and partners' activities do not interfere and are in alignment with the agency's mission.

[1] The National Aeronautics and Space Act of 1958, Pub. L. No. 85-568.

Page 3


GAO
Accountability * Integrity * Reliability
Reporting Objectives
• We were asked to review reimbursable Space Act agreements to identify the internal controls NASA has in place and the extent to which the agency is adhering to its controls related to:
1) Fair reimbursement from agreement partners and
2) Ensuring partner use is consistent with NASA's mission and reimbursable SAAs do not interfere with NASA's use of its facilities
Page 4

Background

- NASA was given authority to enter into other transactions, commonly referred to as Space Act agreements, through the National Aeronautics and Space Act of 1958
- One type of SAA is a reimbursable agreement[2]
  - Reimbursable agreements-NASA's costs associated with the undertaking are reimbursed by the agreement partner
- As outlined in NASA policy,[3] NASA may undertake reimbursable agreements when it has unique goods, services, or facilities not being fully utilized to meet mission needs, which can be made available to others in a manner that does not interfere and is consistent with NASA mission requirements.
- NASA has generally benefited from the work conducted under reimbursable SAAs as these agreements can provide useful programmatic knowledge and data for research and they help maximize the use of underutilized facilities and staff.

[2]There are two other types of SAAs that are not included in our review. Funded SAAs are those under which appropriated funds are transferred to an agreement partner to accomplish an Agency mission. Non-reimbursable SAAs involve NASA and one or more partners in a mutually beneficial activity that furthers NASA's mission, where each party bears the cost of its participation and there is no exchange of funds between the parties.

[3]NASA Policy Directive 1050.1I "Authority to Enter into Space Act Agreements" (2008).

Page 5

GAO
Accountability * Integrity * Reliability

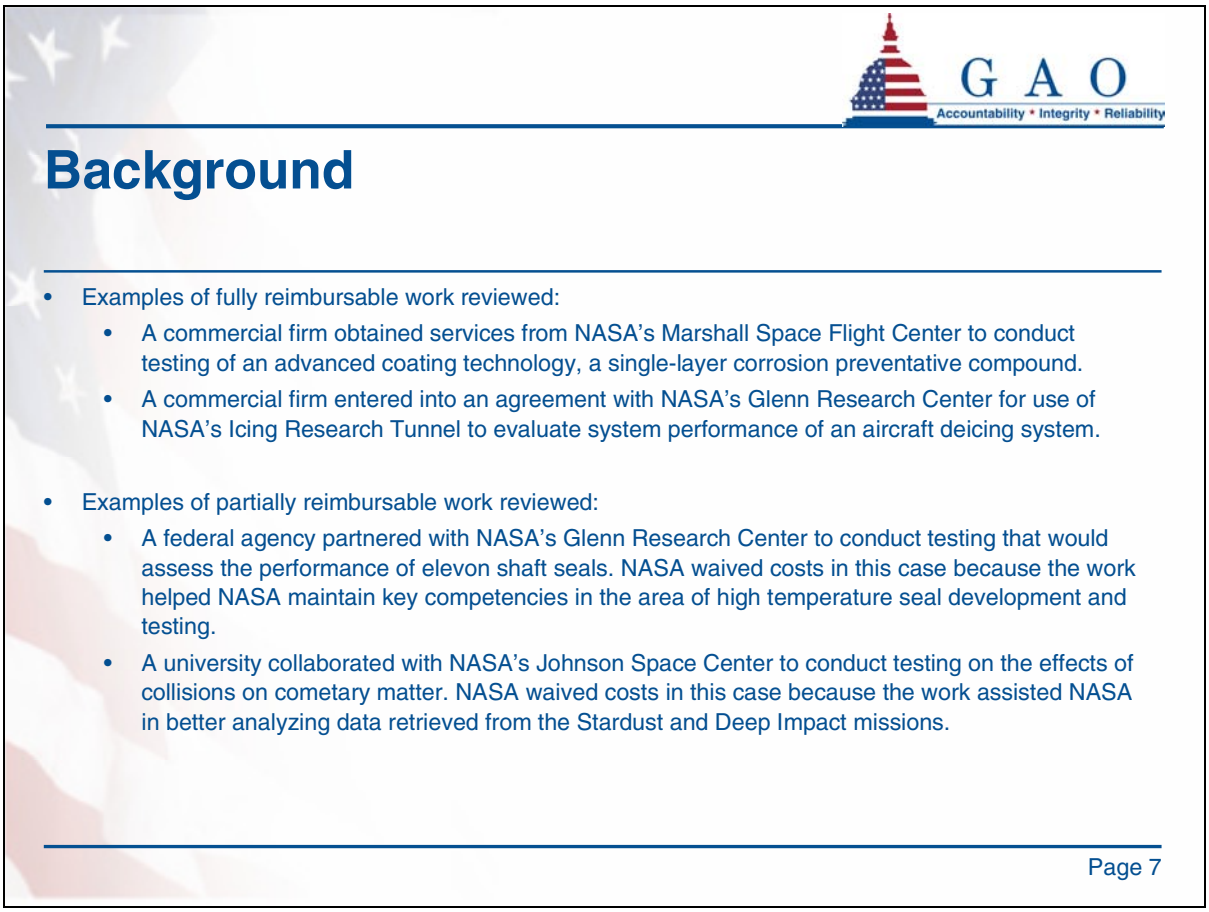
Background

- According to NASA guidance, the agency generally collects full reimbursement for costs associated with a reimbursable agreement. These types of agreements are known as fully reimbursable SAAs. NASA can accept less than full reimbursement when required by statute, NASA's market pricing policies are applicable,[4] or if the reimbursement is fair and reasonable when compared to the benefits NASA receives from the work. When NASA waives costs under a reimbursable SAA, NASA guidance refers to this as a partially reimbursable SAA.
- NASA has delegated the authority to enter into reimbursable agreements to its centers. Centers are able to waive either direct or indirect costs.
  - Direct costs include civil service salaries and benefits for employees who work directly on the project, and travel and material directly related to the reimbursable project.
  - Indirect costs are costs that are not specifically identifiable with any specific project; these include personnel, travel, materials, and other goods and services necessary to manage and operate the center (i.e., overhead costs). Overhead costs are calculated by multiplying direct costs by an established rate.[5]
- Centers have different approaches to waiving direct and indirect costs.
  - For example, Glenn Research Center generally only waives direct costs. Langley Research Center waives overhead costs associated with waived direct costs.

[4] Under certain circumstances, the NASA pricing policy requires the agency to charge market rates which are based on a market survey.

[5] Our review did not include an evaluation of the methods used by NASA to determine the established rate.

Page 6


GAO
Accountability • Integrity • Reliability
Background
• Examples of fully reimbursable work reviewed:
• A commercial firm obtained services from NASA's Marshall Space Flight Center to conduct testing of an advanced coating technology, a single-layer corrosion preventative compound.
• A commercial firm entered into an agreement with NASA's Glenn Research Center for use of NASA's Icing Research Tunnel to evaluate system performance of an aircraft deicing system.
• Examples of partially reimbursable work reviewed:
• A federal agency partnered with NASA's Glenn Research Center to conduct testing that would assess the performance of elevon shaft seals. NASA waived costs in this case because the work helped NASA maintain key competencies in the area of high temperature seal development and testing.
• A university collaborated with NASA's Johnson Space Center to conduct testing on the effects of collisions on cometary matter. NASA waived costs in this case because the work assisted NASA in better analyzing data retrieved from the Stardust and Deep Impact missions.
Page 7

GAO
Accountability * Integrity * Reliability

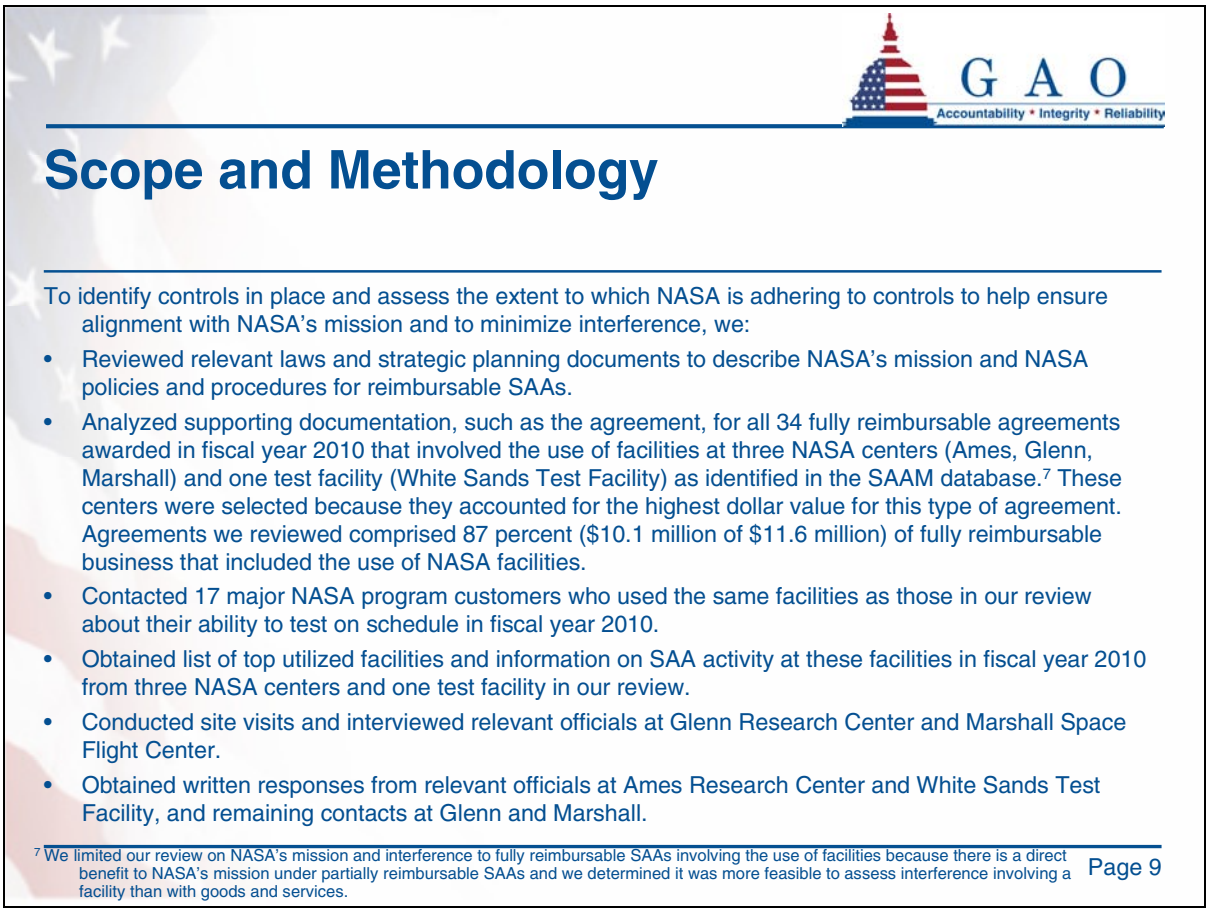
Scope and Methodology

To identify controls in place and assess the extent to which NASA is adhering to controls related to fair reimbursement, we:

- Reviewed NASA policies and procedures for reimbursable SAAs.
- Analyzed supporting documentation for all 44 partially reimbursable agreements awarded in fiscal years 2009 and 2010 as identified in the Space Act Agreement Maker (SAAM) database, including the agreement, estimated price report, and justification for waived costs.[6] These agreements were located at five NASA centers (Glenn, Johnson, Kennedy, Langley, and Marshall). We reviewed estimated price reports for each partially reimbursable agreement, but did not validate the inputs to the cost estimate, including labor and indirect cost rates.
- Conducted site visits and interviewed relevant officials at Marshall Space Flight Center, Glenn Research Center, and Johnson Space Center. We held teleconferences with relevant officials at Kennedy Space Center and obtained written responses from officials at Langley Research Center.
- Conducted analysis based on the data collected in our review to determine the total amount of waived costs, type of work conducted, and type of agreement partner.
- Collected data from centers in our review regarding fiscal year 2010 total reimbursable awards and center budgets.

[6] We limited our review on fair reimbursement to partially reimbursable SAAs because we determined that agreements involving waived costs represented the greatest risk to NASA obtaining fair reimbursement.

Page 8


GAO
Accountability • Integrity • Reliability
Scope and Methodology
To identify controls in place and assess the extent to which NASA is adhering to controls to help ensure alignment with NASA's mission and to minimize interference, we:
• Reviewed relevant laws and strategic planning documents to describe NASA's mission and NASA policies and procedures for reimbursable SAAs.
• Analyzed supporting documentation, such as the agreement, for all 34 fully reimbursable agreements awarded in fiscal year 2010 that involved the use of facilities at three NASA centers (Ames, Glenn, Marshall) and one test facility (White Sands Test Facility) as identified in the SAAM database.[7] These centers were selected because they accounted for the highest dollar value for this type of agreement. Agreements we reviewed comprised 87 percent ($10.1 million of $11.6 million) of fully reimbursable business that included the use of NASA facilities.
• Contacted 17 major NASA program customers who used the same facilities as those in our review about their ability to test on schedule in fiscal year 2010.
• Obtained list of top utilized facilities and information on SAA activity at these facilities in fiscal year 2010 from three NASA centers and one test facility in our review.
• Conducted site visits and interviewed relevant officials at Glenn Research Center and Marshall Space Flight Center.
• Obtained written responses from relevant officials at Ames Research Center and White Sands Test Facility, and remaining contacts at Glenn and Marshall.
[7] We limited our review on NASA's mission and interference to fully reimbursable SAAs involving the use of facilities because there is a direct benefit to NASA's mission under partially reimbursable SAAs and we determined it was more feasible to assess interference involving a facility than with goods and services.
Page 9

Scope and Methodology

- We assessed the reliability of the SAAM database by (1) performing electronic testing of required data elements, (2) reviewing existing information about the data and the system that produced them, and (3) interviewing agency officials knowledgeable about the data. We determined that the data were sufficiently reliable for the purposes of this report.
- Additional data on the 78 agreements we reviewed can be found on pages 39 to 49.
- We conducted this performance audit from July 2010 to May 2011 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.

Page 10

GAO
Accountability * Integrity * Reliability

Scope and Methodology

Table 1: Total and Waived Costs for Partially Reimbursable Agreements Awarded in FY 2009 and 2010

Center[a]	Total full cost	Total waived costs[b]	Total waived-direct	Total waived-indirect	Waived as percentage of total
Glenn Research Center (11)	$3,579,559	$1,011,515	$921,850	$89,665	28%
Johnson Space Center (5)	$1,319,078	$228,792	$107,945	$120,847	17%
Kennedy Space Center (1)	$209,777	$25,277	$0	$25,277	12%
Langley Research Center (23)	$27,193,464	$15,614,089	$13,152,388	$2,461,701	57%
Marshall Space Flight Center (4)	$2,117,478	$1,035,978	$915,014	$120,964	49%
Total (44)	**$34,419,356**	**$17,915,651**	**$15,097,197**	**$2,818,454**	**52%**

Source: GAO analysis based on NASA data.

[a]There were 44 partially reimbursable Space Act agreements awarded in total. The number in parentheses represents the number of agreements we reviewed at each NASA center.

[b]Total waived costs include those instances where NASA agreed to share costs with the agreement partner.

Page 11

GAO
Accountability • Integrity • Reliability

Scope and Methodology

Table 2: Fully Reimbursable SAAs Using NASA Facilities Awarded in FY 2010

Center[a]	Reimbursed cost	Percentage of reimbursed cost
Ames Research Center (4)	$2,155,265	19%
Glenn Research Center (14)	$4,304,810	37%
Marshall Space Flight Center (13)	$1,808,572	16%
White Sands Test Facility (3)	$1,839,500	16%
Remaining Centers and Wallops Flight Facility(14)	$1,509,044	13%
Total (48)	**$11,617,191**	**100%**

Source: GAO analysis based on NASA data.
Note: Percentages do not add to 100 due to rounding.

[a]We reviewed 34 fully reimbursable SAAs involving use of facilities at Ames, Glenn, Marshall, and White Sands-which accounted for 87 percent of the fully reimbursable business involving the use of facilities in FY 2010. We did not include 14 fully reimbursable SAAs involving the use of facilities at other NASA centers and Wallops Flight Facility in our review because of low cumulative dollar value of relevant agreements at these centers.

Page 12


GAO
Accountability • Integrity • Reliability
Summary
Findings:
• NASA has controls in place related to fair reimbursement for SAAs and is generally adhering to those controls.
• Unclear guidance in place at the time of our review may have contributed to variation in the level of detail and format for waived costs.
• Partner activities appear to be consistent with NASA's mission and NASA is adhering to its internal controls to prevent interference.
• Several factors also help to ensure that SAA activities do not interfere with NASA work.
Conclusion:
• NASA is generally adhering to its internal controls regarding fair reimbursement, alignment with NASA's mission, and preventing interference.
• In the current fiscal environment, it is important to fully and consistently document the rationale for waiving costs associated with work for NASA partners to help the agency ensure, in all cases, that waiving costs is fair and reasonable when compared to the benefits NASA is receiving.
• Based on the current state of demand placed on NASA facilities, the agency's internal controls appear to prevent interference while ensuring alignment with its mission. Should the level of demand materially change, NASA may have to re-evaluate its approach to managing partners' use of its facilities.
Recommendations:
• We recommend that NASA refine its policy to clearly define the type of information required to support the rationale or justification for waived costs. This type of information may include documenting that there is a clear and demonstrated benefit to NASA and quantifying the benefit to the extent practicable.
Page 13

GAO
Accountability * Integrity * Reliability

Objective 1-Fair Reimbursement

- **At the time of our review, NASA had controls in place in order to help ensure it received fair reimbursement on SAAs**
  - These controls were based on NASA policies and included:
    1) Estimated Price Reports-included cost estimates that generally identify direct labor, travel, procurement, and overhead costs.[8]
    2) Required approvals-obtained from the Center Chief Financial Officer and legal officials.[9]
    3) Rationale for waived costs.[10]

[8] NASA Procedural Requirements, 9090.1, Section 3.1.2 (Sept. 30, 2008) (superseded by NASA Interim Directive, 9090.1, "Reimbursable Agreements" (Dec. 15, 2010)).
[9] NASA Procedural Requirements, 9090.1, Section 1.2 (2008) (superseded).
[10] NASA Procedural Requirements, 9090.1, Section 1.2.6(i) (2008) (superseded).

Page 14

Objective 1-Fair Reimbursement

- **Most agreements we reviewed generally adhered to the internal controls regarding fair reimbursement, but unclear NASA policy in place at the time of our review may have contributed to variation in the detail and format of waived cost rationales at the centers**
  - An estimated price report was prepared for all agreements.
  - Required approvals were obtained from the Center Chief Financial Officer and legal officials for all agreements.
  - Most of the agreements we reviewed provided documentation for the rationale for waived costs. However, the detail supporting and format for documenting the rationale varied within and among the centers in our review.
- **By adhering to internal controls, NASA helps to ensure all partially reimbursable work was appropriate for the agency to conduct, such as providing a direct benefit to the agency.**

Page 15

Objective 1-Fair Reimbursement

- NASA's procedural requirements that were applicable to agreements in our review state that the Center Chief Financial Officer is required to maintain records of all reimbursable agreements, including estimated costs, waived costs, and the rationale for the waiver.
- The policy in place at the time of our review did not specify the type of information which should be included in the rationale, nor did it define the format for documenting the rationale for waived costs. For example, the estimated price report instructions did not clarify that this information should be included in the estimated price report. This unclear NASA policy may have contributed to variation in the detail and format of waived cost rationales at the centers.

Page 16

Objective 1-Fair Reimbursement

- The detail included in the rationale may have varied based on the format used for documenting the rationale for waived costs.
  - For example, Glenn Research Center uses a memo template which requires an explanation of the benefits the agency will receive and how the work aligns with NASA's best interest.
    - "NASA's Hypersonics Project is interested in turbine-based combined-cycle propulsion systems for access to space application. Furthermore, joint efforts such as this one enable Fundamental Aeronautics Program projects access to system level data critically needed to validate the computational analysis and design tools being developed under the projects."

Page 17

Objective 1-Fair Reimbursement

- Some rationales that were included as part of an estimated price report did not directly explain the rationale for the waiver.
  - For example, one Langley Research Center estimated price report simply stated: NASA's waived costs for this project include civil service salary and benefits, travel, a portion of material costs, plus all direct costs from the 40-hour 14 x 22 wind tunnel test.
  - An estimated price report from Marshall Space Flight Center simply stated: The money that the agreement partner will pay NASA is recovering housing costs for the percentage of non-NASA work that the agreement partner has won.

Page 18

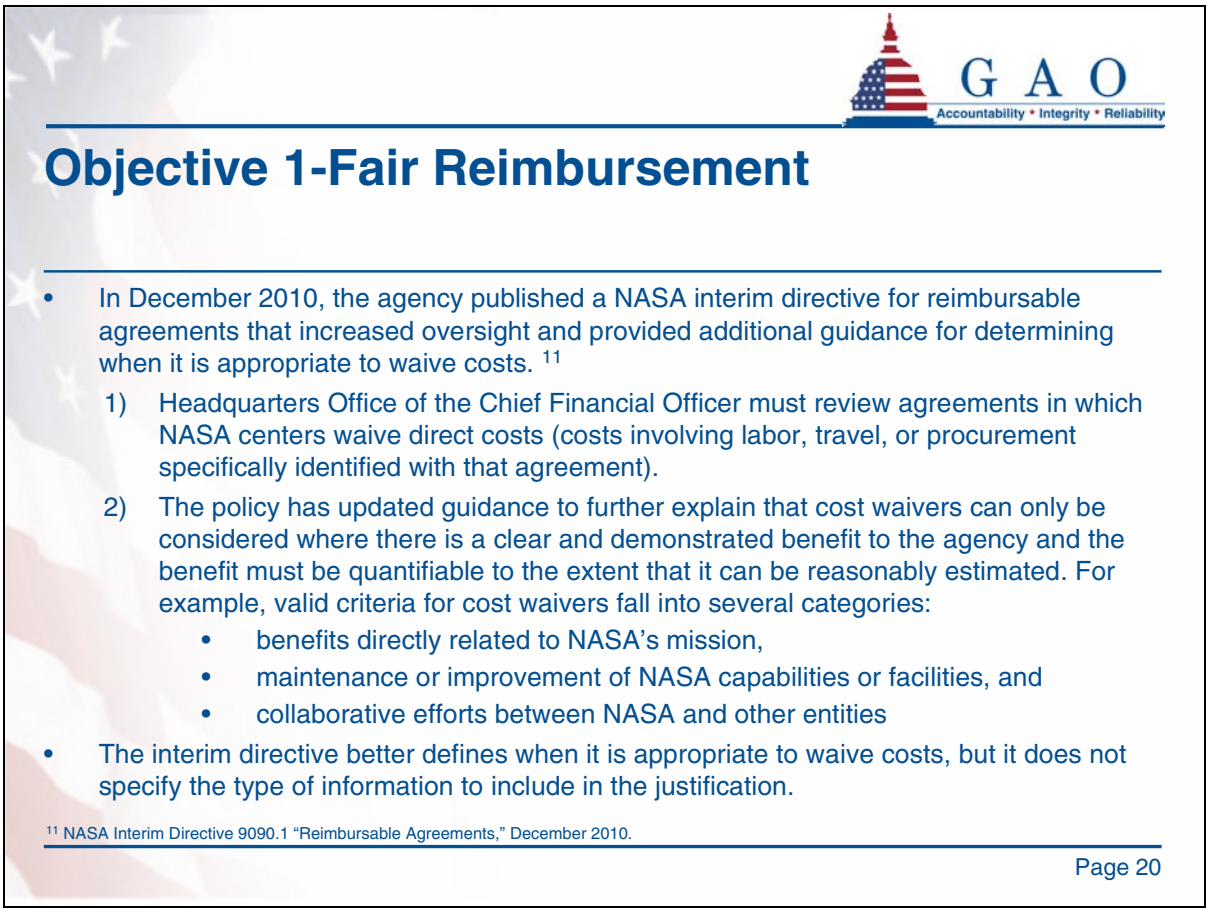
Objective 1-Fair Reimbursement

Table 3: Number of Times in Which Various Formats Were Used to Document Waived Cost Rationales at Five NASA Centers

Center	Memo to file	Estimated price report	Body of agreement
Glenn Research Center (11)	11	0	0
Johnson Space Center (5)	2	0	3
Kennedy Space Center (1)	1	0	0
Langley Research Center (23)	0	23	0
Marshall Space Flight Center (4)	2	2	0

Source: GAO analysis based on NASA data.

Page 19


GAO
Accountability • Integrity • Reliability
Objective 1-Fair Reimbursement
• In December 2010, the agency published a NASA interim directive for reimbursable agreements that increased oversight and provided additional guidance for determining when it is appropriate to waive costs. [11]
1) Headquarters Office of the Chief Financial Officer must review agreements in which NASA centers waive direct costs (costs involving labor, travel, or procurement specifically identified with that agreement).
2) The policy has updated guidance to further explain that cost waivers can only be considered where there is a clear and demonstrated benefit to the agency and the benefit must be quantifiable to the extent that it can be reasonably estimated. For example, valid criteria for cost waivers fall into several categories:
• benefits directly related to NASA's mission,
• maintenance or improvement of NASA capabilities or facilities, and
• collaborative efforts between NASA and other entities
• The interim directive better defines when it is appropriate to waive costs, but it does not specify the type of information to include in the justification.
[11] NASA Interim Directive 9090.1 "Reimbursable Agreements," December 2010.
Page 20


GAO
Accountability • Integrity • Reliability
Objective 1-Fair Reimbursement
• Given NASA's new interim policy requirements for review by the Headquarters' Chief Financial Officer, full and consistent documentation of the rationale for waiving costs is important to facilitate the review process and help NASA ensure it receives fair reimbursement from agreement partners.
Page 21

Objective 2-Mission and Interference

- NASA's Space Act Agreement Guide[12] outlines the following steps to ensure that SAA work is in alignment with NASA's mission:
  - The purpose section of each fully reimbursable agreement needs to describe how the activity is consistent with NASA's mission.
  - As part of the preliminary review process for SAA activities that could have a significant impact on the agency's mission, abstracts outlining proposed SAA activities should include a description of how activities support NASA's mission.[13]

[12] NASA Advisory Implementing Instruction, 1050-1A, "Space Act Agreement Guide" (Aug. 15, 2008).

[13] SAAs generally not requiring an abstract include renewals or extensions of existing routine, previously vetted agreements with partners, or agreements for routine, previously vetted activities with U.S. partners with whom NASA has worked repeatedly in the past. Guidance on proposed SAAs generally requiring an abstract is provided in the Space Act Agreement Guide.

Page 22

GAO
Accountability • Integrity • Reliability

Objective 2-Mission and Interference

Table 4: NASA Goals and Objectives Supported by Fully Reimbursable Agreements

1	2	3	4	5
Advance knowledge in the fundamental disciplines of aeronautics, and develop technologies for safer aircraft and higher capacity airspace systems.	The development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space.	Understand the effects of the space environment on human performance, and test new technologies and countermeasures for long-duration human space exploration	Establish a lunar return program having the maximum possible utility for later missions to Mars and other destinations.	Cooperation with Public Agencies
2006 NASA Strategic Plan, Strategic Sub-Goal 3E	*Section 102(c)(3) of the National Aeronautics & Space Act of 1958*	*2006 NASA Strategic Plan, Strategic Sub-Goal 3F*	*2006 NASA Strategic Plan, Strategic Goal 6*	*Section 203(c)(6) of the National Aeronautics & Space Act of 1958 (as amended)*

Source: GAO analysis based on NASA data

Page 23

Objective 2-Mission and Interference

- Partner activities under all 34 agreements we reviewed are consistent with NASA's mission.[14]
- For example:
  - At Ames Research Center, the commercial partner utilized NASA's B747 flight simulator for crew training and to collect data for aviation safety research. This work is related to NASA's goal to develop technologies for safer aircraft.
  - At White Sands Test Facility, a federal partner used NASA's propulsion test stand to conduct rocket engine testing. This work supports NASA's goal to develop vehicles capable of carrying instruments or equipment through space.
  - At Glenn Research Center, a commercial partner utilized the Portable Unit for Metabolic Analysis (PUMA) and calibration systems to support development of a technology that may be used to monitor astronaut health in space based environments. This work supports NASA's goal to understand effects of the space environment on human performance.

[14] Further description of SAA activities in our review that support listed NASA goals and objectives can be found on slides 43 to 45.

Page 24

Objective 2-Mission and Interference

- **As outlined in NASA's Policy Directive[15] and Space Act Agreement Guide, NASA has controls in place to help ensure reimbursable activities do not interfere with the use of its facilities:**
  1) All reimbursable agreements must provide that NASA has priority of use. The sample clause in the guide explains that NASA can put its needs before those of its partners. This may include delaying partner testing to accommodate NASA testing requirements.
  2) Resource availability (funding, services, equipment, expertise, information, and facilities) is considered in the agreement development process by various NASA stakeholders including:
     - Agreement managers who are responsible for collecting information needed to develop and implement the agreements, including determining resource availability.
     - Affected and interested NASA parties involved in the preliminary abstract review process, which is coordinated by NASA's Office of Program and Institutional Integration.

- **According to NASA center officials, management or technical points of contact also play a role in determining if the center has resources required to perform any proposed work.**

[15] NASA Policy Directive 1050.1I "Authority to Enter into Space Act Agreements" (2008).

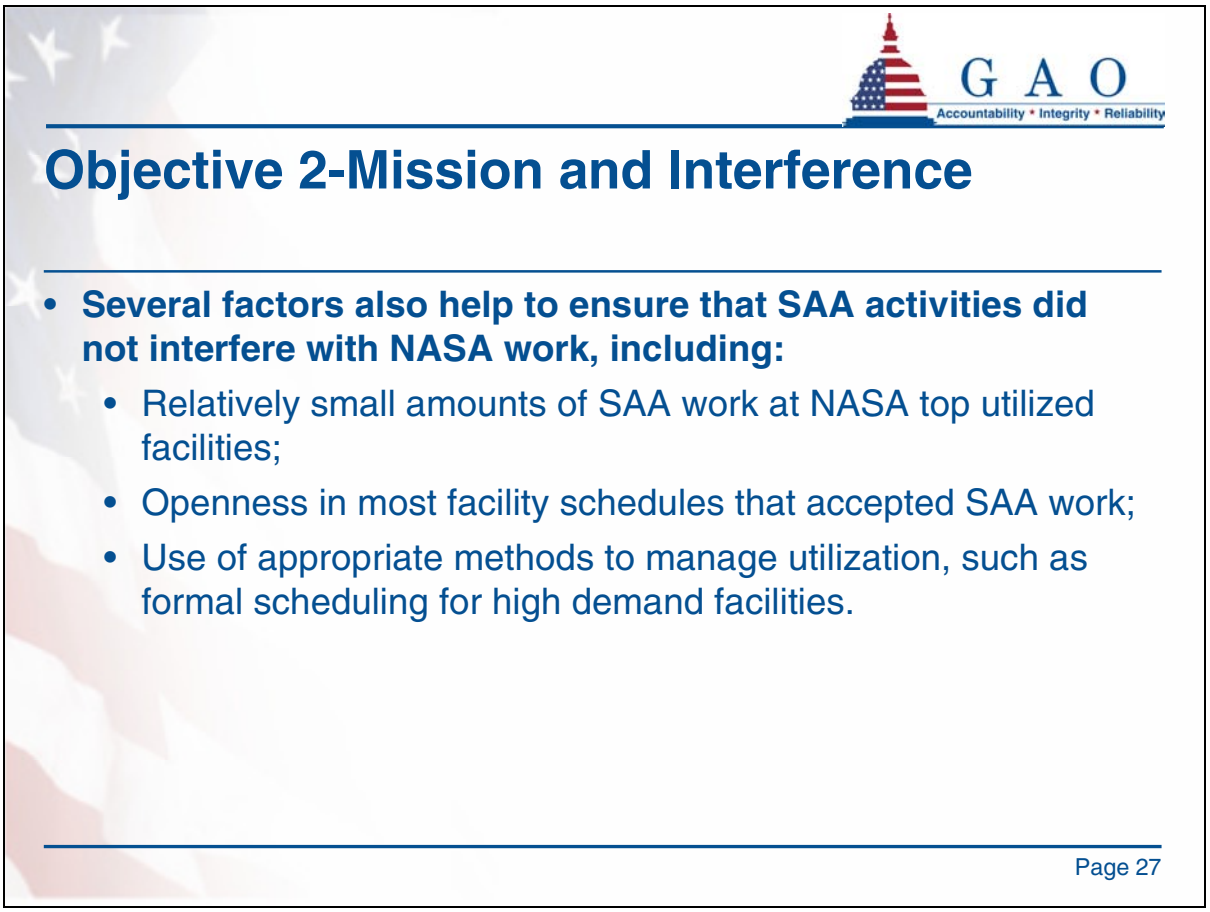
Page 25

Objective 2-Mission and Interference

- Partner activities did not appear to interfere with NASA's use of its facilities
  - All 34 SAAs we reviewed included a priority of use clause.
    - According to NASA officials, there was only one instance where NASA had to enforce the priority of use clause. Officials also provided examples at two facilities where NASA and the agreement partner were able to informally address scheduling conflicts without having to invoke the priority of use clause. In both instances, the partner's test schedule was delayed to meet NASA testing needs.

      For example, SAA testing at the Space Environmental Effects Facility at Marshall was delayed for two months in FY2010 due to unplanned, extended testing required for NASA's Juno Program.
  - According to NASA officials, responsible staff conducted the necessary coordination steps to ensure resources required in proposed SAA activities were available.
  - We contacted 17 major NASA program users of facilities in our review. All responses indicated that SAA activities did not interfere with their testing needs.
    - 14 NASA program users told us that they completed all testing on schedule in FY2010.
    - 3 NASA program users experienced a delay in testing unrelated to reimbursable activities conducted at the facilities.

Page 26


GAO
Accountability • Integrity • Reliability
Objective 2-Mission and Interference
• Several factors also help to ensure that SAA activities did not interfere with NASA work, including:
• Relatively small amounts of SAA work at NASA top utilized facilities;
• Openness in most facility schedules that accepted SAA work;
• Use of appropriate methods to manage utilization, such as formal scheduling for high demand facilities.
Page 27

Objective 2-Mission and Interference

- **In FY2010, reimbursable work was conducted at fewer than half of the top utilized facilities identified at centers in our review**
  - 31 of 51 top utilized facilities identified by NASA officials at three centers and one test facility did not support any SAA work in FY2010.[16]
  - Activities related to 36 fully reimbursable SAAs and 4 partially reimbursable SAAs were supported at 20 of 51 top utilized facilities identified by NASA officials at four centers.

[16] For a list of top utilized facilities and corresponding SAA activity at each of the four centers, see slides 46 to 49.

Page 28

GAO
Accountability * Integrity * Reliability

Objective 2-Mission and Interference

According to facility managers, most facilities with SAAs that we reviewed had relatively open schedules to accommodate SAA work.

- Managers of 14 of 19 facilities in our review indicated that utilization rates were 85 percent or less in FY2010.
- According to NASA officials, at least 7 facilities in our review involved partner activities that occupied NASA facilities for three weeks or less in FY2010.

Table 5: Utilization of NASA Facilities in Our Review

Utilization overall, NASA and SAA partners [a]	No. of facilities
Not utilized (Less than 30%)	1
Under-utilized (30-60%)	1
Utilized (60-85%)	12
Over-utilized (greater than 85%)	5

Source: GAO analysis based on NASA data.

[a] Utilization categories are based on laboratory utilization rate codes reported in the Federal Real Property Profile, an inventory of federal property, by all executive branch agencies including NASA.

Page 29

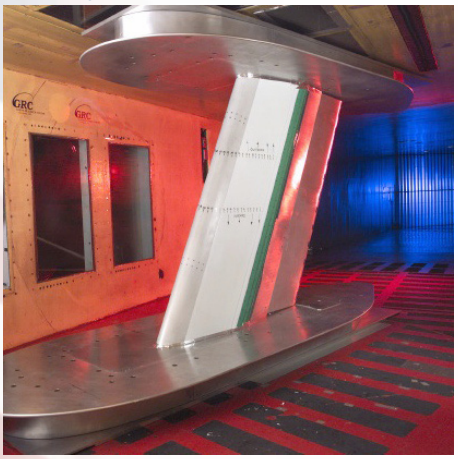
Objective 2-Mission and Interference

- **Methods used to manage facilities and uphold NASA's non-interference policy vary depending on facility features and demand**
  - Facilities are managed to prevent interference by taking advantage of facility features that enable support of multiple customers and changes in the testing schedule. Facility features that enable managers to accommodate both NASA and non-NASA customer testing needs include:
    - Option of operating facilities for extended periods (e.g., 24 hour testing)
    - Availability of multiple pieces of testing equipment (e.g., four ultraviolet (UV) radiation test chambers used for UV testing)
    - Flexibility within the testing plan (e.g., phased testing that can be completed over a range of time)
    - Relatively short testing periods (e.g., 5 minutes, 1 to 3 weeks)
    - Facility utilization levels below capacity
  - High use facilities utilize more formal scheduling processes compared to lower use facilities where formal scheduling is not necessary.
    - For example, the 9'x15' low speed wind tunnel is part of a wind tunnel complex that was used at capacity in FY2010 for all but 25 days when the facility was undergoing maintenance. A formal facility schedule is maintained and shared monthly to keep NASA customers updated on schedule changes.
  - Ongoing communication with partners and NASA customers prior and during testing was cited as a key tool in managing use at many facilities.

Page 30

NASA Facility Case Study: Icing Research Tunnel, Glenn Research Center

Testing to support the development of a wing heated air ice protection system.



Source: NASA.

Table 6: Icing Research Tunnel, FY 2010 Facility Information

No. SAAs[a]	SAA Use[a]	Overall utilization	NASA use (percentage of overall utilization)	Avg. test time	Formal schedule
9	58 days	Under-utilized (30-60%)	Typically 20%	1-3 weeks	Yes

Source: GAO representation of NASA data.

[a] The "No. of SAAs" and "SAA Use" columns refer to agreements in our review. This note also applies to similar tables in subsequent case study examples.

- **Facility Description:** Among the world's largest refrigerated wind tunnels, this facility duplicates natural icing conditions to test effects of in-flight icing on actual aircraft components and aircraft models. Facility supports icing protection system development and certification.
- **Assessment of Interference**: The risk of interference is mitigated by:
  - the limited and predictable use of the facility by NASA customers,
  - relatively short test times and low utilization rate in FY2010 (which enable flexibility in scheduling), and
  - use of a formal schedule.

Page 31

NASA Facility Case Study: PUMA Device and Calibration Systems, Glenn Research Center

A prototype PUMA unit

Source: NASA.

Table 7: PUMA Device and Calibration Systems, FY 2010 Facility Information

No. SAAs	SAA use	Overall utilization	NASA use (percentage of overall utilization)	Avg. test time	Formal schedule
1	3-4 days	Not utilized (Less than 30%)	None	3 days	No

Source: GAO representation of NASA data.

- **Facility Description:** The Portable Unit for Metabolic Analysis (PUMA) system is a self-contained device that measures the six key quantities (oxygen, carbon dioxide, flow, temperature, pressure, and heart rate) capable of measuring human metabolic function at rest, during exercise, in clinical settings, or in the field. PUMA and associated calibration systems are being used by Orbital Research, Inc. to support the development of its Pilot Physiologic Assessment System, to be used to provide pilots with early warning signal of hypoxic state (lack of oxygen) and could be similarly used by astronauts.
- **Assessment of Interference:** Interference was not an issue at this facility as there was no NASA work in FY 2010.

Page 32

NASA Facility Case Study: B747-400 Flight Simulator, Ames Research Center

Advanced Concepts Flight and B747 simulators

Source: NASA.

Table 8: B747-400 Flight Simulator, FY 2010 Facility Information

No. SAAs	SAA use	Overall utilization	NASA use (percentage of overall utilization)	Avg. test time	Formal schedule
1	2 days	60% (Utilized, 60-85%)	95%	3-9 months	Yes

Source: GAO representation of NASA data.

- **Facility Description:** The B747-400 simulator is part of the Ames Research Center's Crew Vehicle System Research Facility which is used to study air-traffic management concepts and technologies, aviation human factors and safety, and develop and improve new simulation and training tools. United Parcel Service (UPS) utilized the B747 simulator to support UPS crew operations familiarization and training and to collect flight operations quality assurance data for aviation safety research on typical UPS flight profiles.
- **Assessment of Interference**: Interference is managed at this facility through:
  - Use of a two-step approval process involving NASA customers required for all SAA activity: (1) during SAA proposal and agreement development stages, and (2) prior to placement of SAA work on the facility schedule.
  - Schedule flexibility with use in FY2010 estimated at 60 percent.
  - Limited use of the facility by SAA partners. For example, in FY2010 UPS used the facility for only 2 days.

Page 33

NASA Facility Case Study: Components Services Section, White Sands Test Facility

Precision cleaning at CSS

Source: NASA Contract Number:NJ06HC0IC

Table 9: Components Services Section, FY 2010 Facility Information

No. SAAs	SAA use	Overall utilization	NASA use (percentage of overall utilization)	Avg. test time	Formal schedule
2	250 hours	Utilized (60-85%)	Predominantly NASA customers	3-6 hours per component	Yes

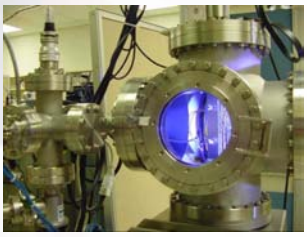
Source: GAO representation of NASA data.

- **Facility Description:** The Component Services Section (CSS) performs precision cleaning, component refurbishment and repair, and hydrostatic testing. Equipment includes ultra sonic baths, clean rooms, convection ovens, and other tooling required to perform precision cleaning as well as tooling and equipment needed for disassembling and reassembling components and pressure systems to functionally check components.
- **Assessment of Interference**: The risk of interference is mitigated by:
  - Multiple components can be precision cleaned and tested at the same time. In FY2010, this facility had the capacity to support work for up to 24 customers at the same time.
  - The facility maintained a relatively open schedule with utilization identified in the 60-85 percent range by NASA officials.
  - Potential SAA work must be approved by the Office Chief and is managed by a special White Sands Test Facility Work Control unit that is responsible for coordinating customer scheduling needs and managing potential schedule interference for all work at service centers.
  - The time necessary to complete SAA work was relatively small at 250 hours to precision clean and/or functionally test 206 components.

Page 34

NASA Facility Case Study: Space Environmental Effects Facility, Marshall Space Flight Center

Ultraviolet Radiation Test Chamber



Source: NASA.

Table 10: Space Environmental Effects Facility, FY 2010 Facility Information

No. SAAs	SAA use	Overall utilization	NASA use (percentage of overall utilization)	Avg. test time	Formal schedule
5	21 weeks	Varies by capability [a]	75%	Ranges by capability, 1-3 weeks per sample	No

Source: GAO representation of NASA data.

[a] Overall utilization of the four test capabilities used to support partner activities in the five agreements we reviewed ranged from 40% (under-utilized, 30-60%) to 90% (over-utilized, greater than 85%) in FY2010, according to NASA officials.

- **Facility Description:** The Space Environmental Effects Facility (SEE) houses 11 distinct testing capabilities. Equipment is used to test materials incorporated or planned for integration in spacecraft design.
- **Assessment of Interference:** Interference is managed at this facility through:
  - Some test equipment used in partner activities have more than one test chamber and can support testing for multiple customers.
  - SEE has a relatively open schedule with only 2 or 3 test chambers out of 15 available in use at any given time, according to NASA officials.
  - Tests are run for relatively short periods of 1 to 3 weeks per sample. This enables facility managers to easily change test schedules to meet customer testing needs and helps prevent interference.

Page 35

NASA Facility Case Study: Hot Gas Facility, Marshall Space Flight Center

Hot Gas Facility

Source: NASA.

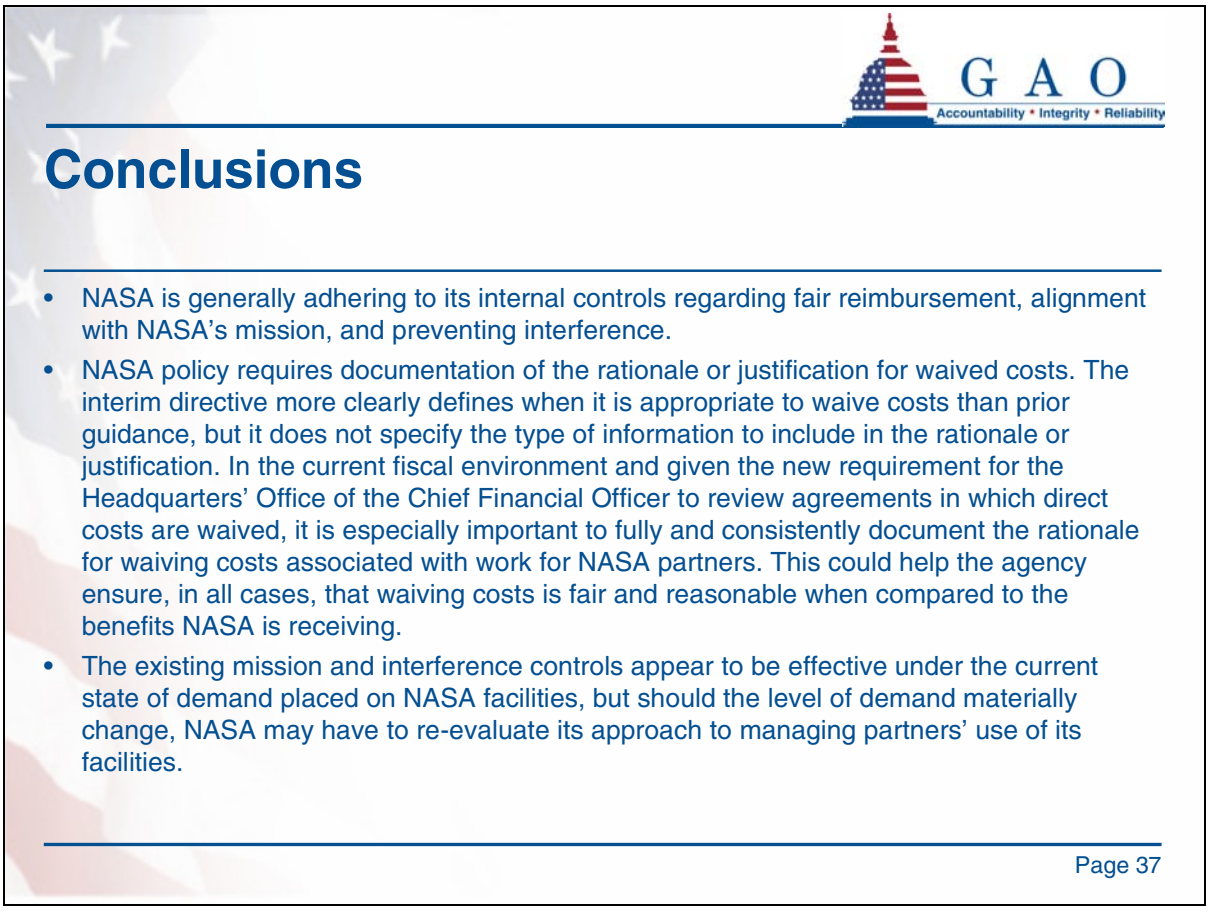
Table 11: Hot Gas Facility, FY 2010 Facility Information

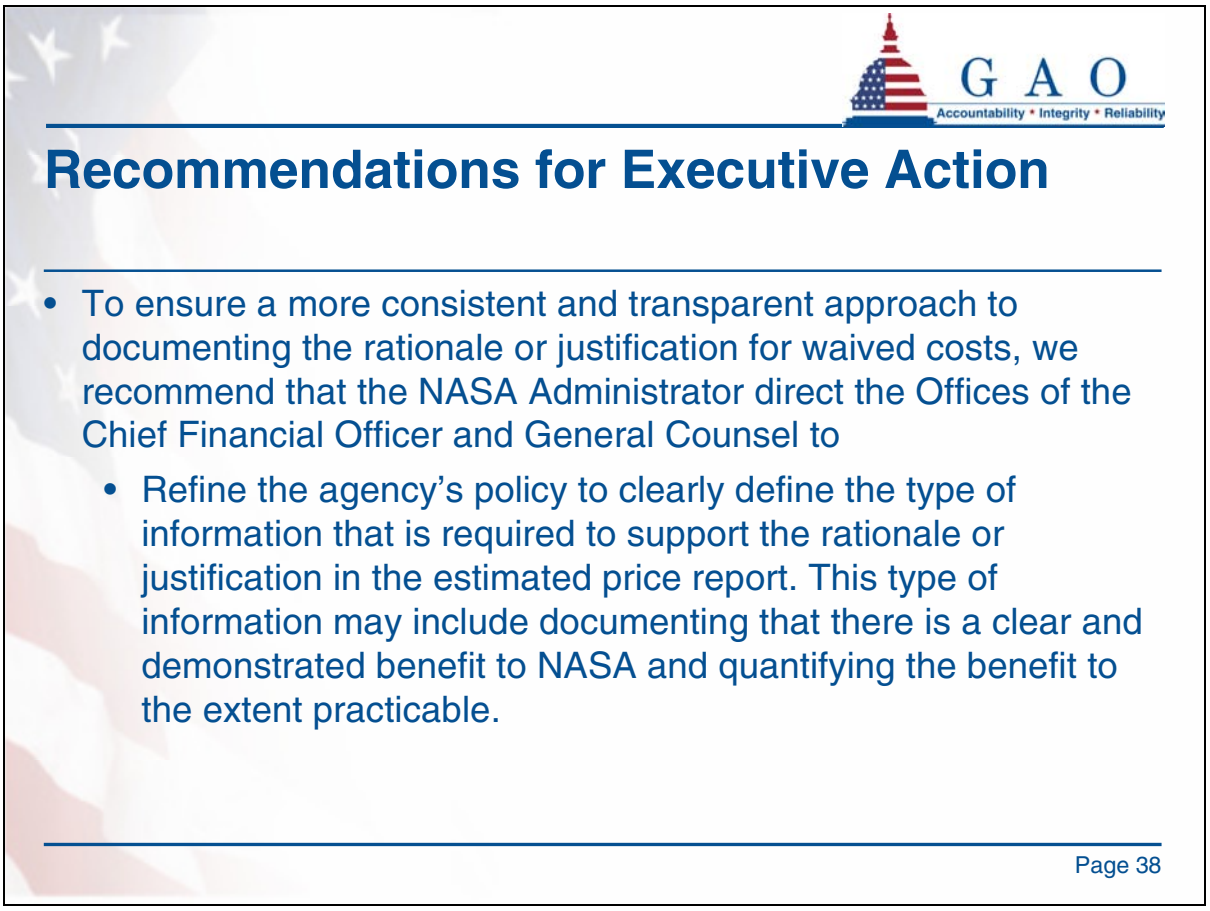
No. SAAs	SAA use	Overall utilization	NASA use (percentage of overall utilization)	Avg. test time	Formal schedule
1	4 days	Utilized (60-85%)	Top users are NASA customers	5 minutes	No

Source: GAO representation of NASA data.

- **Facility Description:** The Hot Gas Facility is a unique gaseous hydrogen/air combustion-driven wind tunnel that can produce combined environments of launch and reentry heating rates and dynamic pressure used to certify thermal shield material for use on spacecraft.
- **Assessment of Interference:** The risk of interference is mitigated by:
  - Extremely short testing time with multiple test runs per day: This facility tests sample materials for extremely short testing times of five minutes and requires no hardware changes between testing. Up to 25 test runs may be conducted in a single day.
  - Limited SAA activity: Planned SAA testing is expected to require 12 days, with 4 days of testing completed in FY2010.
  - Openness in facility schedule: The facility was used only 103 days last year. Officials also noted that the workload has decreased recently related to the planned retirement of the Space Shuttle.

Page 36


GAO
Accountability • Integrity • Reliability
Conclusions
• NASA is generally adhering to its internal controls regarding fair reimbursement, alignment with NASA's mission, and preventing interference.
• NASA policy requires documentation of the rationale or justification for waived costs. The interim directive more clearly defines when it is appropriate to waive costs than prior guidance, but it does not specify the type of information to include in the rationale or justification. In the current fiscal environment and given the new requirement for the Headquarters' Office of the Chief Financial Officer to review agreements in which direct costs are waived, it is especially important to fully and consistently document the rationale for waiving costs associated with work for NASA partners. This could help the agency ensure, in all cases, that waiving costs is fair and reasonable when compared to the benefits NASA is receiving.
• The existing mission and interference controls appear to be effective under the current state of demand placed on NASA facilities, but should the level of demand materially change, NASA may have to re-evaluate its approach to managing partners' use of its facilities.
Page 37


GAO
Accountability • Integrity • Reliability
Recommendations for Executive Action
• To ensure a more consistent and transparent approach to documenting the rationale or justification for waived costs, we recommend that the NASA Administrator direct the Offices of the Chief Financial Officer and General Counsel to
• Refine the agency's policy to clearly define the type of information that is required to support the rationale or justification in the estimated price report. This type of information may include documenting that there is a clear and demonstrated benefit to NASA and quantifying the benefit to the extent practicable.
Page 38


GAO
Accountability • Integrity • Reliability
Backup Slides
Page 39

Backup Slides

Table 12: Total Reimbursable Work and Center Budgets

Center	FY 2010 total reimbursable awards	FY 2010 budget	Reimbursable work as percentage of budget
Glenn Research Center	$30.7 million	$609 million	5%
Johnson Space Center	$22.8 million	$6.3 billion	<1%
Kennedy Space Center	$85.4 million	$1.2 billion	7%
Langley Research Center	$31 million	$656 million	5%
Marshall Space Flight Center	$19.6 million	$2.8 billion	1%

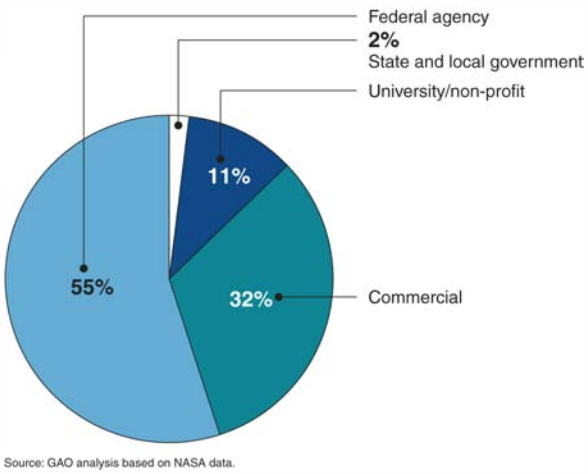
Source: GAO analysis based on NASA data.

Page 40

GAO
Accountability * Integrity * Reliability

Backup Slides

Figure 1: Types of Agreement Partner for Partially Reimbursable Agreements



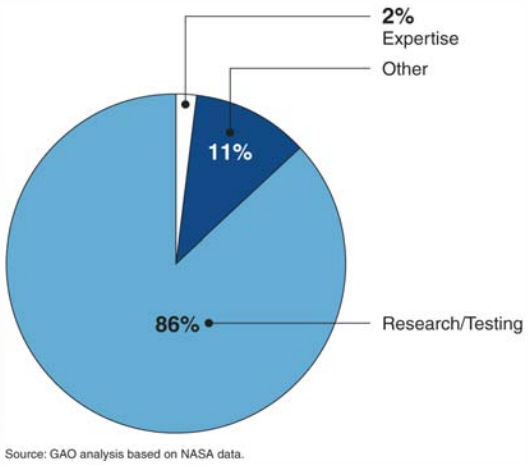
Source: GAO analysis based on NASA data.

Page 41

GAO
Accountability • Integrity • Reliability

Backup Slides

Figure 2: Types of Work Conducted for Partially Reimbursable Agreements



Source: GAO analysis based on NASA data.

Page 42

Backup Slides

Table 13a: Partner Activities Consistent with NASA's Mission

Goal/Objective 1: *Advance knowledge in the fundamental disciplines of aeronautics and develop technologies for safer aircraft and higher capacity airspace systems*

Facilities utilized in SAA work[a]	Description of facility use in SAA work
•Icing Research Tunnel •9x15 Low Speed Wind Tunnel •11x11 Foot Wind Tunnel	Used to test aircraft component and/or model performance under various in-flight conditions
•B747 Flight Simulator at the Crew Vehicle Systems Research Facility	To collect data for aviation safety research
•Particulate Aerosol Laboratory	Supports work on cleaner combustion cycle on aircraft engines
•Aero Acoustic Propulsion Lab	To measure nozzle performance of various engine air-brake designs

Source: GAO analysis based NASA data.
[a] Some of the listed facilities were utilized for work under multiple fully reimbursable Space Act agreements in our review. This also applies to the information on slide 44.

Page 43

GAO
Accountability • Integrity • Reliability

Backup Slides

Table 13b: Partner Activities Consistent with NASA's Mission

Goal/Objective 2: *The development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space.*

Facilities utilized in SAA work	Description of facility use in SAA work
•National Center for Advanced Manufacturing •Space Environmental Effects Facility •Hot Gas Facility •Automated Surface Mount Assembly Lab •Failure Analysis Lab	Development and testing of new and improved materials for use in spacecraft
•Inducer Test Loop	Performance pump testing for potential application in NASA projects and programs
•Component Services Section	Precision cleaning and functional testing of components (e.g., space vehicle components such as valves, fitting unions, tubing)
•White Sands Test Facility Chemistry Lab	Analytical chemistry services relating to propellants, propellant pressurizing gases, and material compatibility testing in propellants
•Propulsion Test Stand 401	Rocket engine testing

Source: GAO analysis based on NASA data.

Page 44

Backup Slides

Table 13c: Partner Activities Consistent with NASA's Mission

Goal/Objective 3: *Understand the effects of the space environment on human performance and test new technologies and countermeasures for long-duration human space exploration*	
Facilities utilized in SAA work	**Description of facility use in SAA work**
•Portable Unit for Metabolic Analysis (PUMA) Device & Calibration Systems	Support development of technology that may be used to monitor astronaut health in space based environments
Goal/Objective 4: *Establish a lunar return program having the maximum possible utility for later missions to Mars and other destinations*	
Facilities utilized in SAA work	**Description of facility use in SAA work**
•Fluid Mechanics Lab in-draft wind tunnel •Fluid Mechanics Lab water channel	Supports development of solar technologies that have potential for application in space based environments
Goal/Objective 5: *Cooperation with Public Agencies*	
Facilities utilized in SAA work	**Description of facility use in SAA work**
•Moffett Airfield Aircraft Maintenance Hangar	Base of operation for helicopters used to support local law enforcement and emergency response capabilities

Source: GAO analysis based on NASA data.

Page 45

GAO
Accountability * Integrity * Reliability

Backup Slides

Table 14: SAA Activity in FY 2010 at Top Utilized Facilities at Glenn Research Center

Facility	Fully reimbursable agreements FY2010	Partially reimbursable agreements FY2010
Icing Research Tunnel	11	--
10 X 10 Supersonic Wind Tunnel	--	--
8 X 6 Supersonic Wind Tunnel	--	1
9 X 15 Supersonic Wind Tunnel	2	--
Propulsion Systems Laboratory	--	1
Engine Research Building Complex	1	1
Aero-Acoustic Propulsion Laboratory	--	--
Zero Gravity Research Facility	--	--
Small Multi-Purpose Research Facility	--	--
TOTAL	**14[a]**	**3**

Source: GAO analysis based on NASA data.

[a] Partner work for 11 of these fully reimbursable SAAs was conducted at the Icing Research Tunnel at Glenn, which was included in our review. This facility is predominantly utilized for commercial work, with NASA-related work estimated at 20 percent. In addition, the facility manager described this facility as under-utilized in FY2010.

Page 46

GAO
Accountability * Integrity * Reliability

Backup Slides

Table 15: SAA Activity in FY 2010 at Top Utilized Facilities at White Sands Test Facility

Facility	Fully reimbursable SAAs FY2010	Partially reimbursable SAAs FY2010
300 Area Propulsion Blockhouse	--	--
300 Area Propulsion Data Acquisition and Control	--	--
400 Area Propulsion Blockhouse	1	--
400 Area Propulsion Data Acquisition and Control	1	--
Cryogenic Storage System	--	--
Hypergols Storage, conditioning and distribution System, 400 area	--	--
Inert Gas Storage & Distribution System	--	--
Materials Flammability in Oxygen Enriched Atmospheres Test Areas	--	--
Photo and Video Test Support Laboratory	--	--
Small Altitue Simulation System 400 Area	--	--
Standard Materials Test Areas	--	--
Test Materials Preparation,Staging,and Controlled Access Storage Areas	--	--
Test Stand Support Buildings (400 Area)	1	--
WSSH Shuttle Landing Training and Shuttle Landing Facility	--	--
Ordnance Storage Bunkers	--	--
TOTAL	**1[a]**	**0**

Source: GAO analysis based on NASA data

[a] The work at the 400 Area Propulsion Blockhouse and Data Acquisition and Control and Test Stands Support Buildings was related to one fully reimbursable SAA.

Page 47

GAO
Accountability • Integrity • Reliability

Backup Slides

Table 16: SAA Activity in FY 2010 at Top Utilized Facilities at Ames Research Center

Facility	Fully reimbursable SAAs FY2010	Partially reimbursable SAAs FY2010
11 foot Wind Tunnel	2	--
80 x 120 Wind Tunnel	1	--
Ames Research Center Arcjet Facility	1	--
Fluid Mechanics Laboratory, 48 x 32 Wind Tunnel Facility	1	--
Hangar 3	2	--
Hangar 144	2	--
Magnetic Test Facility, N-217/A	1	--
Moffett Federal Airfield	4	1
NASA Ames Crew Vehicle Systems Research Facility (CVSRF)	1	--
NASA ARC Laboratories	1	--
Vertical Motion Simulator (VMS) Facility	1	--
TOTAL	**17**	**1**

Source: GAO analysis based on NASA data.

Page 48

GAO
Accountability * Integrity * Reliability

Backup Slides

Table 17: SAA Activity in FY 2010 at Top Utilized Facilities at Marshall Space Flight Center

Facility	Fully reimbursable SAAs FY2010	Partially reimbursable SAAs FY2010
Bldg 4705 Mechanical Fabrication (including surface treat/plating/painting)	--	--
Bldg 4755 ECLSS Development Facility	--	--
Bldg 4487 Software Development Facility (SDF)	--	--
Hot Gas Facility	4	--
Test Stand 116 – high pressure engine system components	--	--
Test Stand 115 – multi-purpose, multi-position oxygen/hydrogen facilities for scale-model combustion devices	--	--
Environmental Test Facilities in West end of 4619	--	--
Structural (Static and Dynamic) Testing in East end of 4619	--	--
Mechanical Metallurgy and Corrosion Research Facilities (MMTF)	--	--
Materials Diagnostic Facility	--	--
Hydrogen Test	--	--
Ceramic Composite and Ceramic Testing Lab	--	--
Propulsion Research Development Laboratory	--	--
Payload Operations Center	--	--
Imaging Lab	--	--
Human Factors Lab	--	--
TOTAL	**4**	**0**

Source: GAO analysis based on NASA data.

Page 49


GAO
Accountability • Integrity • Reliability
GAO on the Web
Web site: http://www.gao.gov/
Contact
Chuck Young, Managing Director, Public Affairs, youngc1@gao.gov
(202) 512-4800, U.S. Government Accountability Office
441 G Street NW, Room 7149, Washington, D.C. 20548
Copyright
This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.
Page 50

Comments from the National Aeronautics and Space Administration

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

May 20, 2011

Reply to Attn of: Office of the General Counsel

Ms. Cristina Chaplain
Director
Acquisition and Sourcing Management
United States Government Accountability Office
Washington, DC 20548

Dear Ms. Chaplain:

The National Aeronautics and Space Administration (NASA) appreciates the opportunity to review the Government Accountability Office (GAO) draft reports entitled "NASA Reimbursable Space Act Agreements" (GAO-11-553R; report number 120926) and "NASA Data Issues and Compliance" (GAO-11-552R; report number 120983). NASA values the continued open communications between NASA and the GAO team and appreciates the constructive comments arising as a result of this effort

NASA agrees with GAO's concern regarding managing programs and projects as efficiently and effectively as possible, especially within a budget that is likely to be constrained due to the fiscal limitations currently faced by all Federal Government agencies. NASA remains dedicated to continuous improvement of the Agency's Space Act Agreement's (SAA) internal controls and business practices. We are pleased that GAO recognized the policy requirements and other internal controls in place related to Agency SAA practices and found that NASA is generally adhering to those controls.

We also appreciate GAO's constructive findings from the two reports regarding the need to clarify existing Agency guidance in regard to certain Reimbursable SAA pricing policies (i.e., waived costs), the need for improved training and internal controls to ensure the data integrity in NASA's Space Act Agreement Maker (SAAM) system, and the need for improved training and internal controls to ensure that NASA does not violate statutory provisions or policy regarding competition with the private sector. NASA is committed to promptly addressing these issues and, in fact, has already taken several actions and has planned additional action toward that end, as discussed below.

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

May 20, 2011

Reply to Attn of: Office of the General Counsel

Ms. Cristina Chaplain
Director
Acquisition and Sourcing Management
United States Government Accountability Office
Washington, DC 20548

Dear Ms. Chaplain:

The National Aeronautics and Space Administration (NASA) appreciates the opportunity to review the Government Accountability Office (GAO) draft reports entitled "NASA Reimbursable Space Act Agreements" (GAO-11-553R; report number 120926) and "NASA Data Issues and Compliance" (GAO-11-552R; report number 120983). NASA values the continued open communications between NASA and the GAO team and appreciates the constructive comments arising as a result of this effort

NASA agrees with GAO's concern regarding managing programs and projects as efficiently and effectively as possible, especially within a budget that is likely to be constrained due to the fiscal limitations currently faced by all Federal Government agencies. NASA remains dedicated to continuous improvement of the Agency's Space Act Agreement's (SAA) internal controls and business practices. We are pleased that GAO recognized the policy requirements and other internal controls in place related to Agency SAA practices and found that NASA is generally adhering to those controls.

We also appreciate GAO's constructive findings from the two reports regarding the need to clarify existing Agency guidance in regard to certain Reimbursable SAA pricing policies (i.e., waived costs), the need for improved training and internal controls to ensure the data integrity in NASA's Space Act Agreement Maker (SAAM) system, and the need for improved training and internal controls to ensure that NASA does not violate statutory provisions or policy regarding competition with the private sector. NASA is committed to promptly addressing these issues and, in fact, has already taken several actions and has planned additional action toward that end, as discussed below.

In the two draft reports, GAO makes a total of four recommendations to the NASA Administrator to address the findings identified in the reports. Those recommendations, and NASA's responses, are as follows:

GAO-11-553R

Recommendation 1: Direct the Offices of the Chief Financial Officer and General Counsel to refine the agency's policy to clearly define the type of information that is required to support the justification in the estimated price report. This type of information may include documenting that there is a clear and demonstrated benefit to NASA and quantifying the benefit to the extent practicable.

NASA's Response: Concur. The Office of the Chief Financial Officer (OCFO) is already working with the Office of General Counsel (OGC) and other offices addressing this recommendation. We are in the process of reviewing these and other refinements to NASA Interim Directive 9090.1, as part of the transition to a NASA Procedural Requirement this year. Among the refinements being reviewed are reporting requirements including the additional types of information recommended above.

GAO-11-552R

Recommendation 1: Direct the Office of Program and Institutional Integration to rectify the data inaccuracies in the SAAM database that we have identified in this report.

NASA's Response: Concur. All of the data inaccuracies identified in the GAO report have been corrected in coordination with the respective Center and Headquarters Agreement Managers.

Recommendation 2: Direct the Office of Program and Institutional Integration to assess why the coding errors identified in this report occurred and develop procedures for enhancing the accuracy of the data.

NASA's Response: Concur. The Mission Support Directorate (MSD) has assessed each instance and found that there were two primary causes for the data entry errors:

1) Initial misclassification by the Agreement initiator due to a lack of understanding of how to classify certain Agreements in the system. We also identified some problematic SAAM data entry protocols that confused users and allowed erroneous classification entries such as "Fully Nonreimbursable" or "Fully Reimbursable [with waived costs entered]," which contributed to this problem.

2) Failure or inability of the Agreement Manager to update the initial classification of an Agreement if it changed during the course of discussions with the partner (e.g., from "Fully reimbursable" to "Partially reimbursable" or vice versa). We also found that system restrictions that prohibited the Agreement Managers from being able to directly make changes to the agreement classification after it had been initially established contributed to this problem.

In order to enhance the accuracy of the system data, we conducted training on proper agreement classification protocols during the Space Act Agreement Community of Practice Meeting at Stennis Space Center on May 18-19, 2011. In addition, we implemented changes to the SAAM system to allow designated Center and Headquarters Agreement Managers to make changes to the classification of their Agreements as needed. Finally, are in the process of implementing additional changes to the SAAM system to automatically "flag" such errors and eliminate the possibility of confusing or contradictory agreement classification entries.

Recommendation 3: Direct the Office of Program and Institutional Integration to provide refresher training, as part of NASA's annual Space Act agreement community of practice, to SAAM users to explain the various agreement types, stress the importance of accurately inputting data into the SAAM database, and clarifies NASA's policy regarding competition with the private sector.

Management's Response: Concur. MSD will conduct training on proper agreement classification protocols during the upcoming Space Act Agreement Community of Practice Meeting referenced above. As part of that training, we discussed the findings from the GAO's audit and provided both policy and technical training regarding how to properly classify and enter SAAs in SAAM, emphasizing the importance of users accurately inputting data into the system. During the meeting, MSD and OGC also covered the legal and policy requirements relating to the "competition with the private sector" issue and the related policies and internal controls in place to prevent that.

The GAO report finding regarding "competition with the private sector" in SAAM 7492 (GRC's SAA3-1112 w/Technical Directions Inc.), we have reviewed the circumstances surrounding that particular agreement. We agree with the facts as stated in the GAO report, and offer the following additional background information for further context.

Under the agreement, GRC performed work on a small jet engine that the company was developing for the Department of Defense (DoD) using GRC's Propulsion Systems

Laboratory (PSL). The PSL is NASA's only ground-based test facility that can provide true flight simulation for experimental research on air-breathing propulsion systems. When the Agreement was initiated, the GRC Agreements Manager relied on the written statement in SAAM by the PSL facility manager that there were no other vendors available who could do the work. After additional inquiry, however, it appears that there may have been another vendor capable of performing the testing conducted under the agreement.

GRC indicated that, although the agreement was with a commercial entity (DTI), the work was known to be for the direct benefit of DoD. Accordingly, the testing was conducted within the context of a policy arrangement between NASA and DoD regarding aerospace research of mutual interest to both agencies. For example, GRC waived certain costs incurred under the agreement pursuant to its practice of waiving such costs for testing conducted in conjunction with the DoD. While we understand that these facts do not fully address the issue of avoiding competition with the private sector, we believe that the context of NASA and DoD's mutual commitment to conduct joint aeronautics research at reduced costs and on appropriate terms and conditions is useful in providing an understanding of the circumstances surrounding this particular agreement.

GRC is planning to conduct additional Center-level training in response to the GAO report finding. Specifically, GRC has taken the following three corrective actions: (1) Since January 2011, shortly after this issue became known, the GRC Agreement Managers make it a standard practice to more extensively question GRC staff to gain better understanding of the uniqueness of requested NASA facilities and the possible existence of other potential vendors; (2) The GRC Office of Chief Counsel and the GRC Chief Technologist convened a meeting with the Propulsion Systems Laboratory facility manager and his management on May 3, 2011, to re-emphasize and explain the NASA policy that NASA must not compete with the private sector in performing reimbursable work; and (3) The GRC Offices of Chief Counsel and Technology Partnerships and Planning have agreed to hold refresher training sessions for GRC staff on initiating and implementing Space Act Agreements.

NASA is committed to continuous improvement of our SAA internal controls and practices, as with all Agency practices, in order to explore and utilize Space in an affordable way for the benefit of the Nation. Toward this end, we look forward to continuing to work with the GAO to measure and improve our performance and management practices.

Thank you for the opportunity to comment on the two draft reports. If you have any questions or require additional information, please contact Richard McCarthy at (202) 358-2031.

Sincerely,

Michael C. Wholley

Michael C. Wholley
General Counsel

(120926)

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday afternoon, GAO posts on its Web site newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to www.gao.gov and select "E-mail Updates."

Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's Web site, http://www.gao.gov/ordering.htm.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm
E-mail: fraudnet@gao.gov
Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Ralph Dawn, Managing Director, dawnr@gao.gov, (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, DC 20548