

# **Ensuring Scientific Integrity at the National Aeronautics and Space Administration**

December 16, 2011

## **Introductory Statement**

Scientific integrity continues to be a very high priority for NASA, and is embedded in the rules and requirements that govern our professional behavior across all technical disciplines. Our policies in support of scientific integrity are robust and have been in place for many years. As an Agency we recommit ourselves to scientific integrity on a regular basis, by reviewing and renewing existing policies every five years. Additionally, we have augmented long-standing policies with newer complementary policies, such as *Release of Information to News and Information Media (14 CFR 1213)*, introduced in 2006, to foster honesty and transparency in communicating the science conducted by and used by the Agency. NASA is committed to continuously upholding, examining, and enhancing its policies to maintain the highest standard of scientific integrity in the future.

## **Background**

On March 9, 2009, President Obama issued a Memorandum on Scientific Integrity underscoring the importance of science in informing public policy decisions, and emphasizing that the public must be able to trust the science behind those decisions. This Memorandum highlighted six principles of scientific integrity that cover issues including transparency, public communications, and peer review.

On December 17, 2010, the Director of the White House Office of Science and Technology Policy issued a Memorandum to the Heads of Departments and Agencies with further guidance for implementation of these principles throughout the executive branch. For copies of both Memoranda, see:

<http://www.whitehouse.gov/administration/eop/ostp/library/scientificintegrity>

Through policy and practice, NASA is fully committed to the principles articulated in these Memoranda. The Administration's request provides us with a welcome opportunity to collect and expand our policies, and once again to demonstrate our deep commitment to scientific integrity in pursuit of our mission.

The following summary collectively lists the NASA policies, both current and planned, that maintain and enhance scientific integrity within the Agency and with our colleagues in the scientific community. This summary is organized according to the major headings and topics of the December 2010 OSTP Memorandum. The

principles outlined herein frame NASA's commitment to scientific integrity now and into the future.

## **I. Foundations of Scientific Integrity in Government.**

### **1. Ensure a culture of scientific integrity.**

NASA is committed to sustaining an environment of scientific integrity, honest investigation, and freedom from political interference. Among the policies that support this commitment are:

- [NASA Policy Directive \(NPD\) 1000.0A, \*NASA Governance and Strategic Management Handbook\*](#), stipulates that integrity is a NASA core value and that the Agency “is committed to maintaining an environment of trust, built upon honesty, ethical behavior, respect, and candor.”
- [NPD 1080.1, \*Policy for the Conduct of NASA Research and Technology\*](#), stipulates that the Agency will achieve excellence by selecting the best research and technology project ideas to be carried out by the most capable people, thereby providing the American public the greatest return on its investment in NASA research and technology programs.
- [NASA Procedural Requirements \(NPR\) 1080.1, \*Requirements for the Conduct of NASA Research and Technology\*](#), creates and sustains a culture of scientific integrity by establishing NASA requirements for research and technology planning, solicitation and selection of proposals, peer review, quality assessment and performance metrics, data protection, and dealing with misconduct.
- [14 CFR 1275, \*Research Misconduct\*](#), stipulates the procedures NASA will use to handle allegations that a person or institution has engaged in fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results, funded or supported by NASA.

### **2. Strengthen the actual and perceived credibility of Government research.**

NASA is committed to strengthening the actual and perceived credibility of its research by:

- (a) *Ensuring that the selection of candidates for scientific positions is based primarily on their scientific and technological knowledge, credentials, experience, and integrity.* Among the policies that support this commitment are:

- [NPR 3335.1, \*Internal Placement of NASA Employees\*](#), stipulates that NASA will fill positions available only to internal candidates through competition and on the basis of merit.
- [5 CFR 300.102, \*Employment Practices\*](#), stipulates that NASA will use competitive practices for external hiring that fairly test the relative capacity and fitness of candidates for the jobs to be filled and to support selection from among the best-qualified candidates.

(b) *Ensuring that data and research used to support policy decisions undergo independent peer review by qualified experts.* Among the policies that support this commitment are:

- [NPD 1000.0A, \*NASA Governance and Strategic Management Handbook\*](#), stipulates NASA's commitment to employing process-related checks and balances including peer review to ensure the integrity of its programs.
- [NPR 1080.1, \*Requirements for the Conduct of NASA Research and Technology\*](#), and [NPR 7120.8, \*NASA Research and Technology Program and Project Management Requirements\*](#), stipulate that NASA will rely on peer review panels of competent and non-conflicted research and technology experts from both internal and external to NASA to conduct quality and performance assessments.
- [NPR 1080.1, \*Requirements for the Conduct of NASA Research and Technology\*](#), and [NPR 2200.2, \*Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information\*](#), stipulate that NASA expects all scientific research by NASA investigators and NASA-sponsored investigators to be peer-reviewed before publication, whether the results are published by NASA or submitted to a scientific journal for publication.
- The [2010 Science Plan for NASA's Science Mission Directorate](#) stipulates that investment choices for Earth and space science programs will be based on scientific merit via peer review and open competition.<sup>1</sup>

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<sup>1</sup> The Science Mission Directorate is responsible for conducting robotic space missions and supporting research and technology development in the areas of Earth science, planetary science, astrophysics, and heliophysics.

- [Human Research Program \(HRP\)-47053, Science Management Plan](#), stipulates that projects managed by the Human Research Program will be selected on the basis of peer review of competing proposals.

(c) *Setting and enforcing clear standards regarding conflicts of interest.*

NASA civil servants are bound by federal restrictions against financial conflicts of interest. As with federal civil servants generally, NASA scientists in covered positions file financial disclosure reports annually and are provided annual training on conflict of interest rules and other federal ethics requirements.

Scientists participating in NASA peer reviews and NASA research, whether NASA civil servants or members of the external scientific community, must follow documented standards for conflicts of interest to eliminate bias and perception of bias in our peer-review process. Among the policies that support this commitment are:

- The [Guidebook for Proposers Responding to a NASA Research Announcement or Cooperative Agreement Notice](#) stipulates that all peer reviewers of NASA proposals made under a NASA Research Announcement or Cooperative Agreement Notice must avoid not only actual but also any apparent conflicts of interest and must maintain confidentiality about all activities involved in the peer review process.
- [Science Mission Directorate Policy Document \(SPD\)-01, Handling Conflicts-of-Interest for Peer Reviews](#), stipulates clear conflicts-of-interest policies for peer reviewers in all peer reviews managed by NASA's Science Mission Directorate.
- [SPD-05, Preventing Financial Conflicts for IPA Employees](#), stipulates the measures that may be utilized by an Intergovernmental Personnel Act (IPA) detailee to the NASA Science Mission Directorate to mitigate potential conflicts of interest between his or her home institution and the Science Mission Directorate. The IPA permits assignments to and from universities. IPA detailees serve within the Science Mission Directorate in all capacities that civil servant scientists do.
- In 2008, the Office of Government Ethics approved the "NASA Conflicts of Interest and Confidentiality Self Certification for NASA Peer Reviewers who are Federal Government Employees Form." This form is incorporated into the online [NASA Solicitation and Proposal Integrated](#)

- [Review and Evaluation System](#), and all NASA civil servants must complete it to certify the absence of financial conflicts of interest before participating in peer reviews of projects proposed for Agency support.
- [Human Research Program \(HRP\)-47053, Science Management Plan](#), stipulates clear conflicts-of-interest policies for peer reviewers and civil servants involved in proposal selections for projects managed by the Human Research Program.

(d) *Adopting appropriate whistleblower protections.*

NASA is fully committed to the [Whistleblower Protection Act of 1989, Public Law \(P.L.\) 101-12](#), and its expanded protections enacted by [P.L. 103-424](#):

NASA's [Whistleblower Protection Plan](#) dated March 2007 stipulates that the Agency will provide confidentiality, a single point of contact to make complaints, tracking of the complaint for the whistleblower, education of employees about their rights and protections, education of employees about their obligation to report their concerns, and education to human resources professionals and NASA managers and supervisors regarding personnel laws, rules, and regulations. The plan was developed in response to Section 110 of the [NASA Authorization Act of 2005 \(P.L. 109-155\)](#), which required the NASA Administrator to transmit to Congress "... a plan describing steps to be taken by NASA to protect from retaliation NASA employees who raise concerns about substantial and specific dangers to public health and safety or about substantial and specific factors that could threaten the success of a mission."

NASA conducts annual training regarding the [No FEAR Act \(P.L. 107-174\)](#) that informs employees of the rights and protections available under the Whistleblower Protection Act and anti-discrimination laws. In addition, the annual notice and training encourages employees to raise violations of the Whistleblower Protection Act to the NASA Office of Inspector General located at each NASA Center, or Office of Special Counsel.

### 3. Facilitate the free flow of scientific and technological information, consistent with privacy and classification standards.

NASA is committed to facilitating open communication among scientists and engineers, between NASA staff and the technical community, and between NASA employees and the public. NASA requires the results of NASA-funded research,

both internal and external, to be made available to the scientific community and to the public at no cost to them. Among the policies that support this commitment are:

- The [National Aeronautics and Space Act of 1958, as amended](#), stipulates that NASA shall “provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.” Unless a determination is made that public dissemination of information must be prohibited or restricted, NASA information is made available to the public.<sup>2</sup>
- [NPD 2200.1, Management of NASA Scientific and Technical Information](#), stipulates that NASA shall provide for the "widest practicable and appropriate dissemination" of scientific and technical information resulting from NASA's research effort, while precluding the inappropriate dissemination of NASA's restricted and sensitive information, in keeping with the National Aeronautics and Space Act of 1958, as amended.
- [NPR 2200.2, Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information](#), stipulates that NASA scientific and technical information must be made available to the public either through publication in the open literature or through NASA's Scientific and Technical Information homepage, <http://www.sti.nasa.gov/STI-public-homepage.html>.
- [NPD 1001.0, NASA Strategic Plan](#), and the [2010 Science Plan for NASA's Science Mission Directorate](#) stipulate that the results of NASA research and development must be made available for the benefit of the Government, the advancement of research, and the increase in the public's knowledge.

#### 4. Establish principles for conveying scientific and technological information to the public.

NASA is committed to conveying to the public scientific and technological information that derives from its research and development activities. When conveying such information, NASA is also committed to providing a clear explication of underlying assumptions, accurate contextualization of uncertainties, and the probabilities associated with both optimistic and pessimistic projections, including best-case and worst-case scenarios when appropriate. Among the policies that support this commitment are:

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<sup>2</sup> NASA scientific and technical information can be restricted if it includes national- security-classified information, export-controlled information, proprietary information, or discloses an invention (NPR 2200.2, Section 4.5.1).

- The [National Aeronautics and Space Act of 1958, as amended](#), stipulates that NASA shall “provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.” Unless a determination is made that public dissemination of information must be prohibited or restricted, NASA information is made available to the public.<sup>3</sup>
- [NPD 2200.1, Management of NASA Scientific and Technical Information](#), stipulates that NASA will collect, manage, disseminate, safeguard, and archive its scientific and technical information for use by NASA and NASA contractors and grantees, and unless restricted, the public in order to advance NASA’s goals in science, exploration, and aeronautics; to strengthen the effectiveness and improve the productivity and cost effectiveness of the NASA research effort; to reduce unnecessary duplication; and to improve U.S. competitiveness in science and technology.
- [NPR 2200.2, Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information](#), establishes NASA requirements for approving and publishing NASA scientific and technical information and disseminating it to the NASA technical community and the public consistent with the stipulations contained in NPD 2200.1.
- NASA practice is to place all scientific data from robotic space missions into publicly accessible data archives for use by the scientific community and the public at no cost to them. These practices are governed by requirements that are generally included in all solicitations for space missions and investigations. See, for example, <http://science.nasa.gov/earth-science/earth-science-data/data-information-policy/> and <http://science.nasa.gov/heliophysics/heliophysics-data-centers/>.

## **II. Public Communications.**

NASA is committed to promoting and maximizing openness with the media and the American people. Among the policies that support this commitment are:

- The [National Aeronautics and Space Act of 1958, as amended](#), stipulates that NASA shall “provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.” Unless a determination is made that public dissemination of

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<sup>3</sup> Ibid.

information must be prohibited or restricted, NASA information is made available to the public.<sup>4</sup>

- [14 CFR 1213, Release of Information to News and Information Media](#), includes provisions that:
  - NASA will offer articulate and knowledgeable spokespersons who can best serve the needs of the media and the American public (14 CFR 1213.105(b)).
  - NASA employees may, but are not required to, speak to the media and the public about their work (14 CFR 1213.105(c) and (h)). Specifically, it is NASA policy that NASA employees wishing to speak to the media or the public about their work shall notify their immediate supervisor and coordinate with their public affairs office in advance of interviews whenever possible, or immediately thereafter, and are encouraged, to the maximum extent practicable, to have a Public Affairs Officer present during interviews. If Public Affairs Officers are present, their role will be to attest to the content of the interview, support the interviewee, and provide post-interview follow up with the media, as necessary.
  - Set forth an internal dispute resolution process for ensuring scientific and technical accuracy is not compromised (14 CFR 1213.104(e)). Specifically, any dispute arising from a decision to proceed or not proceed with the issuance of a news release or other type of public information will be addressed and resolved by the Assistant Administrator for Communications with the appropriate Mission Directorate Associate Administrator, Mission Support Office head, Center Director, and others, such as Center Communications Directors, as necessary. However, the appropriate Mission Directorate Associate Administrator shall be the arbiter of disputes about the accuracy or characterization of programmatic, technical, or scientific information. Additional appeals may be made to agency leadership including the Office of the Administrator. When requested by a Center Communications Director, an explanation of the resolution will be provided in writing to all interested Agency parties.
  - Scientific and technical information from or about Agency programs and projects will be accurate and unfiltered (14 CFR 1213.102(a)) and that editing by public affairs staff to ensure that public information products are well written and appropriate for the intended audience shall not change scientific or technical data or the meaning of programmatic

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<sup>4</sup> Ibid.

content (14 CFR 1213.103(c)). It is NASA policy that political officials should not suppress or alter scientific or technological findings and that in no circumstance may public affairs officers ask or direct Federal scientists to alter scientific findings.

### **III. Use of Federal Advisory Committees.**

NASA is committed to the integrity of its use of Federal advisory committees (FAC) tasked with giving scientific advice. It is NASA policy that:

- The recruitment process for new FAC members should be as transparent as practicable.
- NASA should, when practicable and appropriate, announce FAC member vacancies widely, including notification in the Federal Register with an invitation for the public to recommend individuals for consideration and for self-nominations to be submitted.
- Professional biographical information (including current and past professional affiliations) for appointed committee members should be made widely available to the public (e.g., via a website) subject to Privacy Act and other statutory/regulatory considerations. Such information should clearly illustrate the individuals' qualifications for serving on the committee.
- The selection of members to serve on a scientific or technical FAC should be based on expertise, knowledge, and contribution to the relevant subject area. Additional factors that may be considered are availability of the member to serve, diversity among members of the FAC, and the ability to work effectively on advisory committees. Committee membership should be fairly balanced in terms of points of view represented with respect to the functions to be performed by the FAC.
- Except when prohibited by law, NASA should make public which FAC members were granted conflict-of-interest waivers and make all such waivers publicly available upon request.
- Except when explicitly stated in a prior agreement between an agency and a FAC, all reports, recommendations, and products produced by FACs should be treated as solely the findings of such committees rather than of the USG, and thus are not subject to intra- or inter-agency revision.
- Subcommittees or task forces that are not subject to FACA will operate under procedures that provide for public meetings and the maintenance of publicly available records.

Among the policies that support this commitment are:

- [NPD 1150.11, \*Federal Advisory Committee Act Committees\*](#) (under revision as of December 2011, to include the stipulations outlined above), and in compliance with the [Federal Advisory Committee Act \(5 U.S.C. App., as amended\)](#) and the [General Services Administration \(GSA\) Final Rule on Federal Advisory Committee Management \(41 CFR Parts 101-6 and 102-3\)](#).

#### **IV. Professional Development of Government Scientists and Engineers.**

##### 1. Encourage publication of research findings in peer-reviewed, professional, or scholarly journals.

It is NASA policy to encourage Agency employees to publish NASA-sponsored research findings in peer-reviewed, professional, or scholarly journals. Among the policies that support this commitment are:

- [NPR 1080.1, \*Requirements for the Conduct of NASA Research and Technology\*](#), stipulates that NASA researchers and project staff are required to publish the results of their research and development activities in peer-reviewed literature or publicly available NASA technical reports.
- [NPR 2200.2, \*Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information\*](#), establishes NASA requirements for approving and publishing NASA scientific and technical information and disseminating it to the NASA technical community and the public.

##### 2. Encourage presentation of research findings at professional meetings.

It is NASA policy to encourage Agency employees to present research findings at professional meetings. Among the policies that support this commitment are:

- [NPR 1080.1, \*Requirements for the Conduct of NASA Research and Technology\*](#), stipulates that NASA researchers and project staff are expected to share their results with their peers and colleagues at professional meetings, science conferences, and other venues. NASA civil servants will do so to the extent permitted by available funding and law.<sup>5</sup>

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<sup>5</sup> For example, the [Consolidated Appropriations Act, 2010, P.L. 111-117](#), requires that NASA limit travel to any single conference outside of the United States (a "foreign conference") to no more than 50 NASA employees. The [NASA Authorization](#)

### 3. Allow Government scientists and engineers to become editors or editorial board members of professional or scholarly journals.

It is NASA policy to allow NASA civil servant scientists and engineers to serve as editors or editorial board members of professional or scholarly journals. This service is generally considered part of a NASA scientist's or engineer's official duties and, when approved by his or her supervisor, may be carried out as part of his or her job. NASA recognizes that such service is not only important for the professional development of NASA scientists and engineers, but also that such development serves the interests of the government and the U.S. taxpayer by improving the quality and professional standing of employees.

### 4. Allow full participation in professional societies including removing barriers for serving as officers or on governing boards of such societies.

It is NASA policy to allow its scientists, engineers, and all other NASA employees for whom such participation is an integral part of professional development to serve as officers in professional societies:

- There are no NASA-specific barriers to participation as officers or directors of professional societies. The Department of Justice Office of Legal Counsel has opined that with the exception of certain standard-setting organizations [18 U.S.C. § 208](#) prohibits outside board service in an official capacity. NASA ethics officials work with interested employees to ensure that outside activities are performed in compliance with all legal and ethics requirements.
- NASA has issued an Agency-wide memorandum dated July 26, 2011, confirming the Agency's support for NASA scientists, engineers, and all other NASA employees for whom such participation is an integral part of professional development to serve as society officers or board members, where appropriate, and summarizing the Agency's processes for them to obtain approval for such service.

### 5. Allow Government scientists and engineers to receive honors and awards for their research and discoveries.

It is NASA policy to allow its scientists and engineers to receive honors and awards for their research and discoveries:

- Consistent with [5 CFR 2635.204\(d\)](#), NASA civil servant scientists and engineers may receive honors and awards from outside entities for their research and discoveries.
- The Agency also makes full use of the [Government Employees Incentive Awards Act, 5 U.S.C. §§ 4501 et seq.](#), to recognize superior accomplishments of its scientists and engineers.

## **Appendix – List of Acronyms**

CFR Code of Federal Regulations

FAC Federal Advisory Committee

FACA Federal Advisory Committee Act

GSA General Services Administration

HRP Human Research Program

IPA Intergovernmental Personnel Act

NASA National Aeronautics and Space Administration

NPD NASA Policy Directive

NPR NASA Procedural Requirements

OSTP Office of Science and Technology Policy

P.L. Public Law

SPD Science Mission Directorate Policy Document

U.S.C. United States Code