DoE RPS Infrastructure Review Status
Review Committee Membership

• NASA Membership
  – Jim Adams  Chair, NASA Deputy Chief Technologist
  – David Schurr  NASA PSD Deputy Division Director
  – Hal Bell  NASA Deputy Chief Engineer
  – Frank Bellinger  NASA Facilities Engineering & Real Property Director(former); NASA WFF Technical Director
  – Kevin Gilligan  Committee Executive Secretary; NASA OCFO Program Analyst

• Non-NASA Consultants
  – Ralph McNutt  APL, NRC RPS Study Chair
  – Mark Rokey  The Aerospace Corporation
  – Tim Frazier  DOE Radioisotope Program Director (former)

• Ex-Officio Observers
  – Len Dudzinski  NASA PSD Liaison
  – Alice Caponiti  DOE NE-75 Liaison
DOE RPS Infrastructure Capabilities

DOE manages RPS assembly, delivery and analysis capabilities and RPS development and system integration contracts

- Physical infrastructure at INL, ORNL, LANL
  - Material handling
  - Material storage
  - Safeguards and security
  - Safety
  - Waste management
- Personnel skills
  - Professionals and technicians
  - Corporate knowledge
  - Succession
- Assemble, test and deliver power systems
- Analyze safety and risk of RPS deployment and operations

- Knowledge Bases
  - Safety: in design, production and use for worker safety in production and public safety in application
  - Quality assurance: in production, assembly and testing to assure product quality
  - Program knowledge: the integration of all processes and participant organizations
- Provide launch support and emergency response
- Manage plutonium-238 supply
- Provide international leadership on safe use of space NPS
- Manage customer funded RPS System Integration Contracts
Select Observations

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<th>Pu-238 is an exceptionally difficult material with which to work.</th>
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<td>Disposal of waste products is a significant factor in the process.</td>
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<td>The processes observed at the sites did not show excess.</td>
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<td>The role of DOE in the process is essential.</td>
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<td>RPS’s are a critical resource to execute most missions from the National Research Council’s National Academy of Science Decadal Survey of Planetary Science for the period 2013-2022.</td>
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<td>If the need for plutonium-238 grows beyond the 1.5kg annual production rate currently planned, significant changes will be necessary.</td>
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<td>Fine-weave pierced fabric is a critical resource in the production of general-purpose heat source modules.</td>
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Together, NASA and DOE should derive production rates that maintain proficiency across the DOE sites, as well as meet NASA’s future mission needs.

Ensure the availability of fine-weave pierced fabric in order to enable general-purpose heat source module production.

Communications between NASA and DOE need to be free and open, while authority needs to be formalized.

Regularly scheduled meetings should be held between the leadership of NASA and DOE at all levels.

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**Select Recommendations (cont.)**

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<th>Recommendation</th>
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<td>Though NASA is providing infrastructure funding, the responsibility, accountability, and ownership of these assets should remain with DOE.</td>
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<td>NASA should ensure sufficient funding is available to DOE so as to not impact ongoing operations</td>
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<td>The investigation of new processes should be considered routinely, coupled with a long-term continuous improvement program.</td>
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ASRG Status
Background

• The Science Mission Directorate (SMD) and Planetary Science Division (PSD) are under tighter fiscal constraints for FY13 and beyond than when the ASRG project was established.
  – No Flagship missions were identified in the President’s FY14 budget request that would require ASRGs.
  – The Discovery and New Frontiers Announcements of Opportunity (AOs) will have a slower than historical cadence under the FY14 budget levels, reducing the concerns about Plutonium limitations.

• Pu-238 availability, incorporating new production, will be sufficient to support the cadence that PSD can support using MMRTG technology
Go Forward Plan

• PSD has been directed to maintain the infrastructure, technology, expertise, and production capabilities for the Nation’s RPS capabilities.
  – This has to be our highest RPS priority
• PSD’s technology program, and the RPS Program, is re-scoped to optimize production and sustaining of existing capabilities, to support the expected missions and mission cadence of the Planetary programs
• PSD has directed DOE to terminate the existing ASRG flight project, and the RPS Program Office to develop options to continue Stirling research as a technology development project
• Additional Pu-238 inventory was recently released for NASA set-aside with the promise of new production.

For planning purposes, subject to change. Graphics are not precise.