

SPACE NUCLEAR SYSTEMS FORUM 2010 (SNSF-10)

February 9 – 11, 2010

NASA Marshall Space Flight Center
US Space and Rocket Center Educator Training Facility
Huntsville, AL

SNSF would like to thank the Idaho National Laboratory for their continuing support of space nuclear power, demonstrated by their generous sponsorship of this meeting.



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U.S. DEPARTMENT OF
ENERGY



DRAFT AGENDA

Tuesday, Feb 9, 2010

Opening Session

Chair:

- 8:30 a.m. Welcome from NASA Marshall Space Flight Center
NASA MSFC Director's Officer
- 8:40 a.m. Opening Address
Congressman Parker Griffith (AL)
- 9:10 a.m. Exploration Technology Development Program
Frank Peri, NASA Director of the Exploration Technology Development Program
- 9:50 a.m. European Space Nuclear Initiative: A UK Perspective and Scientific Implications
Richard Ambrosi, University of Leicester

10:30 a.m. *Break*

- 10:50 a.m. Planetary Science Missions and Use of Radioisotope Power Systems
Leonard Dudzinski, NASA Program Executive, Radioisotope Power Systems *
- 11:30 a.m. Status of Radioisotope Power System Development
Tom Sutliff, Deputy Manager, Radioisotope Power Systems Program Office

* Invited

Tuesday, February 9, 2010 (continued)

12:10–12:50 p.m. *Lunch – on-site*

Afternoon Session – Program updates

- 12:50 p.m. Future Launch Systems and Launch Capabilities
NASA MSFC *
- 1:30 p.m. Multi-mission RTG Fueling and Testing
Carla Dwight, Space Nuclear Systems and Technology Deputy Division
Director, Idaho National Laboratory
- 2:15 p.m. Fission Surface Power (FSP) for Lunar Exploration
Don Palac, Project Manager Fission Surface Power, NASA GRC
- 3:15 p.m. Nuclear Thermal Propulsion (NTP) Recent Activities
Stan Borowski, NASA GRC, and Steve Howe, CSNR

4:15 p.m. *Break*

- 4:30 – 6:00 p.m. Advanced In-Space Propulsion
Franklin Chang – Diaz, Ad Astra Rocket Company

* Invited

Wednesday, February 10, 2010

8:30 – 10:00 a.m. *Morning Session – University Perspectives Panel Session*

University Perspectives and Capabilities: Session 1

Chair: Dr. Andy Klein, Oregon State University

Panelists: Dr. Travis Knight, University of South Carolina

Dr. Shannon Bragg-Sitton, Texas A&M University

Dr. Jeff King, Colorado School of Mines

10:00 a.m. *Break*

10:15 a.m. – 12:00 p.m. – *Breakout Sessions*

Breakout 1. Fission Power

Chair: Dr. Michael Houts, NASA Marshall Space Flight Center

- Nuclear Design of a Fission Surface Power System - Dave Poston, LANL
- Designing and Planning a Full-scale FSP Technology Demonstration Unit – Lee Mason, NASA GRC
- Pump Design and Options for NaK Cooled Fission Surface Power Systems - Jim Werner, INL

Breakout 2. Application of Radioisotope Systems / Pu-238 Production

Chair: Carla Dwight, Idaho National Laboratory

- MARS Hopper - Steve Howe, CSNR
- Radioisotope Encapsulation Techniques – Rob O'Brien, CSNR
- Stirling Testing – NASA GRC
- RPS Facility Development – Marc Borland, INL

12:00–12:50 p.m. *Lunch – on-site*

1:00 p.m.–2:45 p.m. – *Breakout Sessions*

Breakout 3. Nuclear Thermal Propulsion

Chair: Jon Webb, Center for Space Nuclear Research

- NTR Development Plan and Trade Studies - Steve Howe, CSNR
- NTP System Studies – Stan Borowski, NASA GRC
- NTR Modeling Efforts – Bruce Schnitzler, INL
- Fuels and Reactor Studies - Jon Webb, CSNR

Breakout 4. Fission Power (Session 2)

Chair: Lou Qualls, Oak Ridge National Laboratory

- FSPS Control System Development and Modeling - Lou Qualls, ORNL
- TDU Reactor Simulator modeling – Ross Radel, SNL
- Current Status on Power Conversion and Heat Rejection Technologies for FSP – Lee Mason, NASA GRC
- Component Irradiation Testing at ORNL and SNL – Ross Radel, SNL

2:45 p.m. *Break*

3:15 – 5:00 p.m. *Breakout Sessions*

Breakout 5. Advanced Concepts

Chair: Terry Kammash, University of Michigan

- Fusion Hybrid Reactor for Space Power and Propulsion - Terry Kammash, University of Michigan
- Nuclear Fusion Propulsion - Bill Seidler, Boeing
- Engineering Gaseous Fusion Propulsion – Gerry Brainard, REISZ Engineers
- Lunar and Mars Lander Design for Nuclear Surface Systems Emplacement - Ben Donahue, Boeing
- Optical Lunar Reactor - Steve Howe, CSNR

Breakout 6. Fission Power (Session 3)

Chair: Jim Werner, Idaho National Laboratory

- Pre-TDU Integrated Pumped NaK Testing - Boise Pearson, NASA MSFC; Lee Mason, NASA GRC; and Jim Werner, INL
- Radiation Shielding for Fission Surface Power Systems - Dave Poston, LANL
- Safety Considerations for Fission Surface Power Systems - Sterling Bailey, Consultant
- FSP Reflector Thermal Management - David Dixon, LANL

Evening Special Session

5:30 p.m. Space and Rocket Center open for SNSF participants to tour

6:30 p.m. Dinner meeting @ Space and Rocket Center
Speaker: Mike Griffin, Former NASA Administrator

Thursday, February 11, 2010

Morning Session – Nuclear Energy University Program (NEUP)

8:30 a.m. Nuclear Energy University Programs (applications to Space Nuclear Systems)
Chair: Dr. Harold Blackman, Idaho National Laboratory

10:00 a.m. *Break*

10:15 a.m. Recap of Working Sessions & Topic Areas
Chair: James Werner, Idaho National Laboratory

11:15 p.m. *Lunch*
Box Lunch Available for Tour Participants (purchase in advance)

12:15 – 2:15 p.m. NASA MSFC Tour
Requires Advance Registration no later than Tuesday, Feb. 9