

Monday February 22, 2016

8:00am - 9:00am	Registration	Registration Desk
	Session Preparation	
9:00am - 10:30am	Plenary Session I	Ballroom 1
	Welcome: Paul McConaughy • Bhavya Lal, Institute for Defense Analyses' Science and Technology Policy Institute (STPI)	
10:30am - 11:00am	Refreshments	Exhibitor Hall
11:00am - 12:00pm	Plenary Session II	Ballroom 1
	• Mike Houts, NASA Marshall Space Flight Center • Lee Mason, NASA Glenn Research Center • Tom Brown, NASA Marshall Space Flight Center	
12:00pm - 1:00pm	Lunch	On your own
1:00pm - 2:30pm	Technical Sessions	Ballrooms 1, 3, and 4
2:30pm - 3:00pm	Refreshments	Exhibitor Hall
3:00pm - 5:30pm	Technical Sessions	Ballrooms 1, 3, and 4
7:00pm - 9:00pm	Opening Reception Keynote Speaker: Ralph McNutt, Johns Hopkins Applied Physics Laboratory	US Space and Rocket Center

Tuesday February 23, 2016

8:30am - 11:00am	Technical Sessions	Ballrooms 1, 3, and 4
11:00am - 1:00pm	Lunch	On your own
1:00pm - 2:30pm	Technical Sessions	Ballrooms 1, 3, and 4
2:30pm - 3:00pm	Refreshments	Exhibitor Hall
3:00pm - 5:30pm	Technical Sessions	Ballrooms 1, 3, and 4

Wednesday February 24, 2016

8:30am - 11:30am	Technical Sessions	Ballrooms 1, 3, and 4
11:30pm - 1:00pm	Lunch	On your own
1:00pm - 2:30pm	Technical Sessions	Ballrooms 1, 3, and 4
2:30pm - 3:00pm	Refreshments	Exhibitor Hall
3:00pm - 5:30pm	Technical Sessions	Ballrooms 1, 3, and 4
7:00pm - 9:00pm	Dinner Banquet Intro: Roger Myers, Aerojet Rocketdyne Keynote Speaker: Steve Jurczyk, NASA HQ	Von Braun Center

Thursday February 25, 2016 - Tour of NASA Marshall Space Flight Center

7:30am - 8:00am	Travel from Embassy Suites to MSFC (shuttle provided)
8:00am - 8:20am	Additive Manufacturing
8:20am - 8:40pm	Composite Manufacturing
8:40am - 9:00am	Shuttle
9:00am - 9:20am	ECLSS
9:20am - 9:40am	SLS Weld Tools
9:40am - 10:00am	Shuttle
10:00am - 10:20am	NTP Fuel Lab
10:20am - 10:40am	Shuttle
10:40am - 11:00am	East Test Area
11:00am - 11:20am	Shuttle
11:20am - 11:40am	ISS HOSC
11:40am - 12:00pm	Shuttle
12:00pm - 12:20pm	NTRRES
12:20pm - 12:40pm	Travel to Embassy Suites from MFSC (shuttle provided)

Monday February 22, 2016

Track I: Radioisotope Power Systems
Mission Studies: Part I

1:00 pm - 2:30 pm	6005	Re-Inventing the Light Bulb , A. Rajguru (<i>University of Southern California</i>), M. Molnar (<i>Missouri University of Science and Technology</i>), and P. Rexing (<i>Missouri University of Science and Technology</i>)	Ballroom 1
	6084	Saturn Spacecraft Power: Trading Radioisotope, Solar, and Fission Power Systems , S.R. Oleson (<i>NASA GRC</i>), L. Kohout (<i>NASA GRC</i>), P. Schmitz (<i>Vantage Partners, LLC</i>), and R. Lorenz (<i>Johns Hopkins University</i>)	
	6038	Timelines for Supporting a Nuclear-Enabled NASA Mission: Does a Temporal Phase Mismatch Between NASA and DOE Exist? , S.G. Johnson (<i>Idaho National Laboratory</i>), C.C. Dwight (<i>Idaho National Laboratory</i>), K. Lively (<i>Idaho National Laboratory</i>), and Y. Lee (<i>Jet Propulsion Laboratory</i>)	

Track III: Nuclear Thermal Propulsion
Project and Mission Architecture

1:00 pm - 1:30 pm	6080	Development and Utilization of Nuclear Thermal Propulsion , M. Houts and S. Mitchell (<i>NASA MSFC</i>)	Ballroom 3
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Track III: Nuclear Thermal Propulsion
Test Facility and Regulatory Considerations

1:30 pm - 2:30 pm	6009	Approach to Licensing and Permitting Nuclear Test Facilities and Launch Approval for a Nuclear Safety Review and Launch Approval , J. Werner (<i>Idaho National Laboratory</i>), A. Weitzberg, and A. Belvin (<i>Department of Energy</i>)	Ballroom 3
	6083	Axisymmetric Analysis of a Hydrogen Containment Process for Nuclear Thermal Engine Ground Testing , T-S. Wang, E.T. Stewart, and F. Canabal (<i>NASA MSFC</i>)	

Track I: Radioisotope Power Systems
Fuel Production: Part I

1:00 pm - 2:30 pm	6047	Idaho National Laboratory Radioisotope Power Systems Nuclear Operations: Preparations, Documentation, Readiness Assessments and Conduct of Operations Supporting a Nuclear-Enabled NASA Mission , K.L. Lively, E.S. Clarke, and R.P. Gomez (<i>Idaho National Laboratory</i>)	Ballroom 4
	6015	The Plutonium-238 Supply Project , R.M. Wham, D.W. DePaoli, R.W. Hobbs, E.D. Collins, E.D. Benker, R.S. Owens, and R.J. Vedder (<i>Oak Ridge National Laboratory</i>)	
	6046	Production of Polonium-209 Using Nuclear Reactor as Radioisotope Fuel for Space Nuclear Power , J. Nishiyama (<i>Tokyo Institute of Technology</i>)	

Track I: Radioisotope Power Systems
Mission Studies: Part II

3:00 pm - 5:30 pm	6052	Assessment of Future New Frontiers Mission Concepts Utilizing the MMRTG and eMMRTG Radioisotope Thermoelectric Generators , R.L. Cataldo (<i>NASA GRC</i>), and D.F. Woerner (<i>Jet Propulsion Laboratory</i>)	Ballroom 1
	6023	RPS Program Status , J.A. Hamley, T.J. Sutliff, C.E. Sandifer II, and J.F. Zakrajsek (<i>NASA GRC</i>)	
	6033	Triton Hopper: Exploring Neptune's Captured Kuiper Belt Object , S.R. Oleson and G. Landis (<i>NASA GRC</i>)	
	6045	Radioisotope Power Systems (RPS) for Emerging Power Needs for Deep Space Small-Sats, CubeSats and Deployed Payloads , Y.H. Lee, B.K. Bairstow, and J.E. Riedel (<i>Jet Propulsion Laboratory</i>)	
6059	Power Generation Alternatives for Deep Space Exploration in the Solar System , P.M. Beauchamp, J. Elliott, J.A. Cutts, and JPL A-Team (<i>Jet Propulsion Laboratory</i>)		

Track II: Fission Power Systems
Reactor Physics and Fuel

3:00 pm - 5:00 pm	6006	LEU CERMET Based Fission Surface Power Source for a Martian Habitat - Reactor Design , A. Kumar (<i>Center for Space Nuclear Research</i>), K. Schillo (<i>University of Alabama</i>), K. Harris (<i>Utah State University</i>), Y.M. Hew (<i>Stanford University</i>), and S.D. Howe (<i>Center for Space Nuclear Research</i>)	Ballroom 3
	6014	Moderator Configuration Options for Low-Enriched Uranium Fueled Kilowatt-Class Space Nuclear Reactors , L.D.H. Mencarini (<i>Instituto de Estudios Avancados</i>) and J.C. King (<i>Colorado School of Mines</i>)	
	6017	Conceptual Design of a Heat Pipe Cooled Nuclear Reactor Power System for Mars Base , C. Yao (<i>China Institute of Atomic Energy</i>), G. Hu (<i>China Institute of Atomic Energy</i>), J. Xie (<i>China Institute of Atomic Energy</i>), Y. Liu (<i>China Institute of Atomic Energy</i>), C. Xu (<i>China Institute of Nuclear Information and Economy</i>), and L. Ha (<i>China Institute of Nuclear Information and Economy</i>)	
	6090	Reactor Design of the Kilowatt Reactor Using Stirling Technology (KRUSTY) , D.I. Poston (<i>Los Alamos National Laboratory</i>), M. Gibson (<i>NASA GRC</i>), T. Godfroy (<i>NASA MSFC</i>), and P. McClure (<i>Los Alamos National Laboratory</i>)	

Track I: Radioisotope Power Systems

Fuel Production: Part II

- 3:00 pm - 5:00 pm
- 6026 **Development of Chemical Processes for Production of Pu-238 from Irradiated Neptunium Targets**, *D.W. DePaoli, D.E. Benker, L.H. Delmau, J.D. Burns, and R.M. Wham (Oak Ridge National Laboratory)*
- 6078 **The Separation of AM-241 from Aged Plutonium Dioxide for Use in Radioisotope Power Systems**, *M.J. Sarsfield (National Nuclear Laboratory), M.J. Carrott (National Nuclear Laboratory), C. C. Majer (National Nuclear Laboratory), C. Mason (National Nuclear Laboratory), C. Cambell (National Nuclear Laboratory), J. Holt (National Nuclear Laboratory), T. Griffiths (National Nuclear Laboratory), C. Carrigan (National Nuclear Laboratory), H. Fenwick (National Nuclear Laboratory), B. McLuckie (National Nuclear Laboratory), C. Gregson (National Nuclear Laboratory), T. Tinsley (National Nuclear Laboratory), and K. Stephenson (European Space Agency)*
- 6001 **Continuous Improvement Initiatives for the Radioisotope Power Systems Program at Oak Ridge National Laboratory**, *K.R. Veach Jr. (Oak Ridge National Laboratory)*
- 6039 **Progress on the Sol-Gel Microsphere Technology Demonstration for Pu-238 Heat Sources**, *J. Katalenich and S. Sinkov (Pacific Northwest National Laboratory)*

Ballroom 4

Tuesday February 23, 2016

Track I: Radioisotope Power Systems

Thermoelectric Conversion: Part I

- 8:30 am - 11:00 am
- 6064 **Optimization of High Temperature Zintl Materials for the p-Leg of Thermoelectric Space Power Generation**, *S.M. Kauzlarich (University of California), J.H. Grebenkemper (University of California), Y. Hu (University of California), D. Barrett (University of California), E. Wille (University of California), and S. Bux (Jet Propulsion Laboratory)*
- 6029 **High Efficiency Graphene Superlattices Based Thermoelement for Radioisotope Thermoelectric Generator Applications**, *S. K. Mishra, C.P. Kaushik, B. Dikshit, and A. Kumar (Bhabha Atomic Research Centre)*
- 6041 **An Update on the eMMRTG Skutterudite-Based Thermoelectric Technology Maturation Project**, *T. Caillat (Jet Propulsion Laboratory), I. Chi (Jet Propulsion Laboratory), S. Firdosy (Jet Propulsion Laboratory), C.-K. Huang (Jet Propulsion Laboratory), K. Smith (Jet Propulsion Laboratory), J. Paik (Jet Propulsion Laboratory), P. Gogna (Jet Propulsion Laboratory), K. Yu (Jet Propulsion Laboratory), J.-P. Fleurial (Jet Propulsion Laboratory), R. Bennett (Teledyne Energy Systems), and S. Keyser (Teledyne Energy Systems)*
- 6043 **A Technology Roadmap for Thermoelectric-Based Space and Terrestrial Power Systems**, *J.-P. Fleurial and T. Hendricks (Jet Propulsion Laboratory)*
- 6049 **Progress on Development of Skutterudite Thermoelectrics for Space Power Applications**, *R. Bennett (Teledyne Energy Systems), T. Hammel (Teledyne Energy Systems), S. Keyser (Teledyne Energy Systems), T.C. Holgate (Teledyne Energy Systems), and T. Caillat (Jet Propulsion Laboratory)*

Ballroom 1

Track II: Fission Power Systems

Power Conversion and Associated Technologies: Part I

- 8:30 am - 11:00 am
- 6004 **Mass Optimization of Supercritical CO2 Brayton Cycle Power Conversion System for a Mars Surface Fission Power Reactor**, *K.E. Harris (Utah State University), Y.M. Hew (Standard University), K.J. Schillo (University of Alabama), A. Kumar (Texas A&M University), and S.D. Howe (Center for Space Nuclear Research)*
- 6007 **Design-Based Model of a Closed Brayton Cycle for Space Power Systems**, *G.B. Ribeiro, L.N.F. Guimaraes, and F.A.B. Filho (Institute for Advanced Studies)*
- 6068 **Alkali Metal Heat Pipes for Kilopower**, *C. Tarua, W.G. Anderson, and D. Beard (Advanced Cooling Technologies)*
- 6069 **Multiphysics Analysis of Liquid Metal Annular Linear Induction Pumps**, *C.O. Maidana and J.E. Neiminen (Maidana Research)*
- 6074 **Fission Surface Power Technology Demonstration Unit Test Results**, *M.H. Briggs (NASA GRC), M.A. Gibson (NASA GRC), S. Geng (NASA GRC), and J. Sanzi (Vantage Partners)*

Ballroom 3

Track III: Nuclear Thermal Propulsion

Reactor Design: Part I

- 8:30 am - 11:00 am
- 6048 **Comparison of LEU and HEU Cermet Nuclear Thermal Propulsion Systems at 16,000 lbf Thrust**, *M. Eades (The Ohio State University), W. Deason (Center for Space Nuclear Research), and C.R. Joyner II (Aerojet Rocketdyne)*
- 6025 **Comparison of Neutronic Properties of CERMET and Composite Nuclear Thermal Rocket Cores Utilizing Low-Enriched Uranium**, *A. Thoday, T. Franklin, and A. Klein (Oregon State University)*
- 6050 **A LEU Cermet Point Design: The Space Capable Cryogenic Thermal Engine (SCCTE)**, *M. Eades (The Ohio State University), V. Patel (Center for Space Nuclear Research), and W. Deason (Center for Space Nuclear Research)*
- 6086 **Low-Enriched Uranium Nuclear Thermal Rocket Design Considerations**, *V. Patel (Center for Space Nuclear Research)*
- 6072 **A Point Design for a LEU Composite NTP System: Superb Use of Low-Enriched Uranium (SULEU)**, *P. Venneri (Ultra-Safe Nuclear Corporation) and M. Eades (The Ohio State University)*

Ballroom 4

Track I: Radioisotope Power Systems Thermoelectric Conversion: Part II		Ballroom 1
1:00 pm - 2:30 pm	6040 Development of a Sliding and Compliant Cold Side Thermal Interface for the a Thermopile Inside a Terrestrial Mini-RTG , N.R. Keyawa, P. Bahrami, G. Molina, V. Cormarkovic, S. Firdosy, R. Ewell (<i>Jet Propulsion Laboratory</i>)	
6073	High Temperature Device Technologies for the Advanced Thermoelectric Couple Project (ATEC) , S. Firdosy, T. Caillat, B.C-Y. Li, C.K. Huang, V. Ravi, J. Paik, D. Uhl, J. Ni, K. Smith, G. Nakatsukasa, J.-P. Fleurial (<i>Jet Propulsion Laboratory</i>)	
6030	Development of High Efficiency Complex Zintl Phases for Thermoelectric Space Power Generation Applications , S. Bux (<i>Jet Propulsion Laboratory</i>), B. Li (<i>Jet Propulsion Laboratory</i>), Y. Hu (<i>University of California</i>), A. Zevalkink (<i>Jet Propulsion Laboratory</i>), S. Chanakian (<i>Jet Propulsion Laboratory</i>), D. Uhl (<i>Jet Propulsion Laboratory</i>), S. Kauzlarich (<i>University of California</i>), and J.-P. Fleurial (<i>Jet Propulsion Laboratory</i>)	
Track II: Fission Power Systems Power Conversion and Associated Technologies: Part II		Ballroom 3
1:00 pm - 2:30 pm	6075 Completion of a 12kWe Stirling Converter for Fission Power Systems , J.C. Stanley (<i>Sunpower</i>), J.G. Wood (<i>Sunpower</i> , E. Holliday(<i>NASA GRC</i>), S.M. Geng (<i>NASA GRC</i>)	
6081	First Approach to the Design of Annular Linear Induction Pumps using First Principles , J.E. Nieminen and C.O. Maidana (<i>Maidana Research</i>)	
6087	Ultra-Compact Heat Rejection System , J.J. Breedlove (<i>Creare</i>), T.M. Conboy (<i>Creare</i>), M. Gibson (<i>NASA GRC</i>)	
Track III: Nuclear Thermal Propulsion Reactor Design: Part II		Ballroom 4
1:00 pm - 2:30 pm	6051 WORPH: An Open Source Code for NTR Infinite Lattice Studies Using MCNP and Serpent , M. Eades (<i>The Ohio State University</i>) and P. Venneri (<i>KAIST</i>)	
6037	Space Propulsion Optimization Code Benchmark Case: SNRE , V. Patel (<i>Center for Space Nuclear Research</i>), M. Eades (<i>The Ohio State University</i>), C.R. Joyner II (<i>Aerojet Rocketdyne</i>)	
6071	Characterization of Xenon Induced Reactivity Changes in Low-Enriched Nuclear Thermal Propulsion Cores , P. Venneri (<i>Ultra-Safe Nuclear Corporation</i>) and M. Eades (<i>The Ohio State University</i>)	

Track I: Radioisotope Power Systems Stirling Conversion		Ballroom 1
3:00 pm - 5:30 pm	6020 Stirling Research Laboratory Activities at NASA Glenn Research Center , S. Oriti (<i>NASA GRC</i>)	
6061	Advanced Stirling Converter ASC-E3 Project Summary , J. Collins, K. Wilson, and M.A. Dunlap (<i>Sunpower</i>)	
6062	Advanced Stirling Converter (ASC) Design and Technology Assessment White Paper , J. Collins and K. Wilson (<i>Sunpower</i>)	
6076	Radioisotope Thermoacoustic Power Conversion for Spacecraft , D.E. Lee, M. Petach, and E. Tward (<i>Northrop Grumman Aerospace Systems</i>)	
6055	Status of Stirling Power System Modeling Capabilities , J. Metscher (<i>NASA GRC</i>), T. Reid (<i>NASA GRC</i>), P.C. Schmitz (<i>Power Computing Solutions</i>)	
Track II: Fission Power Systems Power Conversion and Associated Technologies: Part III		Ballroom 3
3:00 pm - 4:00 pm	6088 Turbo-Brayton Power Converter for Spaceflight Applications , J.J. Breedlove, T.M. Conboy, M.V. Zagarolo (<i>Creare</i>)	
6063	Maturing Technologies for Stirling Space Power , S.D. Wilson (<i>NASA GRC</i>)	
Track III: Nuclear Thermal Propulsion Reactor Design: Part III		Ballroom 4
3:00 pm - 4:00 pm	6044 Preliminary Analysis of Low-Enriched Uranium (LEU) Ultra High Temperature Nuclear Thermal Rockets Capable of 1100s Specific Impulse , K. Benensky (<i>University of Tennessee</i>), M.-J. Wang (<i>Virginia Polytechnic Institute</i>), J. Nieminen (<i>University of Southern California</i>), M. Eades (<i>The Ohio State University</i>), and S. Howe (<i>Center for Space Nuclear Research</i>)	
6056	A Six Component Model for Dusty Plasma Nuclear Fission Fragment Propulsion , R.L. Clark (<i>Grassmere Dynamics</i>) and R.B. Sheldon (<i>RBSeldon Consulting</i>)	

Track I: Radioisotope Power Systems		Ballroom 3
Cermet as a Fuel Simulant: Part I		
4:00 pm - 5:30 pm	6034 Influence of the Gd(III) Cation on the Oxygen Exchange Behavior of CeO₂ , C.E. Whiting, D.P. Kramer, and C.D. Barklay (University of Dayton)	
	6036 Impact of Carbon on the Oxygen Potential of a High Temperature System Containing CeO₂ as PuO₂ Surrogate , C.E. Whiting, H. Knachel, D.P. Kramer, and C.D. Barklay (University of Daytona)	
	6079 Sintering and Characterisation of Cerium Dioxide as a Surrogate for Americium-241 , M.J. Sarfield (National Nuclear Laboratory), H. Fenwick (National Nuclear Laboratory), P. Glenville (National Nuclear Laboratory), D.P. Kramer (University of Dayton), E.J. Watkinson (University of Leicester), R.M. Ambrosi (University of Leicester), H.R. Williams (University of Leicester), C.D. Barklay (University of Daytona), K. Stephenson (European Space Agency), and T. Tinsley (National Nuclear Laboratory)	

Wednesday February 24, 2016

Track I: Radioisotope Power Systems		Ballroom 1
Materials and Systems Testing: Part I		
8:30 am - 11:30 am	6031 Neutron Irradiation of Bi₂Te₃ Based Thermoelectric Modules for Radioisotope Space Power Systems Applications , R. Mesalam (University of Leicester), H.R. Williams (University of Leicester), R.M. Ambrosi (University of Leicester), D.P. Kramer (University of Dayton), C.D. Barklay (University of Daytona), J. Garcia-Canadas (Universitat Jaume I), and K. Stephenson (European Space Agency)	
	6085 Effect of Sub-Sized Specimen Geometry and Orientation on High Strain-Rate Tensile Impact Ductilities of DOP-25 Iridium , B.R. Friske and C.A. Carmichael Jr. (Oak Ridge National Laboratory)	
	6035 Modeling the Gas Phase Chemistry Inside an RTG , C.E. Whiting (University of Dayton), E.J. Watkinson (University of Leicester), C.D. Barklay (University of Dayton), D.P. Kramer (University of Dayton), H.R. Williams (University of Leicester), and R.M. Ambrosi (University of Leicester)	
	6053 Characterization the Thermal Conductivity of CBCF: A Review and Recent Advances , N.C. Gallego, G.R. Romanoski, R.B. Dinwiddie, W.D. Porter, J. Wang, and G.B. Ulrich (Oak Ridge National Laboratory)	
	6054 Dynamics Modeling and Heat Flow Optimization of an Enhanced MMRTG , D. Woerner (Jet Propulsion Laboratory)	
	6058 Advanced Hybrid SiO₂ Aerogel for eMMRTG Flight Module , Y. Song (Teledyne Energy Systems), R. Bennett (Teledyne Energy Systems), T. Hammel (Teledyne Energy Systems), S. Keyser (Teledyne Energy Systems), J-A. Paik (Jet Propulsion Laboratory), S. Jones (Jet Propulsion Laboratory), and T. Caillat (Jet Propulsion Laboratory)	

Track II: Fission Power Systems		Ballroom 3
Space Nuclear Power Programs		
8:30 am - 11:00 am	6002 Power Management and Distribution System for a Marian Fission Surface Power Reactor , Y.M. Hew (Stanford University), K.E. Harris (Utah State University), K.J. Schillo (University of Alabama), A. Kumar (Texas A&M University), and S.D. Howe (Center for Space Nuclear Research)	
	6011 Charger-1: Nuclear Fusion Propulsion Facility for Improved Deep Space Exploration , E.R. Gish, C.L. Matzkind, D.L. and Coad (The Boeing Company)	
	6028 Democritos: Development Logic for a Demonstrator Preparing Nuclear-Electric Spacecraft , S. Oriol (CNES), F. Masson (CNES), T. Tinsley (National Nuclear Laboratory), R. Stainsby (National Nuclear Laboratory), Z. Hodgson (National Nuclear Laboratory), E. Detsis (ESF), J-C. Worms (ESF), A. Solodukhin (Keldysh Research Center), A. Semkin (Keldysh Research Center), F. Jansen (Thales Alenia Space Italia), W. Bauer (Thales Alenia Space Italia), M.C Tosi (DLR), S. Ferraris (DLR), F. Lassoudiere (Airbus-Safran Launchers), and M. Muszynski (Airbus-Safran Launchers)	
	6057 Nuclear Systems Kilopower Project Update , D.T. Palac (NASA GRC), M.A. Gibson (NASA GRC), L.S. Mason (NASA GRC), M.G. Houts (NASA MSFC), P. McClure (Los Alamos National Laboratory), and R.C. Robnison (Y-12 National Security Complex)	
	6070 Y-12 National Security Complex Casting and Machining Capabilities, and their Recent Application to Nuclear and Emerging Technologies for Space Programs , W.T. Rogerson Jr. (Y-12 National Security Complex)	

Track III: Nuclear Thermal Propulsion		Ballroom 4
Engine System and Component Development: Part I		
8:30 am - 11:30 am	6010 Nuclear Thermal Propulsion Technology Demonstration Plan , G. Dought (NASA MSFC), J. Werner (Idaho National Laboratory), S. Borowski (NASA GRC), R. Sefick (NASA GRC), and A. Weitzberg	
	6077 An Examination of the Engine Cycle TRENDS for a HEU and LEU NTP , C.R. Joyner II (Aerojet Rocketdyne), D.J. Levack (Aerojet Rocketdyne), and T. Jennings (Aerojet Rocketdyne)	
	6019 Nuclear Thermal Propulsion Integrated Injector-Manifold Development , T. Belcher (University of Texas), R. Hetterich (Lehigh University), M. Reilly (Georgia Institute of Technology), T. Scogin (Georgia Institute of Technology), and J. Santeccchia (Arizona State University)	
	6018 Aluminum-Beryllium Composite Trade Study for Space Nuclear Applications , R. Hetterich (Lehigh University), T. Belcher (University of Texas), M. Reilly (Georgia Institute of Technology), T. Scogin (Georgia Institute of Technology), and J. Santeccchia (Arizona State University)	
	6008 Potential for Additive Manufacture in Nuclear Thermal Propulsion , O.R. Mireles, C. Garcia, Z. Jones (NASA MSFC)	
	6032 Radiation Shielding for Nuclear Thermal Propulsion , J.A. Caffrey (Oregon State University)	

Track I: Radioisotope Power Systems		Ballroom 1
Cermet as Fuel Simulant: Part II		
1:00 pm - 2:30 pm	6013 Further Developments in CeO₂ and Nd₂O₃ Sintering Trials as Analogues for Americium Oxide , E.J. Watkinson (University of Leicester), R.M. Ambrosi (University of Leicester), D.P. Kramer (University of Dayton), H.R. Williams (University of Leicester), M. Reece (Queen Mary University of London), K. Chen (Queen Mary University of London), H. Ning (Queen Mary University of London), C.E. Whiting (University of Dayton), C.D. Barklay (University of Dayton), D. Weston (University of Leicester), M. Sarsfield (National Nuclear Laboratory), K. Stephenson (European Space Agency), and T. Tinsley (National Nuclear Laboratory)	
	6016 CeO₂ - Ceramic Surrogate for Pu-238? , D.P. Kramer, C.O. Sjoblom, S.M. Goodrich, C.D. Barklay, and C.E. Whiting (University of Dayton)	
	6027 Development of Cerium-Neodymium Oxide Surrogates for Americium Oxides , E.J. Watkinson (University of Leicester), M.J. Sarsfield (National Nuclear Laboratory), R.M. Ambrosi (University of Leicester), H.R. Williams (University of Leicester), D. Weston (University of Leicester), N. Marsh (University of Leicester), C. Haidon (University of Leicester), K. Stephenson (European Space Agency), and T. Tinsley (National Nuclear Laboratory)	
Track II: Fission Power Systems		Ballroom 3
Reactor Analytical Studies: Part I		
1:00 pm - 2:30 pm	6003 Thermal Hydraulics Analysis of a Low-Enriched Uranium Cermet Fuel Core for a Mars Surface Power Reactor , K.J. Schillo (University of Alabama), A. Kumar (Center for Space Nuclear Research), K.E. Harris (Utah State University), Y.M. Hew (Stanford University), S.D. Howe (Center for Space Nuclear Research)	
	6060 A Gigawatt Space Power System Using Dusty Plasma Fission Fragment Reactor , R.B. Sheldon (RBSeldon Consulting) and R.L. Clark (Grassmere Dynamics)	
	6067 Status of the Development of Low Cost Radiator for Surface Fission Power - II , C. Tarau (Advanced Cooling Technologies), T. Maxwell (Advanced Cooling Technologies), W. G. Anderson (Advanced Cooling Technologies), C. Wagner (Advanced Cooling Technologies), M. Wrosch (Vanguard Space Technologies), and M.H. Briggs (NASA GRC)	
Track III: Nuclear Thermal Propulsion		Ballroom 4
Engine System and Component Development: Part II		
1:00 pm - 2:30 pm	6091 A Multi-Dimensional Heat Transfer Model of a Tie-Tube and Hexagonal Fuel Element for Nuclear Thermal Propulsion , C. Gomez, E. Stewart, and O.R. Mireles (NASA MSFC)	
	6092 Review of a Preliminary Fluid-Thermal Model of Hydrogen Flow in a Fuel Rod Tube of Nuclear Thermal Propulsion Rocket Engine Core , M. Rucker (NASA MSFC)	
	6093 Cryogenic Fluid Management Technology and Nuclear Thermal Propulsion , B.D. Taylor (NASA MSFC), J. Caffrey, (Oregon State University) A. Hedayat (NASA MSFC), J. Stephens (NASA MSFC), and R. Polsgrove (NASA MSFC)	

Track I: Radioisotope Power Systems		Ballroom 3
Material and System Testing: Part II		
3:00 pm - 4:00 pm	6024 Multi-Mission Radioisotope Thermoelectric Generator Experience on Mars , J. Herman, R. Hall, P. Stella, E. Wood, T.I. Valdez, A. Mitchell (Jet Propulsion Laboratory)	
	6021 Advanced Stirling Radioisotope Generator EU2 Anomaly Investigation , E.J. Lewandowski (NASA GRC)	
	6065 Performance Testing of the EU/QU MMRGT , C.D. Barklay (University of Dayton), B.A. Tolson (UES), C.W. Sjoblom (University of Dayton), and R.J. Harris (University of Dayton)	
3:00 pm - 4:00 pm	6066 Optimized Alkali Metal Backup Cooling System Tested with a Stirling Converter , C. Tarau, C.L. Schwendeman (Advanced Cooling Technologies), N.A. Schifer (NASA GRC), and W.G. Anderson (Advanced Cooling Technologies)	
	6042 Pyroschock Dynamic Loading Impacts on Thermoelectric Module Assemblies and Bi-Couples in Multi-Mission Radioisotope Thermoelectric Generators (MMRTGs) , T. Hendricks, D.J. Neff, N.R. Keyawa, B.J. Nesmith, P. Bahrami, A. Derkevorkian, A.R. Kolaini (Jet Propulsion Laboratory)	
Track II: Fission Power Systems		Ballroom 3
Reactor Analytical Studies: Part II		
3:00 pm - 4:00 pm	6082 Pulsed Fission Fusion Propulsion - Current Developments	
	6089 Shielding Options for Kilowatt Mars Surface Reactors , D.I. Poston (Los Alamos National Laboratory), S. Eustice (Los Alamos National Laboratory), L.S. Mason (NASA GRC), and M. Rucker (NASA JSC)	
Track III: Nuclear Thermal Propulsion		Ballroom 4
Engine System and Component Development: Part III		
3:00 pm - 4:00 pm	6012 Electric Pump System Trade Study for NTP Start-Up and Shut-Down Operations , J. Santecchia (Arizona State University), R. Hetterich (Lehigh University), T. Belcher (Texas Tech University), M. Reilly (Georgia Institute of Technology), T. Scogin (Georgia Institute of Technology)	
	6094 Optimization of NTP System Truss to Reduce Radiation Shield Mass , L.L. Scharber, A. Kharofa, and J.A. Caffrey (NASA MSFC)	