

JANNAF INTERAGENCY PROPULSION COMMITTEE

JOINT ARMY-NAVY-NASA-AIR FORCE

Westin Kansas City at Crown Plaza
Kansas City, Missouri
22 - 25 May 2017



Meeting Invitation

64th JANNAF Propulsion Meeting
Programmatic and Industrial Base Meeting
44th Structures and Mechanical Behavior
40th Propellant and Explosives
Development and Characterization
31st Rocket Nozzle Technology
29th Safety and Environmental Protection
Joint Subcommittee Meeting

Last updated 5/6/2017

JANNAF Preliminary Program - May 2017

You are invited to attend the May 2017 meeting of the Joint Army-Navy-NASA-Air Force (JANNAF), which will consist of the 64th JANNAF Propulsion Meeting, the Programmatic and Industrial Base (PIB) Meeting; and the Joint Meeting of the 44th Structures and Mechanical Behavior / 40th Propellant and Explosives Characterization and Development / 31st Rocket Nozzle Technology / 29th Safety and Environmental Protection Subcommittees. This meeting will be held **Monday through Thursday, 22 - 25 May 2017, at the Westin Kansas City at Crown Center in downtown Kansas City, Missouri.**



The Program Chair for the meeting is **Dr. Charles J. Trefny**, NASA Glenn Research Center, Cleveland, OH. A complete list of Program Committee Members can be found on pages 7-10.

SCOPE

The JANNAF Interagency Propulsion Committee coordinates fundamental research, exploratory development, and advanced development programs; standardizes

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procedures for nomenclature; promotes and facilitates the exchange of technical information; and accomplishes problem solving in the areas of joint agency interest on propulsion systems for missiles, rockets, boosters, spacecraft, satellites, and guns.

JANNAF Propulsion Meeting

The **JANNAF Propulsion Meeting (JPM)** encompasses research and applications at the systems level. The JPM is held each year in conjunction with standing JANNAF subcommittee meetings on a rotating basis. The scope of the 64th JPM in 2017 spans seven mission areas: Tactical Propulsion; Missile Defense/Strategic Propulsion; Propulsion Systems for Space Access; Gun and Gun-Launched Propulsion; Propulsion and Energetics Test Facilities; Sensors for Propulsion Measurement Applications; and System-wide Application of Additive Manufacturing for Propulsion Applications.

Programmatic and Industrial Base

The **Programmatic and Industrial Base (PIB)** areas of interest include integrated program plans and key decision points; industrial base assessments; risks and opportunities with respect to skills, knowledge, and experience; identification of commonality, innovative acquisition, and partnership opportunities; integrated assessments to identify rocket propulsion industrial base (RPIB) rationalization opportunities; special actions from senior agency, department, or Executive Office of the President (EOP) leadership; and information provided to decision makers for either situational awareness or policy decisions.

JANNAF subcommittees focus their resources on technical issues of interest to the JANNAF agencies.

Structures and Mechanical Behavior Subcommittee

The **Structures and Mechanical Behavior Subcommittee (SMBS)** addresses the development, application, and verification of experimental, analytical, and statistical techniques required in the preliminary or detailed structural design of solid propellant rocket motors and gun

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provides technical and administrative support to the JANNAF Interagency Propulsion Committee.
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ammunition, the assessment of their structural integrity, and the prediction of their service life based on structural or chemical aging mechanisms.

Propellant and Explosives Development and Characterization Subcommittee

The scope of **Propellant and Explosives Development and Characterization Subcommittee (PEDCS)** comprises work and issues associated with propellants, explosives, and other energetic formulations used in the development, manufacture, performance, and operation of weapons, propulsion systems, and gas generator devices. This subcommittee covers the technology areas required to develop, manufacture, and characterize propellants and ingredients. The manufacturing technologies of interest include mixing procedures, sampling and quality control, safety and handling practices, and the design and operation of mixing equipment. The characterization tests involve classical wet chemistry, instrumental analysis, chemical stability, compatibility, and calorimetric measurements.

Rocket Nozzle Technology Subcommittee

The **Rocket Nozzle Technology Subcommittee (RNTS)** focuses on the application of advanced composite materials, including carbon-carbon, ceramic matrix, and carbon phenolic composites, and other advanced materials, as applied to solid rocket nozzles and their components, nozzle-based propulsion control systems; and related technology developments for liquid and electric propulsion.

Safety and Environmental Protection Subcommittee

The **Safety and Environmental Protection Subcommittee (SEPS)** sessions will address issues related to the safety, health and environmental impacts associated with the manufacture, storage and use of propellants, explosives and pyrotechnics. Papers addressing all health effects associated with energetic compounds, precursors, combustion products, and waste products as well as safety concerns present during their intentional use, demilitarization, and accidents will be presented. New and emerging areas of interest include additive manufacturing (3D Printing) of energetic materials, nanomaterials, and insensitive high explosive formulations.

Hotel Information

Sleeping rooms have been reserved with the **Westin Kansas City at Crown Center**, located at 1 East Pershing Road, Kansas City, MO 64108. Amenities include complimentary high speed internet access in guestrooms. The hotel is conveniently attached to Hallmark's Crown Center, with more than 15 restaurants, 36 shops, and theaters.



JANNAF has arranged for discounted rooms for attendees. Government employees with valid Government employee I.D. are eligible for the government per diem rate of \$117 per night. The discounted rate for non-Government attendees is \$159 per night. All room rates are subject to applicable state and local taxes, currently 16.975%, plus a Kansas City Development Fee of \$1.50 plus tax per night (\$1.76 including tax).

These discounted rooms will be held for JANNAF attendees until the deadline of Monday, 1 May 2017 at 5:00 p.m. CDT, or until they sell out, whichever comes first. Each individual is responsible for his/her own reservation.

Make Your Reservation Online:

Click on the appropriate reservation link on the [Hotel Page](#) of the meeting website to make your reservation. **Using one of these links will give you direct access to the JANNAF meeting discounted room blocks.** Changes or cancellations to your reservation can also be made via these weblinks; just input your reservation number.

For additional reservation assistance, please call (888) 627-8538. Be sure to reference the May 2017 JANNAF Meeting.

Need to cancel your reservation? Be sure to do so no later than 6:00 p.m. CDT the day prior to your scheduled arrival to avoid paying a cancellation penalty.

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Transportation and Parking

The Kansas City International Airport (MCI) is located 25 minutes from the Westin Kansas City at Crown Center. The hotel does not offer airport shuttle service. However, **SuperShuttle** is offering a discounted rate to JANNAF attendees between the airport and hotel. See page 4 for more information.

For transportation between the airport and hotel, take advantage of the discount offered for JANNAF attendees by **SuperShuttle**: one way per person fare for shared ride service is \$15 (\$3 savings each way); or pay just \$36.50 each way for non-stop service for up to 3 passengers travelling together. **NOTE:** discounted SuperShuttle fares only applicable when booking a round trip. Other options include Uber (\$22-29) or taxi (\$50-60). More information can be found on the **Hotel Page** of the [meeting website](#), including the link to book discounted transportation via **SuperShuttle**.

For those driving personal vehicles or renting a car, self-parking for hotel guests is \$18 per night in the hotel's garage and includes in/out privileges (guest room key required). For those not staying at the hotel, an hourly rate will be charged, up to the daily maximum of \$18. Parking rates are subject to change. Other parking options in the Crown Center area charge comparable rates.

Meeting Site

All sessions will be held at the **Westin Kansas City at Crown Center** in downtown Kansas City, Missouri. For attendance at this meeting, please see the Security/Attendance Requirements and Registration instructions below.

Security/Attendance Requirements

The overall security classification of this meeting is Unclassified.

To qualify to attend this meeting, all attendees must be employed by a DoD, DoE, or NASA facility, or with a DoD, DoE, or NASA contractor facility eligible for receipt of militarily-critical technical data. All attendees must also be **invited U.S. citizens qualified to receive unclassified, limited-distribution information. No foreign nationals are permitted to attend.**

Questions concerning attendance eligibility should be directed to the JHU WSE ERG Facility Security Officer, Mary Gannaway, at (410) 992-7304, ext. 211 or mtg@jhu.edu.

Registration

Registration is now open. Register by Monday, 8 May to take advantage of the lowest fee.

To register, you must have a JANNAF Secure Portal account. Please visit the [Registration Page](#) of the meeting website for additional information and important links.

Registration for this JANNAF meeting is a **two-part process**; to complete this process:

1. Register for the meeting via the **JANNAF Secure Portal**.
2. Pay the registration fee (Portal account **not** required).

Additional information and important links for completing your meeting registration can be found at <https://www.jannaf.org/mtgs/2017May/pages/registration.html>.

Registration Fee

For details of what the registration fee includes, please go to the **Registration Page** of the meeting website. Please reference the registration fee chart below to determine the amount applicable to your registration. **The dates noted below are based on payment being received.**

Payment Received	Regular Attendee	Student*
<i>on or before 5/8/17</i>	\$1,200.00	\$250.00
<i>5/9/17 or later</i>	\$1,350.00	\$250.00

* *A discounted registration fee is offered for **full time** students, interns, and cooperative education students. Students must meet the security/attendance requirements noted above and present current student identification upon registration on-site.*

Registration payment will be accepted via check payable to JHU WSE Energetics Research Group, purchase order (government only), or by credit card (VISA, MasterCard, American Express) using the Registration Payment site available online. Go to the **Registration Page** of the meeting website, and click on "Pay Registration Fee."

Attendees are encouraged to complete step one of the registration process via the JANNAF Secure Portal, and submit payment, on or before Monday, 8 May 2017 to take advantage of the lowest fee, and to ensure prompt registration upon arrival at the meeting. Credit card payments made electronically via the Web will be charged immediately; a receipt will be sent to you via email.

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Cancellation Policy

Please note our cancellation policy—
Written (email) cancellations submitted on or before 8 May 2017 will receive a full refund minus an administrative fee of \$50.00. Cancellations made after 8 May 2017 **will not be refunded**. Substitutes are welcome as long as the request for substitution is from the original attendee; attendance eligibility is appropriately met by the substitute; and the original and substitute attendee are from the same organization to facilitate transfer of registration funds. Please contact Shelley Cohen via email to scohen@erg.jhu.edu to transfer or cancel your registration.

On-Site Registration / Check-in

The JANNAF Registration desk will be located on the Ballroom level of the Westin Kansas City at Crown Plaza. Photo identification is required upon registration or check-in. The desk will be open Monday, 22 May through Thursday, 25 May from 7:00 a.m. - 5:00 p.m.

Attention DoD

An approval package to certify the May 2017 JANNAF Meeting as a “government approved” conference has been submitted by Mr. Drew DeGeorge, member of the JANNAF Executive Committee from the Air Force Research Laboratory at Edwards AFB.

We anticipate timely approval of the meeting. In the meantime, **interested DoD attendees are strongly encouraged to obtain a JANNAF Secure Portal account now and register for the meeting** (step 1). This step does not require travel or training office authorization as it does not include a financial commitment. Payment of the registration fee may be completed as soon as permitted.

There are specific **travel guidelines/restrictions for DoD employees**. Please check the [meeting website](#), with respect to restrictions regarding use of personal vehicles and rental cars.

Attire

There is no official dress code for JANNAF conferences; however, most attendees wear business or business casual attire. When packing, keep in mind that it can be difficult to regulate the temperature in meeting rooms to everyone’s liking, and any changes may not be noticeable quickly, so it is best to bring a sweater or jacket and dress in layers.

Dining

Approximately one and one-half hours for lunch has been built into the program each day. Dining options in the hotel include The Brasserie Restaurant (breakfast, lunch, and dinner), Coffee Bar (breakfast), and Lounge (lunch, dinner, and late night). Additionally, the attached Crown Center complex has more than 15 restaurants, and there are two additional restaurants at Union Station, connected to the hotel by The Link elevated walkway.

Networking Room

Mingle with other attendees in the JANNAF networking room throughout the week, where you can also check email, get a caffeine boost, and have a snack. A light continental breakfast and mid-morning coffee break along with mid-afternoon refreshments will be served at the times stated in the program. This area will be open Monday - Thursday from 7:00 a.m. - 5:00 p.m. Please note that scheduled breaks are included in session agendas where time permits. The Final Program and signs on-site will direct you to the location.

Networking Night

Enjoy an evening and meal with fellow JANNAF attendees on Wednesday, 24 May 2017, from 6:30-8:00 p.m. at the hotel. There is no charge for meeting attendees; however, guest tickets may be purchased on the Registration Payment site for \$40 (admission is free for children five and under). Be sure to wear your JANNAF badge to attend the event. See the Final Program and on-site signage for the location.

Reading Room

All papers presented in the technical sessions and received in time will be available to read via JANNAF touch-screen tablets in the Reading Room, which will be open Monday from 10:00 a.m. - 4:30 p.m., and Tuesday through Thursday from 8:00 a.m. - 4:30 p.m. Reproduction of reading room papers is not permitted.

Side Meetings

A limited number of meeting rooms of varying sizes are available for JANNAF-related side meetings. Audiovisual equipment will not be provided. Please contact Shelley Cohen at scohen@erg.jhu.edu to reserve a room as soon as possible. Requests may also be made on-site during the meeting. Rooms will be assigned first-come, first-served.

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Program Changes

Meeting programs will be distributed to attendees upon registration/check-in on-site. Note that **Final Programs are Distribution Statement C and should be secured when not in your possession.** Changes to the Final Program will be posted on touch screen monitors located on the Ballroom level. Attendees should periodically check for program updates and administrative announcements and note these updates in their copy of the Final Program.

Meeting Proceedings

Proceedings from this meeting will be published by the JHU WSE Energetics Research Group. Papers, and in limited cases presentations, will be provided complimentary to attendees of this meeting who have paid the full registration fee (early or regular). These attendees will have access to these materials beginning approximately 12 weeks following the meeting via the JANNAF Digital Online Collection (JDOC) Database accessible through your account on the JANNAF Secure Portal. This benefit is not available for student attendees.

Questions

Questions concerning this program and/or payment of the registration fee should be directed to Shelley Cohen at (410) 992-7302, ext. 215 or email: scohen@erg.jhu.edu.

Questions pertaining to registering via the JANNAF Secure Portal should be directed to:

Mary Gannaway: Call (410) 992-7304, ext. 211 or email mtg@jhu.edu

OR

Tricia Reider: Call (410) 992-7300, ext. 222 or email treider@erg.jhu.edu

Upcoming JANNAF Meetings

64th JANNAF Propulsion Meeting
Programmatic and Industrial Base Meeting
44th Structures and Mechanical Behavior
40th Propellant and Explosives Development and Characterization
31st Rocket Nozzle Technology
29th Safety and Environmental Protection
Joint Subcommittee Meeting
22-25 May 2017

*Westin Kansas City at Crown Center
Kansas City, Missouri*

49th Combustion
37th Airbreathing Propulsion
37th Exhaust Plume and Signatures
31st Propulsion Systems Hazards
Joint Subcommittee Meeting
Programmatic and Industrial Base Meeting
4-8 December 2017
*Newport News Marriott at City Center
Newport News, Virginia*

65th JANNAF Propulsion Meeting
Programmatic and Industrial Base Meeting
12th Modeling and Simulation
10th Liquid Propulsion
9th Spacecraft Propulsion
Joint Subcommittee Meeting
Spring 2018
Specific Dates and Location TBA

45th Structures and Mechanical Behavior
41st Propellant and Explosives Development and Characterization
32nd Rocket Nozzle Technology
30th Safety and Environmental Protection
Programmatic and Industrial Base Meeting
3-7 December 2018
Location TBA

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Mission Area VI: Range Safety and Explosives Safety

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Mission Area VIII: Green Energetic Materials (GEM) Joint PEDCS - SEPS Mission Area

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Program Highlights

Keynote Address



Mr. Bruce K. Tiller, Deputy Manager of the SLS Solid Rocket Boosters Office in the NASA Space Launch System Program at NASA Marshall Space Flight Center, will present the keynote at this year's conference.

The title of Mr. Tiller's address is "**SLS Overview and Progress to Date.**" NASA is on a journey to

Mars and its new deep space exploration system, consisting of the heavy-lift Space Launch System (SLS), the human-rated Orion spacecraft and modernized launch facilities at Kennedy Space Center, will play a key role in this amazing endeavor. In this presentation, Mr. Tiller will provide an overview of the first mission and discuss progress toward first launch. Mr. Tiller will focus on the status of the major elements that comprise SLS, which will provide unparalleled performance to send Orion beyond the moon – farther than humans have ever ventured.

In his role as the Deputy Manager Booster Office, Mr. Tiller leads the design, development, test, and evaluation of the solid rocket boosters for SLS, NASA's deep-space flagship for a new era of science and exploration.

Prior to this assignment, Mr. Tiller served as the Deputy Manager for the Ares I rocket's first stage. Since beginning his civil service career at NASA, Mr. Tiller has held several key positions within Marshall's Engineering Directorate, including supervisor of the Thermal and Combustion Analysis Branch, supervisor of the Systems Analysis Branch and team leader in the Thermal Analysis Branch. Prior to joining NASA, Mr. Tiller was a thermal analyst for two different NASA contractors.

Mr. Tiller earned a bachelor's degree in geology from the University of North Carolina in Chapel Hill; a bachelor's degree in mechanical engineering from the University of Alabama in Birmingham; and a master's degree in mechanical engineering from the University of Alabama in Huntsville. He has received numerous honors and awards during his NASA career, including the NASA Outstanding Leadership Medal and the NASA Exceptional Service Medal.

All attendees are invited to participate. **The Keynote Address begins at 8:00 a.m. on Tuesday, 23 May, in Century Ballroom C** on the Ballroom level of the hotel.

Additional Highlights

On Monday, 22 May, Stanley Graves, Orbital ATK, Launch Systems, Brigham City, UT, will present ***Creating a World Class Safety Culture - Lessons Learned from Launch Vehicle Failures and Industrial Accidents*** (1P). This Specialist Session is offered jointly by the Rocket Nozzle Technology (RNTS) and Structures and Mechanical Behavior (SMBS) Subcommittees. As Chief Engineer for the Space Shuttle Solid Rocket motor, Stan was intimately involved in the Challenger and Columbia disasters. He lived through and scrutinized a myriad of other industrial accidents, fires, and explosions. Stan will share his methodology for identifying organizational and cultural risks. He will also outline specific initiatives that can be undertaken to prevent crisis and create a healthy, high performing safety culture. More information can be found on page 22 of the Preliminary Program.

PEDCS will present a three-part Specialist Session on Monday, 22 May (1B and 1K) and Wednesday, 24 May (3B) on ***Additive Manufacturing of Energetic Materials***. This Specialist Session will provide a secure closed session forum for researchers across the government, academia,

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and industry to share work and collaborate in the areas of explosives, propellant, and pyrotechnic materials development, AM processing, safety in implementation, equipment, and end uses and applications. A draft agenda is provided on pages 17, 19, and 31 of the Preliminary Program.

The JANNAF Programmatic and Industrial Base (PIB) presents a Specialist Session on Tuesday, 23 May, entitled **Booster Propulsion Technology Maturation Projects Status** in two parts (2A and 2J). As part of a comprehensive Air Force plan to transition U.S. space launch systems off of the Russian RD-180 propulsion system, the Air Force Space and Missile Systems Center, Advanced Systems and Development Directorate (SMC/AD) has initiated several Booster Propulsion Technology Maturation (BPTM) projects in support of SMC Launch Systems Enterprise Directorate (SMC/LE). This Specialist Session will highlight the accomplishments achieved by industry as part of the BPTM Broad Agency Announcement efforts. In addition, SMC/AD will discuss validation efforts and transition plans for the Combustion Stability Tool Development project. The progress of the full-scale Oxygen-Rich Staged Combustion preburner and thrust chamber project will also be discussed. For more details, go to pages 23 and 27 of the Preliminary Program.

The Safety and Environmental Protection (SEPS) and Propellant and Explosives Development and Characterization (PEDCS) Subcommittees will together present a technical session on **Green Energetic Materials** (2O). The session will focus on the development of environmentally sustainable energetic ingredients, formulations, and processing technologies. The agenda can be found on page 29 in the Preliminary Program.

On Wednesday, 24 May, RNTS will present a half-day Specialist Session (3K) on **Thrust Control**. This session will present a review of current rocket motor nozzle materials, tactical thrust management by Orbital ATK and Aerojet Rocketdyne, and include a presentation of the strippable thermal barrier by AMRDEC. A draft agenda can be found on page 34 in the Preliminary Program.

An additional highlight on Thursday is the **Advanced Thermal / Structural Modeling of Carbon Cloth Phenolic** Workshop, presented by RNTS in session 4D. The purpose of this workshop is to develop an industry accepted physics based, nonlinear, fully integrated coupled thermal and structural material model for accurate prediction of the response of heated phenolic material used in ablative thermal protection systems (TPS). See page 38 in the Preliminary Program for more information.

RNTS and SMBS will also offer a workshop on Thursday entitled, **Verification, Validation, and Uncertainty Quantification** (4O). Participants will work in conjunction with the Modeling and Simulation Subcommittee's Verification, Validation, and Uncertainty Quantification Team to define approaches for Verification, Validation and Uncertainty Quantification that can be used in the propulsion analytical community with an emphasis on Rocket Nozzle Technology and Structures and Mechanical Behavior. Additional information including a draft agenda for this workshop can be found on page 42 of the Preliminary Program.

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Technical Program

This year's technical program currently consists of 38 technical sessions with more than 200 presentations, plus 7 specialist sessions, 2 workshops, and 16 panel meetings. A detailed daily schedule of all sessions, workshops, meetings and networking activities is provided below and continues through page 16. Detailed agendas of the technical sessions, specialist sessions, and workshops are listed in the Program Section of the Preliminary Program beginning on page 17.

A Schedule Color Key has been provided below and on pages 14 and 16.

SCHEDULE - Monday, 22 May					
7:00 a.m. - 5:00 p.m.	On-Site Check-In and Registration Desk Open			Century Foyer	
7:00 a.m. - 5:00 p.m.	I.T. Office Open (for Presenters and Session Chairs needing technical assistance)			Penn Valley	Open
7:00 a.m. - 10:35 a.m.	Networking Area Refreshments			Century B	Open
7:15 a.m. - 7:30 a.m.	Session Chair Meeting (Monday Sessions)			Westport	Closed
8:00 a.m. - 5:00 p.m.	PIB Industry Issues Briefing			Pershing Place South	Closed
8:30 a.m. - 12:05 p.m.	Monday Morning Technical Sessions				
8:30 a.m. - 12:05 p.m.	IB	PEDCS	<i>SPECIALIST SESSION:</i> Additive Manufacturing of Energetic Materials - I	Mission	Open
9:00 a.m. - 12:05 p.m.	IC	RNTS/SMBS	Damage Tolerance / Fracture / Failure	Shawnee	Open
10:00 a.m. - 11:35 a.m.	IE	PEDCS	Minimum Signature Ingredients Modeling	Pershing Place East	Open
8:00 a.m. - 11:35 a.m.	IF	PEDCS	Novel Explosives - I	Pershing Place West	Open
10:00 a.m. - 4:30 p.m.	Reading Room			Westport	Open
12:05 p.m. - 1:30 p.m.	Lunch Break - <i>On Your Own</i>				
1:30 p.m. - 6:05 p.m.	Monday Afternoon Technical Sessions and Panel Meetings				
2:00 p.m. - 4:00 p.m.	IJ	PEDCS	<i>KICKOFF MEETING:</i> Updating the Explosives and Propellant Security Classification Guide	Liberty	Open
1:30 p.m. - 5:35 p.m.	IK	PEDCS	<i>SPECIALIST SESSION:</i> Additive Manufacturing of Energetic Materials - II	Mission	Open
4:00 p.m. - 5:05 p.m.	IL	JPM	Gun Propulsion Modeling and Simulation	Shawnee	Open
1:30 p.m. - 3:35 p.m.	IM	SMBS	Materials Characterization - I	Roanoke	Open
3:45 p.m. - 4:15 p.m.	IM	SMBS	<i>PANEL MEETING:</i> Materials Characterization	Roanoke	Open
1:30 p.m. - 4:35 p.m.	IN	PEDCS	Minimum Signature Propellants	Pershing Place East	Open
4:35 p.m. - 5:35 p.m.	IN	PEDCS	<i>PANEL MEETING:</i> Solid Propellant Ingredients and Formulations	Pershing Place East	Open
1:30 p.m. - 5:05 p.m.	IO	PEDCS	Novel Explosives - II	Pershing Place West	Open
1:30 p.m. - 6:05 p.m.	IP	RNTS/SMBS	<i>SPECIALIST SESSION:</i> Creating a World Class Safety Culture - Lessons Learned from Launch Vehicle Failures and Industrial Accidents	Pershing Place North	Open
3:05 p.m. - 4:05 p.m.	Networking Area Refreshments			Century B	Open

Schedule Color Key	
Meeting Services	Concurrent Sessions or Panel Meetings
Networking Opportunities	Session Details
Closed Meetings	Panel and Other Open Meetings

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SCHEDULE - Tuesday, 23 May

7:00 a.m. - 5:00 p.m.	On-Site Check-In and Registration Desk Open			Century Foyer	
7:00 a.m. - 5:00 p.m.	I.T. Office Open (for Presenters and Session Chairs needing technical assistance)			Penn Valley	Open
7:00 a.m. - 8:00 a.m.	Networking Area Refreshments			Century B	Open
7:15 a.m. - 7:30 a.m.	Session Chair Meeting (Tuesday Sessions)			Westport	Closed
8:00 a.m. - 10:00 a.m.	KEYNOTE ADDRESS: "SLS Overview and Progress to Date" Mr. Bruce K. Tiller, NASA <i>Awards and Announcements</i>			Century C	Open
8:00 a.m. - 4:30 p.m.	Reading Room			Westport	Open
9:30 a.m. - 10:00 a.m.	Networking Area Refreshments			Century B	Open
10:00 a.m. - 6:00 p.m.	JANNAF Technical Executive Committee Meeting			Presidents	Closed
10:00 a.m. - 12:35 p.m.	Tuesday Morning Technical Sessions, Specialist Session, and Panel Meeting				
10:00 a.m. - 12:30 p.m.	2A	PIB	<i>SPECIALIST SESSION:</i> Booster Propulsion Technology Maturation Projects Status - I	Liberty	Open
10:00 a.m. - 11:35 a.m.	2B	JPM	Missile Defense / Strategic Propulsion	Mission	Open
10:00 a.m. - 12:05 p.m.	2C	JPM	Novel Gun Propulsion Concepts	Shawnee	Open
10:00 a.m. - 12:05 p.m.	2D	SMBS	Nondestructive Evaluation	Roanoke	Open
12:05 p.m. - 12:35 p.m.	2D	SMBS	<i>PANEL MEETING:</i> Nondestructive Evaluation	Roanoke	Open
10:00 a.m. - 12:05 a.m.	2E	PEDCS	Chemistry Test Methods	Pershing Place East	Open
10:00 a.m. - 12:05 p.m.	2F	SEPS	Demilitarization, Reclamation, and Reuse Technologies	Pershing Place West	Open
10:00 a.m. - 11:35 a.m.	2G	RNTS	Innovative Nozzle Materials	Pershing Place North	Open
12:05 p.m. - 1:30 p.m.	Lunch Break - <i>On Your Own</i>				
1:30 p.m. - 6:00 p.m.	Tuesday Afternoon Technical Sessions, Panel, Specialist Session, and Panel Meetings				
1:30 p.m. - 6:00 p.m.	2J	PIB	<i>SPECIALIST SESSION:</i> Booster Propulsion Technology Maturation Projects Status - II	Liberty	Open
1:30 p.m. - 3:35 p.m.	2K	SEPS	Toxicology	Mission	Open
4:05 p.m. - 4:35 p.m.	2K	SEPS	<i>PANEL MEETING:</i> Toxicology and Occupational Health	Mission	Open
1:30 p.m. - 5:05 p.m.	2L	JPM	Energetics for Gun Propulsion	Shawnee	Open
1:30 p.m. - 4:05 p.m.	2M	SMBS	Service Life Assessment Technology	Roanoke	Open
4:05 p.m. - 5:05 p.m.	2M	SMBS	<i>PANEL MEETING:</i> Service Life Assessment Technology	Roanoke	Open
1:30 p.m. - 3:35 p.m.	2N	JPM	Building Propulsion Systems for Future Space Access	Pershing Place East	Open
1:30 p.m. - 5:05 p.m.	2O	PEDCS/SEPS	Green Energetic Materials	Pershing Place West	Open
5:05 p.m. - 5:35 p.m.	2O	PEDCS/SEPS	<i>PANEL MEETING:</i> Green Energetic Materials	Pershing Place West	Open
1:30 p.m. - 4:05 p.m.	2P	RNTS	Nozzle Thermal, Structural, Fluid Analysis, and Modeling	Pershing Place North	Open
4:05 p.m. - 5:05 p.m.	2P	RNTS	<i>PANEL MEETING:</i> Nozzle Design, Material Analysis, and Testing	Pershing Place North	Open
3:05 p.m. - 4:10 p.m.	Networking Area Refreshments			Century B	Open
6:00 p.m. - 8:00 p.m.	RNTS Technical Steering Group Meeting			Westport	Closed

Schedule Color Key

	Meeting Services		Concurrent Sessions or Panel Meetings
	Networking Opportunities		Session Details
	Closed Meetings		Panel and Other Open Meetings

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SCHEDULE - Wednesday, 24 May

7:00 a.m. - 5:00 p.m.	On-Site Check-In and Registration Desk Open			Century Foyer	
7:00 a.m. - 5:00 p.m.	I.T. Office Open (for Presenters and Session Chairs needing technical assistance)			Penn Valley	Open
7:00 a.m. - 8:00 a.m.	Networking Area Refreshments			Century B	Open
7:15 a.m. - 7:30 a.m.	Session Chair Meeting (Wednesday Sessions)			Westport	Closed
8:00 a.m. - 4:30 p.m.	Reading Room			Westport	Open
8:00 a.m. - 12:00 p.m.	PIB Large Liquids Propulsion Working Group Meeting			Boardroom	Closed
8:00 a.m. - 12:00 p.m.	PIB Test and Evaluation Working Group Meeting			Crossroads	Closed
8:00 a.m. - 12:00 p.m.	PIB Small Solids Working Group			Presidents	Closed
8:00 a.m. - 12:05 p.m.	Wednesday Morning Technical Sessions				
8:00 a.m. - 11:35 a.m.	3A	JPM	High-Speed Airbreathing Propulsion - Experiments and Analysis	Liberty	Open
8:00 a.m. - 11:05 a.m.	3B	PEDCS	<i>SPECIALIST SESSION:</i> Additive Manufacturing of Energetic Materials - III	Mission	Open
8:00 a.m. - 11:35 a.m.	3C	PEDCS	Advanced Testing and Materials	Shawnee	Open
8:00 a.m. - 10:05 a.m.	3D	RNTS	Nozzle Design and Testing	Roanoke	Open
8:00 a.m. - 10:35 a.m.	3E	SMBS	Structural Analysis and Design - I	Pershing Place East	Open
10:35 a.m. - 11:00 a.m.	3E	SMBS	<i>PANEL MEETING:</i> Structural Analysis and Design	Pershing Place East	Open
8:00 a.m. - 12:05 p.m.	3G	PEDCS	Gun Propulsion Component Formulation and Development - I	Pershing Place North	Open
9:35 a.m. - 10:35 a.m.	Networking Area Refreshments			Century B	Open
12:05 p.m. - 1:30 p.m.	Lunch Break - <i>On Your Own</i>				
1:30 p.m. - 3:30 p.m.	AM Energetics Security Meeting			Pershing Place South	Closed
1:30 p.m. - 5:00 p.m.	PIB Small Liquids Working Group Meeting			Boardroom	Closed
1:30 p.m. - 5:00 p.m.	PIB Large Solids Working Group Meeting			Crossroads	Closed
1:30 p.m. - 5:00 p.m.	PIB Science and Technology Working Group Meeting			Presidents	Closed
1:30 p.m. - 6:05 p.m.	Wednesday Afternoon Technical Sessions, Specialist Session, and Panel Meetings				
1:30 p.m. - 6:05 p.m.	3J	JPM	Tactical Solid Rocket Propulsion	Liberty	Open
1:30 p.m. - 3:05 p.m.	3K	RNTS	<i>SPECIALIST SESSION:</i> Thrust Control	Mission	Open
3:35 p.m. - 4:05 p.m.	3K	RNTS	<i>PANEL MEETING:</i> Thrust Control	Mission	Open
4:05 p.m. - 4:35 p.m.	3K	RNTS	<i>PANEL MEETING:</i> Next Generation Nozzle Materials/Materials Obsolescence	Mission	Open
1:30 - 5:35 p.m.	3L	PEDCS	Shock Physics	Shawnee	Open
1:30 p.m. - 5:05 p.m.	3N	SMBS	Structural Analysis and Design - II	Pershing Place East	Open
1:30 p.m. - 4:05 p.m.	3O	SEPS	Environmental Aspects of Munitions	Pershing Place West	Open
4:05 p.m. - 4:35 p.m.	3O	SEPS	<i>PANEL MEETING:</i> Environmental Protection	Pershing Place West	Open
1:30 p.m. - 5:05 p.m.	3P	PEDCS	Gun Propulsion Component Formulation and Development - II	Pershing Place North	Open
5:05 p.m. - 5:30 p.m.	3P	PEDCS	<i>PANEL MEETING:</i> Gun Propulsion Component Formulation and Development	Pershing Place North	Open
3:05 p.m. - 4:05 p.m.	Networking Area Refreshments			Century B	Open
4:00 p.m. - 5:00 p.m.	JPM Program Committee Meeting			Pershing Place South	Closed
4:30 p.m. - 6:00 p.m.	SEPS Technical Steering Group Meeting			Westport	Closed
6:00 p.m. - 8:00 p.m.	Networking Night - Dinner and Cash Bar <i>JANNAF Badge or Guest Ticket required</i>			Century Ballroom C	Open

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SCHEDULE - Thursday, 25 May

7:00 a.m. - 5:00 p.m.	On-Site Check-In and Registration Desk Open			Century Foyer	
7:00 a.m. - 5:00 p.m.	I.T. Office Open (for Presenters and Session Chairs needing technical assistance)			Penn Valley	Open
7:00 a.m. - 8:00 a.m.	Networking Area Refreshments			Century B	Open
7:15 a.m. - 7:30 a.m.	Session Chair Meeting (Thursday Sessions)			Westport	Closed
8:00 a.m. - 4:30 p.m.	Reading Room			Westport	Open
8:00 a.m. - 5:00 p.m.	PIB Executive Committee Meeting			Pershing Place South	Closed
8:00 a.m. - 12:05 p.m.	Thursday Morning Technical Sessions, Workshop, Specialist Session, and Panel Meetings				
8:00 a.m. - 11:35 a.m.	4B	PEDCS	Propellant and Explosives Process Engineering - I	Mission	Open
8:00 a.m. - 12:05 p.m.	4C	PEDCS	Explosive Formulation	Shawnee	Open
8:00 a.m. - 10:50 a.m.	4D	RNTS	WORKSHOP: Advanced Thermal Structural Modeling of Carbon Cloth Phenolic	Roanoke	Open
8:00 a.m. - 11:05 a.m.	4E	SMBS	Experimental Structural and Mechanical Analysis and Test	Pershing Place East	Open
11:05 a.m. - 12:05 p.m.	4E	SMBS	PANEL MEETING: Defect Evaluation	Pershing Place East	Open
8:00 a.m. - 12:05 p.m.	4F	PEDCS	High Performance Propellants	Pershing Place West	Open
8:00 a.m. - 11:05 a.m.	4G	PEDCS	Liquid Propellants	Pershing Place North	Open
11:05 a.m. - 12:05 p.m.	4G	PEDCS	PANEL MEETING: Liquid Propellants	Pershing Place North	Open
10:05 a.m. - 10:35 a.m.	Networking Area Refreshments			Century B	Open
12:00 p.m. - 1:30 p.m.	SMBS Technical Steering Group Meeting			Boardroom	Closed
12:05 p.m. - 1:30 p.m.	Lunch Break - <i>On Your Own</i>				
1:30 p.m. - 5:35 p.m.	Thursday Afternoon Technical Sessions, Workshop, Specialist Session, and Panel Meeting				
1:30 p.m. - 2:35 p.m.	4K	PEDCS	Propellant and Explosives Process Engineering - II	Mission	Open
2:35 p.m. - 3:35 p.m.	4K	PEDCS	PANEL MEETING: Propellant and Explosives Process Engineering	Mission	Open
1:30 p.m. - 5:35 p.m.	4L	PEDCS	Explosives Chemistry	Shawnee	Open
1:30 p.m. - 3:05 p.m.	4M	PEDCS	Surveillance and Aging	Roanoke	Open
3:35 p.m. - 4:35 p.m.	4M	PEDCS	PANEL MEETING: Explosive and Propellants Aging and Surveillance	Roanoke	Open
1:30 p.m. - 4:35 p.m.	4N	PEDCS	Minimum Signature Ingredients	Pershing Place East	Open
1:30 p.m. - 5:35 p.m.	4O	RNTS/SMBS	WORKSHOP: Verification, Validation, and Uncertainty Quantification	Pershing Place West	Open
3:05 p.m. - 4:05 p.m.	Networking Area Refreshments			Century B	Open
6:00 p.m. - 8:00 p.m.	PEDCS Technical Steering Group Meeting			Presidents	Closed

Schedule Color Key

Meeting Services	Concurrent Sessions or Panel Meetings
Networking Opportunities	Session Details
Closed Meetings	Panel and Other Open Meetings