JANNAF Convenes in San Diego for Joint CS, APS, and PSHS Meeting

JANNAF’s 41st Combustion Subcommittee (CS) Meeting, 29th Airbreathing Propulsion Subcommittee (APS) Meeting, and 23rd Propulsion Systems Hazards Subcommittee (PSHS) Meeting were held jointly during the week of 4-8 December 2006 at the San Diego Hotel and Marina and the Naval Fleet Training Intelligence Center, San Diego, California. Mrs. Alice I. Atwood of the Naval Air Warfare Center Weapons Division, China Lake, Calif. served as the Joint Meeting Chair. Approximately 370 scientists, engineers, and managers attended the meeting with a total of 222 papers presented in 41 technical sessions, representing slightly fewer attendees, but with more papers than the 2005 Meeting in Charleston, South Carolina. This year’s numbers represent an increase since the Modeling and Simulation Subcommittee contributed to the Charleston Meeting. The PSHS had a sizable increase in their sessions and papers with this meeting, partially due to a surge in activity on Joint Service Insensitive Munitions.

The meeting opened with an interesting keynote address by Dr. Spiro Lekoudis, Director of Weapons Systems in the Office of the Deputy Under Secretary of Defense for Science and Technology (S&T). Dr. Lekoudis discussed “The R&D Choices and Priorities Facing the U.S.” and highlighted the general categories of threats facing the U.S., the importance of propulsion, the advances needed in the future, the investments and the choices facing the R&D community.

University of Alabama in Huntsville (UAH) Offers Advanced Solid Rocket Propulsion Course

The renewed interest in solid propulsion for the Crew Exploration Vehicle (CEV) and Crew Launch Vehicle (CLV) has resulted in a joint NASA/Jacobs ESTS Group/UAH/Industry initiative to bring the best in the business to The University of Alabama in Huntsville to educate the next generation of solid rocket motor engineers. Graduate students who are pursuing advanced degrees, as well as professionals who want to broaden their understanding of this topic, can participate. Beginning January 11 and continuing through April 26, the course will be held Thursday mornings, from 8:30 a.m. to 11:00 a.m., on the UAH campus. Graduate credit, distance learning, and professional development options are available.

Dr. Robert Frederick, Jr. will lead the graduate class and direct the final course project. Professor

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CPIAC’s Technical/Bibliographic Inquiry Service

CPIAC offers a variety of services to its subscribers, including responses to technical/bibliographic inquiries. Answers are usually provided within three working days and take the form of telephoned, telefaxed, electronic or written technical summaries. Customers are provided with copies of JANNAF papers, excerpts from technical reports, bibliographies of pertinent literature, names of recognized experts, propellant/ingredient data sheets, computer program tapes and instructions, and/or theoretical performance calculations. The CPIAC staff responds to nearly 800 inquiries per year from over 180 customer organizations. CPIAC invites inquiries via telephone, fax, e-mail, or letter. For further information, please contact Ron Fry at 410-992-9951, ext. 206, or by e-mail to: rs_fry@jhu.edu. Representative recent inquiries include:

TECHNICAL INQUIRIES

- Compile and cite typical values of thermal conductivity for pyrotechnics, explosives, and propellants, including references and method of determination (Req. 25167).
- Burning rate data for AA-2 and N-5 propellant and military specification for N-5 propellant (Req. 25185).
- Information and product data for TP-90B plasticizer, di(butyl) carbitol formal, (Req. 25119).
- Spectrometric data for trace elements in the combustion products of typical propellants or powders used in small arms and rocket propelled grenades (RPGs) (Req. 25125).

SPURC 2.0 Now Available

SPURC Users: CPIAC has just received an updated version of the Standard Plume Ultraviolet Radiation (SPURC): Low Altitude (LA) computer code, SPURC 2.0.

SPURC subscribers current with their CPIAC/JANNAF codes registration will automatically receive copies of the new version at no charge. Other qualified U.S. Government Agencies and their U.S. contractors interested in obtaining SPURC can contact CPIAC at (410) 992-7300 or mtg@cpiac.jhu.edu for subscription and application information.

JANNAF 38th S&MBS/25th RNTS/16th NDES Reminder

The meeting announcement and call for papers were distributed in September for the 38th Structures and Mechanical Behavior Subcommittee, 25th Rocket Nozzle Technology Subcommittee, and 16th Nondestructive Evaluation Subcommittee Joint Meeting. The meeting will be held Tuesday through Thursday, March 20-22, 2007 at the Hyatt Regency Newport Hotel and Spa in Newport, Rhode Island. Attendance at this JANNAF meeting is restricted to U.S. citizens whose organizations are registered with an appropriately classified contract with the Defense Technical Information Center and certified for receipt of export-controlled technical data with the Defense Logistics Information Service.

If you are interested in submitting a late abstract, contact CPIAC’s Debbie Eggleston or Pat Szybist at (410) 992-7300, ext. 202 or 212, respectively, or via e-mail to: dse@jhu.edu or pats@cpiac.jhu.edu.
Meeting Reminders

38th S&MBS/25th RNTS and 16th NDES Joint Meeting
20-22 March 2007
Newport, Rhode Island
See page 2 for additional details.

54th JANNAF Propulsion Meeting/5th Modeling & Simulation/3rd Liquid Propulsion and 2nd Spacecraft Propulsion Joint Subcommittee Meeting
14-17 May 2007
Denver, Colorado

Don’t forget your MSS,LPS and/or SPS award nominations. Submit nominations to CPIAC’s Peter Zeender, pzeender@cpiac.jhu.edu, by 5 February.

For additional information, on the above meetings, contact Debbie Eggleston at 410-992-7300, ext. 202, or via e-mail to dse@jhu.edu.

Visit www.jannaf.org for meeting updates and other valuable JANNAF resources.

The Bulletin Board

Various meetings and events of interest are listed below. We welcome all such announcements so that the propulsion community can be better served with timely information. For information on additional industry meetings, visit CPIAC’s calendar of Meetings & Symposia, available at http://www.cpiac.jhu.edu/templates/cpiacTemplate/meetings/. The JANNAF Meeting Calendar appears on the back page.

45th AIAA Aerospace Sciences Meeting/Exposition
8-11 January 2007
Reno, NV
POC: www.aiaa.org

33rd Annual Conference on Explosives and Blasting Technique
28-31 January 2007
Nashville, TN
POC: www.isee.org

Insensitive Energetic Materials - particles, crystals, solids
6-7 March 2007
Karlsruhe, Germany
POC: www.ict.fhg.de

23rd International Symposium on Ballistics
16-20 April 2007
Tarragona, Spain
POC: http://www.mater.upm.es/ISB2007/

NDIA Guns and Missile Systems Conference and Exhibition
23-26 April 2007
Charlotte, NC
POC: www.ndia.org

25-27 April 2007
Pardubice, Czech Republic
POC: http://www.ntrem.com/

Small Arms Symposium
7-10 May 2007
Virginia Beach, Va
POC: www.ndia.org

2nd International Association for the Advancement of Space Safety Conference
14-16 May 2007
Chicago, IL
POC: www.iaass.org
Opening ceremonies also included presentation of an Executive Committee (EC) award as well as awards for outstanding sustained contributions to JANNAF. Dr. Unmeel Mehta, NASA Ames Research Center, was presented an EC Award for his diligent and sustained contributions as the first Technical Steering Group (TSG) Chair of the Modeling and Simulation Subcommittee (MSS) and in recognition of his efforts in starting the MSS. The Combustion Subcommittee (CS) awards for outstanding sustained contribution were presented to Dr. Michael J. Nusca, Army Research Laboratory, Maryland, and Dr. Rich Behrens, Sandia National Laboratory, California. The Airbreathing Propulsion Subcommittee (APS) awards for sustained contribution were presented to Dr. Louis A. Povinelli, NASA Glenn Research Center, Ohio, and Mr. Earl Andrews, NASA Langley Research Center and Swales Aerospace Incorporated, Virginia. The Propulsion Systems Hazards Subcommittee (PSHS) award for sustained contribution was presented to Ms. Jamie M. Fisher, Army RDECOM, Alabama. A Certificate of Recognition for service to the PSHS Community and JANNAF was awarded to Mr. Daniel F. Schwartz, Air Force Research Laboratory, Edwards AFB, California.

The CS technical program included presentation of 95 technical papers in 21 technical sessions sponsored by the CS, with papers in 3 sessions on Future Alternative Fuels cosponsored with the APS. These numbers represent an approximate 25% increase over the 2005 Meeting in Charleston. The CS technical sessions covered: combustion modeling of solid propellants; motor performance prediction; decomposition of energetic materials; enhanced blast modeling, test and evaluation, and formulations; reactive materials; aluminum agglomeration and combustion; gun propellants and ingredients; gun igniters and primers; gun interior ballistics modeling of small caliber ammunition; combustion diagnostics; and component characterization and development. The jointly sponsored session covered: future alternative fuels for propulsion system design.

Meetings of all current CS technical panels were held during the week. Formation of two new technical panels was approved by the CS TSG: the Reactive Materials Panel, which will be a joint panel with the PEDCS, and the Liquid Fuel Kinetics and Properties Panel.

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Panel, which will be a joint panel with the APS, LPS and MSS. Charters and tasks are being formulated. If you have interest in participating, contact the respective TSG Chairs for more information. The current Kinetics Panel is diligently developing a report, anticipated in mid-to-late 2007, containing recommendations on the R&D required to implement new energetic ingredients in munitions. A follow-up meeting was held in San Diego by the participants of a 3-day workshop held previously at ARL in October 2006. The joint CS/PEDCS Propellant Burning Rate Panel was disbanded with the conclusion of its recent work: completion and reporting of two workshops on Closed Bomb Burning Rate Methods and Novel Gun Propellants; and, the establishment of a Gun Propellant Database. The Flowfield Diagnostics Panel is continuing to foster better collaboration between the computational and experimental communities. The CS TSG is helping this panel by identifying specific diagnostic problems of concern.

Future CS workshops being considered include “Reactive Materials,” “Condensed Phase Kinetics,” “Improvements to Performance Prediction Methods,” “Gun Propellant Ignition,” “Small Caliber Ammunition,” and “Replacement Fuels for Hypergolics.” Advise the program committee members (identified in the meeting program) if you support or are interested in participating in any of these proposed workshops.

The APS technical program included presentation of 64 technical papers in 10 technical sessions sponsored by the APS with papers in 3 sessions on Future Alternative Fuels cosponsored with the CS. These numbers represent a slight decrease from the 2005 Charleston Meeting. The technical sessions covered: airbreathing propulsion testing; hypersonic propulsion integration; hypersonic technology overviews; sessions on X-43A, GDE-2, HyCAUSE and Rectangular-to-Elliptical Transition (REST) Flowpath; hypersonic airframe structures and materials; scramjet fuel injection; and, flowpath isolators. The jointly sponsored session covered: future alternative fuels for propulsion system design.

Meetings of all current APS technical panels were held during the week. The APS Engine Test and Validation Panel is very busy developing standards for scramjet engine testing, drawn from Publication 710, Scramjet Propulsion Testing, Recommended Practices and Guidelines (2nd Ed.), released December 2005. Additionally, this panel is examining test medium effects in scramjet testing, and sponsored a specialist session on flight testing as an essential part of scramjet engine development. The Component Level and Physical Modeling Panel is interested in pursuing activities in two areas: turbulent mixing, Schmidt number modeling and data collection; and, isolator CFD modeling. The Structures and Materials Panel has continuing interests to identify the following: state of the art (SOA) in non-metallic high temperature materials; a technology roadmap for developments; and, existing and needed test facilities. The Fuels Panel has interests in joint activities with the CS, LPS and MSS involving the kinetics of liquid hydrocarbon fuels. The Advanced Engine Cycle Panel’s primary interests involve using existing X-43A...
JANNAF Meeting in San Diego....continued from page 5

engine test references data to validate analysis codes. The APS conducted a specialist session on “Flight Test – As an Essential Element of Scramjet Engine Development,” and two workshops on “Scaling Laws for Hypersonic Aerospace Systems - Workshop III” and “Scramjet Engine Test Standards - Workshop VII.”

Future APS workshops being considered are “Uncertainty in Hypersonic R&D - Including Scramjet Predictive Analyses, Ground Test, and Flight Test” and “Use of Community Codes in Conjunction with X-43A datasets to Analyze Engine Performance.” Advise the program committee members (identified in the meeting program) if you support or are interested in participating in any of these proposed workshops.

The PSHS technical program included presentation of 63 technical papers in 9 sessions covering fast cookoff and cookoff response; hazard classification and explosives safety; shock, impact and violent reaction; and insensitive munitions technology. The number of papers represented an increase of more than 50% from the 2005 Charleston Meeting, largely due to a renewed level of activity in the area of insensitive munitions technology development for Joint Service applications, which accounted for nearly half of the PSHS program.

Meetings of all current PSHS technical panels were also held during the week. The Safety and Hazard Classification Panel is planning a second workshop on the topic of solid rocket motor handling safety, either in conjunction with the upcoming JANNAF Propulsion Meeting in May 2007, or later in the Spring. CPIAC representatives updated the panel on their funded effort to develop a database of solid propellant-related accidents. The Cookoff Panel focused on tentative plans for a workshop to discuss the current SOA in cookoff modeling and simulation capabilities. The panel believes it is essential to assess the community’s current capabilities and prioritize future efforts. The newly formed Insensitive Munitions (IM) Technology Panel held its first meeting in San Diego. Ms. Jamie Fisher, Army RDECOM, and Mr. Stephen Struck, AFRL, will cochair this panel. Initial panel tasks will include the generation of an historical record of IM technology efforts conducted by various organizations, and the development of a catalog of IM technologies applicable to tactical rocket motors.

JANNAF continues to be effective in addressing problems of mutual interest to the government, industry and academia. Fruitful meetings of current CS, APS, and PSHS Technical Steering Groups were held throughout the week, contributing to the future direction of JANNAF’s technical activities. Overall, the meeting was judged to be a success by the participants and stands witness to the continuing health of the propulsion industry.

Publish a Technical Article in the CPIAC Bulletin

Do you have a propulsion-related article that you would like us to consider for publication in the Bulletin? CPIAC welcomes suggestions that may be of interest to our readers in the propulsion community. Guidelines for submitting a technical article are available on the CPIAC Web site: http://www.cpiac.jhu.edu/media/techArticle_Guidelines.pdf.

Contact Rosemary Dodds, Bulletin Editor, at 410-992-1905, ext. 219 or by e-mail to rdodds@cpiac.jhu.edu for more information.
New Year’s Greeting from CPIAC Director

Edmund K.S. Liu

December 1, 2006

It has been six months since I began my new position as the director of CPIAC. During that time, I have received countless congratulatory notes from colleagues in the propulsion community. I would like to thank all of you. My fellow employees here in Columbia, Maryland, are truly dedicated to the mission of CPIAC, and it is an honor to be their Director. After many years in industry and a user of CPIAC services, the perspective now as a CPIAC member gives me greater appreciation for the dedication of the workers here.

Let me express our appreciation for your support of the CPIAC organization through your use of our services, whether it was a technical inquiry, product purchase, subscription activity or attendance at one of many workshops or JANNAF Subcommittee Meetings. Do not hesitate to inquire about other activities that could be of service to you, as we exist to ensure that the propulsion community has access to the vast amount of government-controlled information. We will continue to strive to give you the best value for your investment and trust in us.

Please look for the newest product next year, the JANNAF Journal of Propulsion and Energetics, commonly referred to as the JANNAF Journal. This publication will contain manuscripts that have been reviewed by scientists and engineers and will be the only journal devoted to publication of technical data that is export controlled and limited in distribution.

Have a safe and happy holiday. We look forward to another successful year.

Ed
Frederick has over 26 years’ experience in solid propulsion, from propellant research to full scale testing. Mr. Robert Geisler, now in his 48th year in solid rocketry, has worked on most aspects of solid rocket propulsion and serves as a private consultant for various organizations. Mr. Geisler has organized the industry experts who will be assisting with the course. Presently, the following speakers and topics have been scheduled:

<table>
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<tr>
<th>Session</th>
<th>Date</th>
<th>Topic</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>1</td>
<td>1/11/2007</td>
<td>Solid Rocket Motor Overview</td>
<td>Bob Geisler, Consultant</td>
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<tr>
<td>2</td>
<td>1/18/2007</td>
<td>Solid Rocket Motor Design</td>
<td>Dan Meyer, Aerojet</td>
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<tr>
<td>3</td>
<td>1/25/2007</td>
<td>Ballistic Modeling &amp; Burn Rate Analysis</td>
<td>Sam Schlueuter, Aerojet</td>
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<td>4</td>
<td>2/1/2007</td>
<td>Propellant Fundamentals</td>
<td>Carol Campbell, ATK</td>
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<td>5</td>
<td>2/8/2007</td>
<td>Combustion &amp; Two-Phase Flow</td>
<td>Jim Kliegel, Consultant</td>
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<td>6</td>
<td>2/15/2007</td>
<td>Propellant Grain Design</td>
<td>McKay Anderson, Consultant</td>
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<tr>
<td>7</td>
<td>2/22/2007</td>
<td>Motor Case Design</td>
<td>Roger Wright, ATK; Hugh Reynolds, Consultant</td>
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<tr>
<td>8</td>
<td>3/1/2007</td>
<td>Thermal Protection &amp; Insulation</td>
<td>Joe Koo, University of Texas</td>
</tr>
<tr>
<td>9</td>
<td>3/8/2007</td>
<td>Nozzle Design</td>
<td>Russ Ellis, Consultant</td>
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<tr>
<td>10</td>
<td>3/15/2007</td>
<td>Igniter Design</td>
<td>Rob Black, Aerojet</td>
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<tr>
<td>11</td>
<td>3/29/2007</td>
<td>Motor Manufacturing</td>
<td>Dave McGrath, ATK</td>
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<tr>
<td>12</td>
<td>4/5/2007</td>
<td>Motor Demonstration &amp; Performance</td>
<td>Paul Willoughby, Consultant</td>
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<td>13</td>
<td>4/12/2007</td>
<td>System Engineering &amp; Trades</td>
<td>Ed Casillas, Aerojet</td>
</tr>
<tr>
<td>14</td>
<td>4/19/2007</td>
<td>Motor Failure</td>
<td>Allan McDonald, Consultant</td>
</tr>
<tr>
<td>15</td>
<td>4/26/2007</td>
<td>Solid Rocket Motor Project</td>
<td>Robert Frederick, UAH</td>
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</table>

There is still time to take advantage of this first-time opportunity and sign up as either a distance learning student or a Professional Development Distance Learning participant. For additional information, visit www.uahsolidrockets.com. Or, you may contact Dr. Robert A. Frederick, Associate Director, UAH Propulsion Research Center, at 256-824-7203 or by e-mail to Robert.Frederick@uah.edu.

CPIAC Releases Liquid Propellant Database (LPD)

CPIAC is pleased to announce the release of the Liquid Propellant Database (LPD), an electronic migration of the CPIAC M4/Liquid Propellant Manual into a searchable, online database environment. The LPD is a compilation of the chemical, physical, thermodynamic, and safety properties of liquid propellants used in fielded rocket engines, as well as of advanced development propellant candidates. The manual includes sections on gelled propellants and liquid monopropellants for gun and other applications. Data records for current and historical liquid propellants can be searched, browsed, displayed, and/or printed. LPD also contains unclassified data on propellants that have classified performance or formulation details. The LPD’s easy-to-navigate Graphical User Interface (GUI) provides rapid access to propellant manufacturer information, physical, and thermodynamic characteristics, and downloadable propellant manual pages.

As with others in the suite of CPIAC database products, the LPD is hosted on the secure Chemical Propulsion Information Network (Secure CPIN), and access to LPD is controlled via 128-bit Secure Socket Layer (SSL) encryption protocols and login accounts generated and maintained by CPIAC.

Current CPIAC M4/Liquid Propellant Manual customers will automatically have their subscription transferred to the LPD, and should have received a set of access credentials in their GFY 2007 CPIAC subscription package. For more information on the capabilities of the LPD, or to purchase access, contact CPIAC Customer Service at 410-992-7300.
The 54th Joint Army-Navy-NASA-Air Force (JANNAF) Propulsion Meeting (JPM)/5th Modeling and Simulation Subcommittee (MSS)/3rd Liquid Propulsion Subcommittee (LPS)/2nd Spacecraft Propulsion Subcommittee (SPS) Joint Meeting will be held Monday through Thursday, 14-17 May 2007, at the Marriott Denver City Center, located in Denver, Colorado. NASA is the host agency for this joint conference; Mr. James L. Cannon of the NASA Marshall Space Flight Center in Huntsville, Alabama, is the Meeting Chair.

To date, well over 300 abstracts have been submitted for the meeting, promising to make this one of the largest JANNAF technical meetings in recent memory. There may be limited availability to include additional abstracts in some remaining sessions; for more information, please contact CPIAC: Pete Zeender at pzeender@cpiac.jhu.edu or Debbie Eggleston at dse@jhu.edu.

Attendance at this JANNAF meeting is restricted to U.S. citizens whose organizations are registered with an appropriately classified contract with the Defense Technical Information Center and certified for receipt of export-controlled technical data with the Defense Logistics Information Service.

PEDCS and S&EPS Joint Meeting
August 2007

JANNAF will conduct its 34th Propellant and Explosives Development and Characterization Subcommittee (PEDCS) and 23rd Safety & Environmental Protection Subcommittee (S&EPS) Joint Meeting the week of August 13-17, 2007 at Circus Circus in Reno, Nevada. The Meeting Announcement and Call for Papers (CFP) for this meeting will be distributed to the PEDCS and S&EPS communities by the end of January 2007.

This call will allow for the submission of abstracts for classified presentations. Improvised Explosive Devices (IEDs) have been a topic of great interest lately. CPIAC will be inviting speakers as part of a special session on IEDs. We encourage your participation at the session by presenting your work and joining the discussions which could lead to an early solution for the war fighters. This session will contain classified presentations.

Classified sessions will be conducted in the auditorium of the Air National Guard located at the Reno Airport, should responses to the CFP warrant a classified meeting. The deadline date for submission of abstracts is April 2, 2007.

To assure automatic receipt of the meeting announcement, please e-mail Pat Szybist, CPIAC, at pats@cpiac.jhu.edu or telephone (410) 992-7300, ext. 212.
Small Launch Vehicles in the News

Minotaur Rocket Launched from New Mid-Atlantic Regional Spaceport (MARS)

A Minotaur I rocket carrying the U.S. Air Force Research Laboratory’s TacSat-2 satellite and NASA’s GeneSat-1 microsatellite was launched at 7:00 a.m. EST on 16 December 2006, from the Mid-Atlantic Regional Spaceport (MARS) launch site at NASA’s Wallops Flight Facility (WFF) in Virginia. This event represented the first commercial launch from the FAA-licensed MARS, a cooperative enterprise supported by Virginia and Maryland. The Virginia Commercial Space Flight Authority (VCSFA) built the launch pad in 1998 on land leased from NASA WFF. The mission also marked the largest successful rocket launch from the U.S. Mid-Atlantic Seaboard to date.

NASA provided mission control and tracking support for the TacSat-2 mission. The satellite payload was situated atop the four-stage solid propellant Minotaur I launch vehicle contracted by the Space and Missile Systems Center through Orbital Sciences Corporation’s Launch Systems Group. TacSat-2 was the first ground-launched commercial space launch mission from Wallops Island in 11 years. It was also the initial demonstration of a new 61-in. diameter fairing for the Minotaur I launch vehicle. The Air Force Research Laboratory (AFRL), in partnership with the Space Development and Test Wing (SDTW), both at Kirtland Air Force Base (AFB), New Mexico, is leading the TacSat-2 and -3 joint development teams in partnerships that include space organizations from the Air Force, Navy and Army. AFRL was also responsible for development of the new 61-in. Minotaur fairing. NASA’s Ames Research Center in California is orbiting the secondary payload, GeneSat-1, a 10-pound satellite transporting bacteria inside a miniature laboratory to study how microbes respond in spaceflight.

The December mission represented the first of two contracts that were awarded to Orbital in May 2006 by the United States Air Force (USAF) Space and Missile Systems Center and designed to demonstrate new technologies and capabilities for providing responsive space-based support of military operations. The TacSat-2 mission demonstrates the ability to launch a payload approximately six months following contract award. “As we have been doing throughout our 61-year history, the Wallops staff responded quickly and efficiently to the country’s launch needs,” said John Campbell, director of the Wallops Flight Facility. “It was truly a team effort and an honor for the Facility to work with all the participants to support this successful launch,” he added. The second mission, which will launch the TacSat-3 satellite, is scheduled to take place in October 2007.

The Minotaur rocket is sixty-nine feet tall and five feet in diameter. Provided under the U.S. Air Force Orbital/Suborbital Program-2 (OSP-2) contract, the Minotaur family of launch vehicles is derived from U.S. Government-surplus Minuteman and Peacekeeper rocket motors. The space launch configurations combine commercial rocket motors, avionics and other elements with the government-supplied stages to create responsive, reliable and low-cost launch systems for U.S. government payloads. The space launch vehicle configuration used in the TacSat-2 launch included M55 Minuteman rocket motors that served as the vehicle’s first and second stages, efficiently putting to use Government assets that had been previously decommissioned. Its third and fourth stages and structures are common with Orbital’s Pegasus XL rocket.

Two additional Minotaur I rockets are scheduled for launch in 2007 from Wallops carrying the Near-Field Infrared Experiment (NFIRE) satellite in April and the TacSat-3 satellite in October. Both missions will use the Spaceport’s launch pad.

This article includes excerpts from press releases courtesy of NASA News and Orbital Sciences Corp.
Successful Static Firing of Vega’s P80 First-stage Motor

On 30 November 2006, Europe’s Vega launch vehicle achieved another development milestone when its P80 first stage solid rocket motor (SRM) was successfully static fired at the Guiana Space Centre, Europe’s Spaceport, in Kourou, French Guiana. The test was performed on the solid booster test stand in Kourou, the same facility used for firing tests on Ariane 5’s boosters. The P80 motor, the largest European mono-segment composite case SRM ever developed, delivered a mean thrust of about 190 tons for over 100 seconds, representing roughly one third of the thrust delivered by each of Ariane 5’s solid booster stages. A peak of 250 tons was reached 7 seconds into the test. Vega, the new small launch vehicle currently under development by the European Space Agency (ESA), is designed to lift single or multiple payloads to orbits of up to 1,500 km in altitude. Its baseline payload capability is about 1,500 kg to a circular 700-km-high sun-synchronous orbit, but it can also loft satellites ranging from 300 kg to more than 2 ton, as well as piggybacking microsatellites.

“The first data we have in hand show that the firing closely followed the predicted pressure curve,” said Antonio Fabrizi, ESA’s Director of Launchers. “This event concludes the first set of development tests conducted for the Vega launcher in 2006, a very intensive and successful year for the Program. This excellent result marks a milestone that contributes significantly to further increasing confidence in the Vega launcher, the exploitation of which is currently being prepared by Arianespace following the signature of a Convention with ESA in November this year.”

Based on the industrial capability acquired with the three-segment SRM powering Ariane 5’s solid booster stage, and about the size of one of its lower segments, the P80 motor features many new developments which might later be used on Europe’s workhorse heavy launcher to improve its performance in terms of capabilities and cost. New developments include a simplified carbon fiber igniter design; a composite movable nozzle with a simplified architecture to reduce production costs and a flexible joint to facilitate thrust vector control through electromechanical actuators; and a new thermal insulation material.

About 12 m high and 3 m in diameter, the P80 motor is loaded with 88 tons of solid propellant. Unlike previous motors of this size or larger, it is made of a single propellant segment instead of several segments cast separately before being assembled together. Propellant casting was carried out at the Guiana Propellant Plant in Kourou, in the same pit as the 100-ton lower segments of the Ariane 5 booster. Unlike the Ariane 5 booster, P80 has a lightweight filament-wound graphite composite case.

This static firing, the first of two planned firings for the P80 motor, is a major achievement for the Vega Program, as well as for solid propulsion capability in Europe, and completes the series of major Vega milestones planned for 2006, clearing the way for Vega’s maiden flight in 2008.

This article includes excerpts from press releases courtesy of European Space Agency (ESA).
DEFENSE ENERGY SUPPORT CENTER HYDRAZINE TEAM 
WINNS EXCELLENCE IN ACQUISITION AWARD

The Defense Energy Support Center (DESC) Hydrazine Acquisition Team received the coveted David Packard Excellence in Acquisition Award presented by the Honorable Kenneth Krieg, the Under Secretary of Defense for Acquisition Technology and Logistics, at a Fort Belvoir, Virginia ceremony on November 8, 2006.

The team was led by the Aerospace Energy Commodity Business Unit Director, Sharon Murphy, and included members from all disciplines of acquisition, procurement, quality, transportation, engineering and legal; it also included members from the National Aeronautics and Space Administration (NASA) at Kennedy Space Center.

The creative acquisition strategies used by the team resulted in competition for the first time in 25 years for the award of six hydrazine product specifications. The strategies focused on:

• reducing life cycle costs by obtaining 20-year contracting authority for production to encourage small business participation;
• producing two years of requirements to accommodate surges and shorten acquisition lead time for filling customer requirements for a more efficient, responsive and timely acquisition;
• managing risk with unique Economic Price Adjustment provisions; and,
• encouraging competition by allowing a government-dedicated commercial facility to sell to non-space customers with equitable credit to the government.

After extensive research with multiple business process scenarios, the team developed a business case that was in the government’s best interest. These actions resulted in a competitive, cost-saving hydrazine contract awarded in March 2005 to support the Department of Defense, NASA and United States commercial space programs.

DESC Aerospace Energy Commodity Business Unit serves as the DoD Integrated Materiel Manager as a required source for propellants, chemicals, gases and missile fuels. For more information, visit www.desc.dla.mil or call 210-925-9950.

Rocket Test Facility Operators Working Group Welcomes New Chairmen

The Rocket Test Facility Operators Working Group (RTFOWG) concluded its Fall 2006 meeting, hosted at NASA Headquarters in Washington DC, with the election of two new Chairmen - Anthony Sones of Pratt & Whitney Rocketdyne at the NASA Stennis Space Center, and Peter Zeender of the Chemical Propulsion Information Analysis Center (CPIAC) at Johns Hopkins University.

The RTFOWG organization is chartered to “enhance rocket ground test operational effort, reduce ground test costs and facilitate activation of new facilities” and has been doing so with steady participation in working group meetings for more than 10 years. The organization is comprised of over 50 representatives from a multitude of government, contractor and academic test facilities; it meets biannually to discuss and present technical findings on lessons learned, shared design approaches, safety improvements and to promote operational standardization.

RTFOWG membership is open to test facilities operators in the government, industry and academic communities, and the next working group meeting will be held in May 2007. For more information on the organization or membership, please contact Pete Zeender at pzeender@cpiac.jhu.edu.
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JANNAF Meeting Calendar

2007

38th Structures and Mechanical Behavior/25th Rocket Nozzle Technology/
16th Nondestructive Evaluation Joint Subcommittee Meeting
20 - 22 March 2007
Abstract Deadline: Past
Paper and Presentation Deadline: 12 February 2007
Hyatt Regency Newport Hotel and Spa
Newport, RI
Hotel Reservation Deadline: 26 February 2007
Reg. Forms due at CPIAC by: 5 March 2007

54th JANNAF Propulsion Meeting/5th Modeling & Simulation/3rd Liquid Propulsion/
2nd Spacecraft Propulsion Joint Subcommittee Meeting
14 - 17 May 2007
Abstract Deadline: Past
Paper and Presentation Deadline: 9 April 2007
Marriott Denver City Center
Denver, CO
Ph. 800-444-2206 or 303-297-1300
Hotel Reservation Deadline: 23 April 2007
Reg. Forms due at CPIAC by: 30 April 2007

34th Propellant and Explosives Development and Characterization/
23rd Safety & Environmental Protection Joint Subcommittee Meeting
13-17 August 2007
Abstract Deadline: 2 April 2007
Reno, NV

Remember to visit www.jannaf.org for meeting updates.

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