National Aeronautics and Space Administration

MARSHALL STAR

Serving the Marshall Space Flight Center Community

Dec. 9, 2010

NASA ejects nanosatellite from microsatellite in space

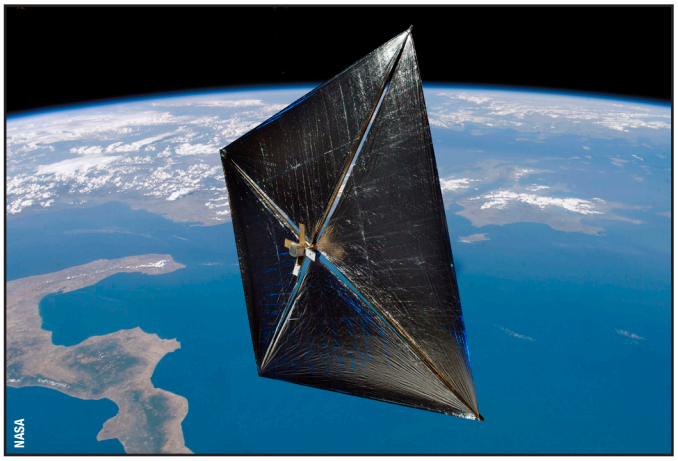
By Kim Newton

On Dec. 6 at 12:31 a.m. CST, NASA for the first time successfully ejected a nanosatellite from a free-flying microsatellite. NanoSail-D ejected from the Fast, Affordable, Science and Technology Satellite, FASTSAT, demonstrating the capability to deploy a small cubesat payload from an autonomous microsatellite in space.

Nanosatellites or cubesats are typically launched and deployed from a mechanism called a Poly-PicoSatellite Orbital Deployer, known as P-POD, mounted directly on a launch vehicle. This is the first time NASA has mounted a P-POD on a microsatellite to eject a cubesat.

FASTSAT, equipped with six science and technology

*See **NanoSail-D** on page 5*



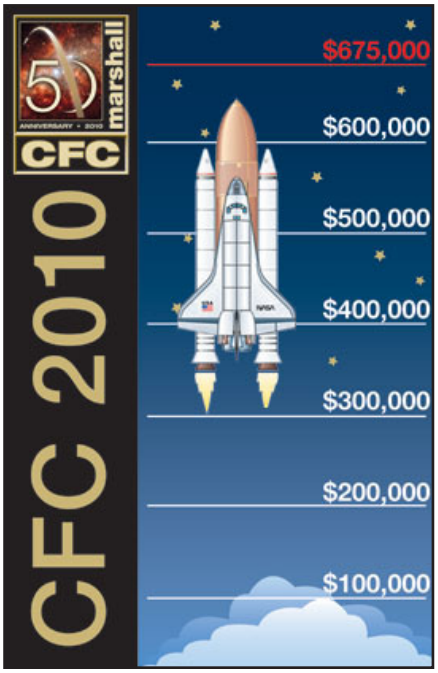
Artist concept of a solar sail in space

Leading Marshall into 2011 and beyond

Addressing the Marshall Space Flight Center work force at an all-hands meeting Dec. 7 are, from left, Garry Lyles, engineering associate director for technical management; Center Director Robert Lightfoot; and Todd May, special assistant to the director. Lightfoot shared the latest details on the Congressional budget cycle and talked about studies now under way at Marshall, headed by Lyles and May, to address NASA's next-generation heavy lift vehicle development capabilities. To review the director's charts from the all-hands, visit http://inside.msfc.nasa.gov/dc. To watch a replay of the meeting, visit http://desktoptv1.ndc.nasa.gov.

Goal line in sight

CFC donations near $642,500



As of Dec. 6, the Marshall Space Flight Center team had contributed $642,382 to the Combined Federal Campaign. Marshall's goal for 2010 is to raise $675,000 by the campaign's end Dec. 10. Employees can use Employee Express or paper pledge forms to contribute by payroll deduction. Visit http://cfc.msfc.nasa.gov/pledges.html for details. Paper forms are available from organization leads or assigned monitors. For a complete list of organization leads, visit http://cfc.msfc.nasa.gov/2010_org-chart.pdf.

Shuttle Discovery's launch set for no earlier than Feb. 3

NASA news release

NASA managers are targeting space shuttle Discovery's launch for no earlier than Feb. 3 at 12:34 a.m. CST. Shuttle managers determined more tests and analysis are needed before proceeding with the launch of the STS-133 mission to the International Space Station.

The Program Requirements Control Board met Dec. 2 and reviewed engineering evaluations associated with cracks on two 21-foot-long, U-shaped aluminum brackets, called stringers, on the shuttle's external tank. Repairs have been made to the cracks, and foam has been reapplied to the exterior of the stringers.

Managers decided the analysis and tests required to launch Discovery safely are not complete and are outlining a detailed plan of work. An instrumented tanking test on the external fuel tank and structural evaluations on stringer test articles are planned to determine if the analysis is correct. Details and timelines for the tanking test are in work, but plans call for temperature and strain gauge measurements to be taken in the intertank region near the top of the tank during the test.

The test will verify the integrity of repairs made earlier when the two cracked stringer sections and foam were replaced. The Final Inspection Team will inspect the tank for evidence of any foam cracking as it would on an actual launch day. The test also will verify the repairs to the Ground Umbilical Carrier Plate, or GUCP, which leaked an unsafe amount of gaseous hydrogen during Discovery's Nov. 5 launch attempt.

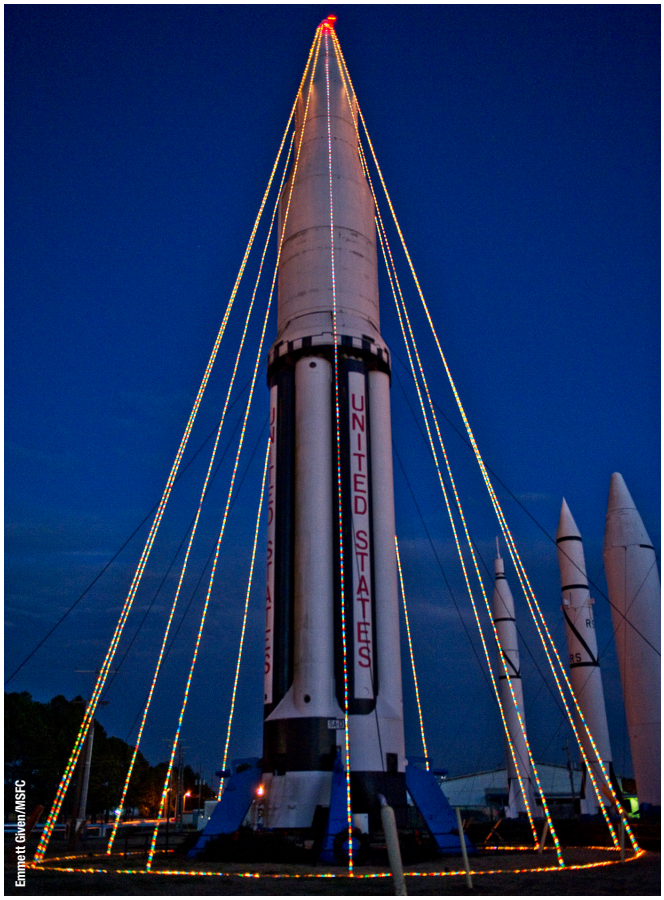
The date of the test is under evaluation, but likely will occur in December.

Engineers will continue to search for the root cause of the stringer cracks through data analysis and tests, including placement of manufacturing defects in separate stringers to demonstrate structural integrity. This effort will be performed to attempt to duplicate the same type of failure that occurred in November.

NASA will review and analyze all of the test data before setting a launch date.

Because of Discovery's delayed launch, the earliest opportunity for the launch of the final scheduled space shuttle mission, the STS-134 mission on Endeavour, will be April 1.

For continued STS-133 updates as well as crew and mission information, visit http://www.nasa.gov/shuttle.



Emmett Given/MSFC

Lighting up the holiday season

Strung with some 3,600 feet of lights, the historic Saturn I in the Marshall Space Flight Center's Rocket Park is transformed into a festive holiday "tree." Marshall team members participated in the lighting ceremony Dec. 2 to usher in the holiday season. The season's festivities continued Dec. 7 when the work force gathered for the center's annual holiday reception. Please see photo coverage of that event in next week's Marshall Star.

NASA Student Launch Projects seek new heights

More than 50 teams to participate in April launchfest

By Rick Smith

Next spring, the annual NASA Student Launch Projects will send aloft more rockets than at any time in its 11-year history. And for the first time ever, some of them will splash down in the Atlantic Ocean instead of dropping into a North Alabama cornfield.

More than 500 student rocketeers from 26 states will take part. Nineteen middle school and high school teams will tackle the Student Launch Initiative, while 33 college and university teams will go head-to-head in the University Student Launch Initiative. NASA designed the twin projects to give science, mathematics and engineering students a taste of real-world experience, seeking to foster new generations of aerospace professionals to sustain NASA's science and exploration mission.

As in years past, all teams will build powerful rockets of their own design, complete with a working science or engineering payload they also design, install and track during flight. Teams also create project websites, write preliminary and post-launch reports and develop educational engagement projects for schools and youth organizations in their communities – sharing their enthusiasm with even younger generations of future explorers.

When teams visit the Marshall Space Flight Center in mid-April, NASA engineers will put their rockets through a rigorous flight readiness review and safety inspection. Then, on April 16, participants will travel to Bragg Farms in Toney, Ala., to launch their rockets, aiming for the 1-mile-high altitude goal and a variety of design and team spirit awards.

Emmett Given/MSFC

Student rocketeers watch a liftoff during the 2009-10 NASA Student Launch Projects launchfest, held April 17-18 at Bragg Farms in Toney, Ala.

'Level 2' challenge added

But not all of this season's competitors will launch over Alabama. Three veteran university teams – Mississippi State University in Starkville, Mitchell Community College in Statesville, N.C., and the University of Alabama in Huntsville – accepted NASA's "Level 2" challenge to tackle a new flight requirement. They will design, build and fly a rocket to a maximum altitude of 10,000 feet, nearly twice the height of the traditional university competition. The Level 2 rockets will be launched May 21, 2011, from NASA's Wallops Flight Facility on Wallops Island, Va. They must make a water landing near the NASA test launch facility – and the rockets must stay afloat in the water for one hour before pickup, with science payloads intact.

"So many of our student teams excel each year at the Level 1 challenge, we decided it was time to introduce a new goal," said Tammy Rowan, manager of Marshall's Academic Affairs Office, which organizes the event each year. The Level 2 launch will be a demonstration, not a competition, she said, but she anticipates a heated race to altitude just the same.

NASA extended Level 2 invitations to all college and university teams that placed in the top five finalists in the last two years of competition.

Level 1 of the University challenge remains a competitive event, sponsored by ATK Aerospace Systems of Magna, Utah, which will award $5,000 to the first-place winner. NASA's Science Mission Directorate in Washington also tweaked the Level 1 challenge, offering teams $5,000 each to incorporate a science payload that will measure pressure, temperature and other atmospheric conditions during descent, returning data remotely to the team on the ground. Nineteen Level 1 teams will pursue this option for the current competition.

For a complete competitor list, visit http://education.msfc.nasa.gov/sli and http://education.msfc.nasa.gov/usli.

The NASA Student Launch Projects are sponsored by NASA's Exploration Systems Mission Directorate, Science Mission Directorate, Space Operations Mission Directorate and Office of Education Flight Projects.

Smith, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

Marshall contractors can now visit USS&RC for free

Marshall Space Flight Center contractors now have free admission to the U.S. Space & Rocket Center by presenting their badge at the museum's main ticket counter.

The museum serves as Marshall's official visitors center. A new Memorandum of Agreement between Marshall and the Alabama Space Science Exhibit Commission was signed in November, adding free access for contractors. Admission also includes half-price IMAX tickets, but does not include special traveling exhibits and movies.

Discounted tickets for contractor family members are available at the Space Shop in Building 4203, and can only be purchased as an admission/movie combination. The cost is $23 for adults and $18 for children.

NASA civil service employees, retirees, spouse and children living in the household under the age of 21 have free admission to the museum.

For questions, please contact Ola Metcalfe, Space & Rocket Center liaison in the Office of Strategic Analysis & Communications, at 544-7093.

Caring in Action Program Recipient of the Month

Harski prevents potential injury by ensuring a pipe was repositioned

Richard Harski, a cost engineer for SEI Group Inc., supporting the Facilities Management Office in the Office of Center Operations, recently was selected as the Caring in Action Program Recipient of the Month.

Harski reported that a conduit pipe in Building 4760 was within inches of causing a potential injury.

"Richard Harski followed up to make sure the pipe was repositioned so no one could get hurt," said Glenda Morton, Safety Action Team chairwoman.

For more information about the Caring in Action Program or to nominate a team member, visit https://safety.msfc.nasa.gov/sites/cia/.

Richard Harski, right, receives the Caring in Action Program Recipient of the Month award from Glenda Morton during a recent Marshall senior staff meeting.

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Marshall Star Ad Form." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue, Dec. 16, is 4:30 p.m. Thursday, Dec. 9.

Miscellaneous

Casio PX-100 88 key keyboard, $150. 256-722-9535

Newest generation of iPod Nano, 8GB, $125. 256-457-5823

Pink Leapster L-Max, two girly games, TV connect cords, parent's guide, $25. 256-617-1822

7x10 metal garage door, $50. 256-423-2662

Infant car seat, walker, high chair, training potty, booster seat, call for pics. 256-990-4243

Ladies New Balance shoes 442, size 9, two pairs, black/pink, white/gray, pics, $20 each. 256-655-6348

King-size furniture: Mediterranean triple dresser, mirror, chest of drawers, nightstand, $200. 256-353-4922

Eagle Creek messenger bag, $50. 256-783-3428

Farberware stainless coffee urn, automatic, 12-to-36-cup capacity, $40. 256-837-6776

Large burgundy leather massage chair, you pick up, $500. 256-509-9926 or hshivers2@comcast.net

Twin bedroom suit, mattresses, boxsprings, night stand, triple dresser with mirror, chest of drawers, $600. 256-881-5860

One-carat diamond bracelet set, 14k gold, have diamond bond, $500. 256-506-0081

Three-section glass pane bronze aluminum storm door/frame, 32w x 80H, hinged on right, $50. 256-527 -0110

Playstation 3 game, Little BIG Planet, Game of the Year edition, rated E, $25. 256-828-1234

Kasson pool table, fruitwood, Queen Anne feet, leather pockets, $1,950. 256-880-6563 leave message

Rustic pine end tables, coffee table, pic available, $75. 256-777-1810

Proform Crosswalk treadmill, space saver, power incline, joint protection system, $150 obo. 256-565-9240

Full-size stand-up mirror, dark wood, Queen Anne style. $45. 256-431-9165

Vehicles

2010 Ford F150 XLT Supercrew, silver exterior, gray interior, 5,500 miles, $26,000. 256-318-0078 or 256-895-0577

2007 Nissan Sentra S 2.0, dark blue, gray cloth interior, 67k miles, $10,000. 931-625-1144

2006 VW Beetle convertible, 44k miles, $11,800; 2001 Honda CRV, manual, 60k miles, $8,800. 256-830-0248

2004 GMC Sierra 2500HD, new tires, 71k miles, $14,000. 508-981-7773

Two-horse bumperpull trailer, new treated wood floor, 7 feet tall, lights work. 256-505-9263

Wanted

Students interested in obtaining beginner to advanced scuba diver certification. 256-651-9909

Electric range. 256-244-1492

Houses/offices to clean, available evenings/weekends. 256-777-8595 leave message

demonstration payloads, including NanoSail-D, launched Nov. 19 at 7:25 p.m. from Kodiak Island, Alaska. During launch, the NanoSail-D flight unit, about the size of a loaf of bread, was stowed inside FASTSAT in a P-POD.

"The successful ejection of NanoSail-D demonstrates the operational capability of FASTSAT as a cost-effective independent means of placing cubesat payloads into orbit safely," said Mark Boudreaux, FASTSAT project manager at the Marshall Space Flight Center. "With this first step behind us, we have demonstrated we can launch a number of different types of payloads using this common deployment system from an autonomous microsatellite like FASTSAT."

"NanoSail-D has multiple enabling technology demonstration objectives for this flight," said Joe Casas, FASTSAT project scientist at Marshall. Casas said when the NanoSail-D sail is deployed it will use its large sail made of thin polymer material, a material much thinner than a single human hair, to significantly decrease the time to de-orbit the small satellite without the use of propellants as most traditional satellites use.

The NanoSail-D flight results will help to mature this technology so it could be used on future large spacecraft missions to aid in de-orbiting space debris created by decommissioned satellites without using valuable mission propellants.

"The successful ejection of NanoSail-D demonstrates the operational capability of FASTSAT as a cost-effective independent means of placing cubesat payloads into orbit safely,"
— Mark Boudreaux, FASTSAT project manager at Marshall

"This is a great step for our solar sail team with the successful ejection of the NanoSail-D satellite from FASTSAT," said Dean Alhorn, NanoSail-D principal investigator and aerospace engineer at the Marshall Center. "We had to carefully plan and calculate the ejection time, so we'd be lined up over the United States and our ground controllers to execute the next phase of the mission."

After ejection, a timer within NanoSail-D will begin a three-day countdown as the satellite orbits the Earth. Once the timer reaches zero, four booms will quickly deploy and the NanoSail-D sail will start to unfold to a 100-square-foot polymer sail. Within five seconds the sail fully unfurls.

If the deployment is successful, NanoSail-D will stay in low-Earth orbit between 70 and 120 days, depending on atmospheric conditions. NanoSail-D is designed to demonstrate deployment of a compact solar sail boom system that could lead to further development of this alternative solar sail propulsion technology and FASTSAT's ability to eject a nanosatellite from a microsatellite – while avoiding re-contact with the FASTSAT satellite bus.

NanoSail-D was designed and built by engineers in Huntsville and managed at the Marshall Center with technical and hardware support from NASA's Ames Research Center in Moffett Field, Calif. This experiment is a combined effort between the Space and Missile Defense Command, Von Braun Center for Science and Innovation – both located in Huntsville – and NASA.

FASTSAT launched on the STP-S26 mission – a joint activity between NASA and the U.S. Department of Defense Space Test Program. The satellite was designed, developed and tested at the Marshall Center in partnership with the Von Braun Center for Science & Innovation and Dynetics Inc. of Huntsville. Dynetics provided key engineering, manufacturing and ground operations support for the new microsatellite. Thirteen Huntsville-area firms, as well as the University of Alabama in Huntsville, also were part of the project team.

For more information on the timeline of the NanoSail-D deployment, visit http://www.nasa.gov/pdf/501204main_NSD2_timeline_sequence.pdf.

To learn more about FASTSAT and the NanoSail-D missions, visit http://www.nasa.gov/mission_pages/smallsats.

Newton is a public affairs officer in the Office of Strategic Analysis & Communications.

To the Marshall team

Your expression of kindness and sympathy through your cards and prayers in the death of my mother Martha McCormick is so greatly appreciated.

Your concern and support have helped so much during this time of sadness.

– Jenny Campbell and family

Source evaluation boards offer broad perspective of Marshall Center business

Heard about the people who work in the basement of Building 4203? Don't know exactly what they do?

They are members of Source Evaluation Boards, or SEBs, appointed to evaluate contract proposals and assist with securing procurements for all aspects of Marshall Space Flight Center business – from support services to hardware.

A source evaluation board is appointed by Marshall's Office of Procurement at the start of each government procurement process, after an acquisition strategy for a service or item is approved. The board develops a solicitation and determines a statement of work explaining the purpose, work activities, deliverables and period of performance for a procurement. It also issues a request for proposals, evaluates offeror proposals and briefs its findings to the deciding official – the source selection authority.

A typical source evaluation board is a civil servant team comprised of a board chairperson, recorder, senior procurement official and business and technical representatives. Depending on the size of the procurement, a board's size, including subject matter expert evaluators, usually ranges from five to 15 members. When a proposal or action is a significantly large one – such as the Ares Upper Stage – a board could include 50 members or more.

Source evaluation board members serve an average of nine months from the time the board is appointed to assemble the solicitation through the contract award and debriefing. Marshall's Office of Procurement trains members about the SEB process and stewards the board throughout the procurement.

"In a matter of months, Marshall team members who serve on SEBs get a unique, in-depth view of key program and organization information that would normally take years to learn – from how the center conducts business, to contract management, to how center organizations work together," said Byron Butler, Marshall's director of procurement.

Butler said that some misconceptions exist about serving on boards – such as the myth that board members serve long, grueling hours for nine months straight in a basement.

"There are four major decision points during the SEB life cycle when work will ramp up: the draft request for proposal review; final request for proposal review; initial findings development and review; and final findings source selection review," Butler said. "Otherwise, the team normally works at a steady pace, following the procurement timeline."

Benefits of serving on a source evaluation board

"Serving on a SEB provides excellent leadership opportunities and a skill set that are highly valued to maturing executive leadership and professional development at Marshall," said Marshall Center Director Robert Lightfoot.

Materials & Processes Laboratory Manager Ralph Carruth served as chairman of the Ares I Upper Stage Source Evaluation Board in 2007 and recommends that others also gain the experience of participating on boards. "Working on a board gives you a more integrated view of how organizations function with contractor teams and NASA Headquarters for planning and approval of contracts," said Carruth. "You also learn how to work on a center-wide team gaining different perspectives outside your area of expertise," he added.

"If you are the type of person who wants to make a difference with your job and see a project through to completion, serving on a SEB allows you to be a part of a decision that will affect Marshall for years," said Butler. "It is extremely important for the center to get the right products and services and your ability to make a difference is multiplied."

Civil servants interested in participating on a source evaluation board are encouraged to contact their supervisor, or Walt Melton, assistant director for agency initiatives in the Office of Procurement at walter.s.melton@nasa.gov.

A list of upcoming acquisitions can found at http://ec.msfc.nasa.gov/cgi-bin/eis/admin/admin.cgi?center=MSFC.

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