



MARSHALL STAR

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May 24, 2007

Space Shuttle Atlantis prepares for STS-117 mission

NASA News Release

Space Shuttle Atlantis is back at its launch pad at NASA's Kennedy Space Center, Fla., where teams are preparing for its STS-117 mission to the International Space Station. Launch is targeted for June 8.

Atlantis rolled out of Kennedy's Vehicle Assembly Building on May 15 on a massive crawler transporter. Traveling less than 1 mph, Atlantis ended its journey atop the launcher pedestals at

Launch Pad 39-A at 10:47 a.m. The total trip time was six hours and 45 minutes. Electrical and mechanical connections of Atlantis to the launch pad are under way. With the refurbishment of Pad 39-A, this launch will be the first from the pad in four years.



Space Shuttle Atlantis as it moved toward Launch Pad 39A at the Kennedy Space Center, Fla., on May 15.

Atlantis originally was targeted for launch in March, but a hail storm damaged foam insulation on the shuttle's external fuel tank and forced managers to roll the spacecraft back into the Vehicle Assembly Building to make repairs.

Atlantis' payload, consisting of the S3/S4 truss, was installed into the shuttle's payload bay May 16. Beginning May 23, propellants will be loaded into Atlantis' storage tanks.

The propellant will be used by the orbital maneuvering system and reaction control system to move the spacecraft while it is in orbit.

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Marshall Center honors 2006 Contractor Excellence Award winners

Each day, thousands of contractors work at the Marshall Center to support NASA's mission of space exploration. Marshall Center Director David King recently presented four contractor companies with the 2006 NASA Marshall Contractor Excellence Award.

The companies selected for significant contributions to Marshall's mission were Jacobs Engineering, Science and Technical Services Group of Huntsville; Pratt and Whitney Rocketdyne of Canoga Park, Calif.; Hernandez Engineering Inc. of Houston, Texas; and Sierra Lobo Inc. of Milan, Ohio.

Each was evaluated against six comprehensive criteria, with applications rated for contract technical performance, schedule and cost performance, leadership and quality improvements, customer

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2006 contractor honorees

Large Business – Service

Jacobs Engineering, Science and Technical Services Group

Large Business – Product

Pratt & Whitney Rocketdyne

Small Business – Service

Hernandez Engineering Inc.

Small Business – Product

Sierra Lobo Inc.

NSSTC scientist Chryssa Kouveliotou elected to serve on American Astronomical Society governing board

Dr. Chryssa Kouveliotou, a NASA scientist at the National Space Science and Technology Center, has been elected to serve on the council of the American Astronomical Society. The council serves as the governing board of the American Astronomical Society. Kouveliotou will serve for three years with responsibilities to help make all decisions to manage, direct, and control the affairs and property of the society.

Kouveliotou, who joined the Marshall Center in 2000 on special assignment from the Universities Space Research Association based in Columbia, Md., has directed the USRA Astronomy Program in Huntsville since 1998. She also has served since 1995 as deputy director of the Institute for Space Physics, Astronomy and Education — a joint research venture of the University of Alabama in Huntsville and the USRA.

“I am extremely honored to be elected to the governing body of the American Astronomical Society, an organization with more than 6,000 members, that is arguably the national leader in building awareness of the importance of science,” said Kouveliotou.

Kouveliotou also is the recipient of two prestigious awards for research in astrophysics, the Rossi Prize, presented by the American Astronomical Society, and the Descartes Prize, also known as the European Science Award.

Awarded by the High Energy Astrophysics Division of the American Astronomical Society, the Rossi Prize recognizes significant contributions to high-energy astrophysics, emphasizing recent, original work. It is named for the late Dr. Bruno Rossi, an authority on cosmic rays and physics professor at the Massachusetts Institute of Technology in Cambridge.

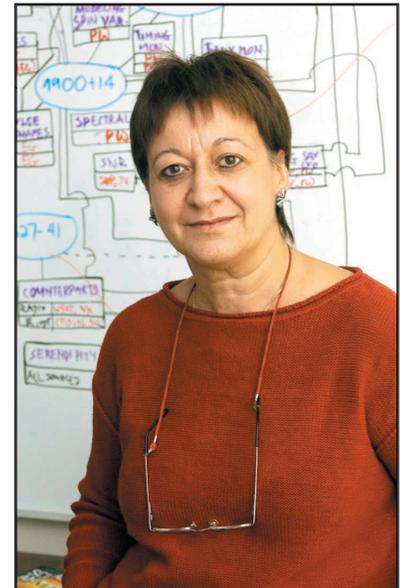
The Descartes Prize recognizes scientific breakthroughs from

European collaborative research in any scientific field. This marks the first time the Descartes Prize — named for René Descartes, a mathematician, natural scientist and philosopher — honors research in astrophysics.

A native of Athens, Greece, Kouveliotou has a bachelor’s degree in physics from the National University of Athens, master’s and doctorate degrees in astrophysics from the University of Sussex in Brighton, England, and the Technical University of Munich, respectively.

Known internationally for her work in astrophysics, Kouveliotou is active in professional societies including the American, European and Hellenic astronomical societies and the Royal Astronomical Society of England. She is a fellow of the American Physical Society and a member of the American Association for the Advancement of Sciences.

The NSSTC is a cooperative venture of Marshall, Alabama A&M University, Auburn University, Tuskegee University, the University of Alabama, the University of Alabama at Birmingham, the University of Alabama in Huntsville, and the University of South Alabama.



Chryssa Kouveliotou

Marshall’s Business Systems & Support Office to host open house May 31

The Marshall Center’s Business Systems & Support Office from the Office of the Chief Financial Officer will host its quarterly open house May 31.

As one of Marshall’s main training venues for the Integrated Enterprise Management Program, or IEMP, the open house

builds the knowledge and skills to equip Marshall’s IEMP user community with the technical, management and leadership tools essential to move the organization to the future and accomplish results.

For this event, Marshall will have 12 subject-matter experts to support 11 various sessions. The training opportunities include a Business Warehouse Beginner’s course, i-View Portal training and a Homeland Security Presidential Directive 12 overview. For a complete list of courses being offered, go to http://inside.msfc.nasa.gov/train/bss0_053107.html

To learn more about this event, contact Angela Saile at angela.m.saile@nasa.gov.

External tank ET-124 repairs complete

By Sanda Martel

Repairs to Space Shuttle Atlantis' external tank ET-124 were completed May 11 at the Kennedy Space Center's Vehicle Assembly Building. A hail storm passed over the area Feb. 26 as Atlantis sat on the launch pad, leaving the tank with more than 4,000 damage sites and causing NASA to delay launch from March 15 to June to repair the tank.

"This has been a truly unique experience, based on the task that was before us," said John Chapman, manager of Marshall Center's External Tank Project office. "The hail storm left us with a tremendous amount of work to do," he added.

"The team — consisting of engineers and managers from Marshall, the Kennedy Center, Johnson Space Center and NASA Headquarters, as well as the USA and Lockheed Martin contractor teams and support personnel around the country — has done a fantastic job getting the tank once again ready for flight," said Chapman.

The storm produced golf-ball-size hail, which caused significant damage to the external fuel tank foam, mostly on the upper part of the tank. Immediately after the storm, NASA managers decided to roll the shuttle from the launch pad back to the Vehicle Assembly Building to assess the full extent of the damage and to develop detailed repair plans.

Teams from Kennedy, Marshall and the Michoud Assembly Facility in New Orleans performed this initial damage assessment. A hands-on inspection was required to determine the depth of damage. Workers constructed an intricate network of scaffolding and platforms around the shuttle to allow access to all of the hail-damaged areas, which were then "mapped" to indicate damage location, size and depth. This initial assessment showed damage in all quadrants of the tank, from the liquid oxygen tank ogive — the pointed nose section — to the aft interface hardware where the orbiter is attached. A thermal/aerothermal assessment was performed for each damage site to determine the required extent of repair.

About 1,400-1,500 of the damage sites were near the top of the tank in a location known as the "pencil sharpener" area. This high density of damage led to a decision to remove a half-inch thick layer of foam in this entire area to eliminate all damage. This process was used to avoid numerous individual repairs. The removed material was replaced with a single, large manually applied spray using a type of material referred to as "BX" foam. This same "remove damage and spray a replacement layer" technique was used to repair a large area of damaged foam covering almost 500 damage sites on the side

of the liquid oxygen tank. While BX material has been flown very successfully in numerous applications on Return-to-Flight hardware, these spray repairs required a demonstration to ensure that the application process was repeatable, and the performance meets or exceeds thermal protection and debris minimization requirements.

Engineers and technicians devised a high-fidelity mock-up of the top of the tank at the Michoud Assembly Facility and duplicated the exact conditions in which they would be working on the spray and final foam machining process at the Kennedy Center. This included replicating the precise access and narrow spaces around the platform in the Vehicle Assembly Building. The team also practiced the manual spray and tested and dissected the completed demonstration repair.

After the manual spray at the top of the actual tank was completed, technicians used a new portable tool they devised at Michoud to trim and machine the foam to the precise dimensions required in this pencil sharpener area. This unique pneumatic tool fits down over the tank's nose cone spike and sands the foam with a sandpaper covered roller.

Approximately 2,500 other sites on the hail-damaged tank were repaired using a mixed repair approach. More than a thousand of these were repaired by removing the damaged foam with a mechanical grinding tool and reapplying specialized pourable foam, known as "PDL". This two-step process has been developed and perfected over several years and is routinely used at the Michoud factory to repair incidental damage to the foam material, which can occur during tank construction.

See Repairs on page 5



Inside the Vehicle Assembly Building at NASA's Kennedy Space Center, Fla., United Space Alliance technicians Brenda Morris and Brian Williams repair a hail-damaged area on Space Shuttle Atlantis' external tank. In late February, the tank received hail damage during a severe thunderstorm that passed through the Kennedy Center Launch Complex 39 area, leaving divots in the giant tank's foam insulation.

Hundreds attend inaugural meeting of NASA Marshall Small Business Alliance

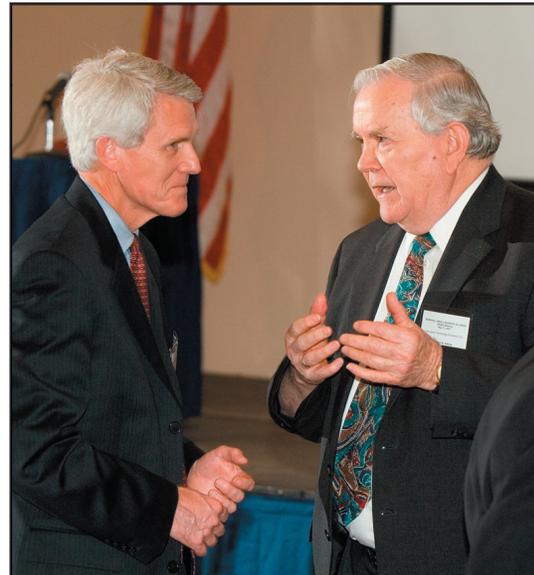
By Sherrie Super

Nearly 300 owners and managers of small businesses converged in Huntsville on May 17 to learn how to forge stronger partnerships with each other and with the Marshall Center. The event was organized by the Marshall Small Business Alliance, an organization sponsored by Marshall's Office of Procurement and Small Business Office.

"The alliance was established to assist small businesses interested in Marshall procurement and subcontracting opportunities with prime contractors," said David Brock, a Marshall small-business specialist and industry assistance officer. "The organization's ultimate goal is to provide useful tools and information that will assist small businesses in their marketing endeavors at Marshall."

The meeting gave small business representatives the opportunity to network with fellow entrepreneurs and featured presentations from the leadership of the Marshall Center and NASA Headquarters in Washington.

Speakers included David King, Marshall Center director; Glenn Delgado, assistant administrator of the NASA Office of Small Business Programs at NASA Headquarters in Washington; and Stephen Beale, director of Marshall's Office of Procurement.



At the Small Business Alliance meeting, Stephen Beale, left, director of Marshall's Office of Procurement, talks with William Adkins, senior assistant consultant of Innovative Technology Solutions, a Huntsville-based company.

David Higginbotham/MSFC

"The meeting served as a venue for sharing procurement data, small-business program updates, educational information and small-business success stories," Beale said. "We believe that when small businesses work together, they can become a stronger voice in promoting the interests of the small-business community, which, in turn, can help increase the quality and quantity of opportunities available."

This event took place at the University of Alabama in Huntsville. The Marshall Small Business Alliance is planning to organize future meetings quarterly.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

Atlantis

Continued from page 1

The flight readiness review meeting, where the official launch date is scheduled, will be held May 30-31 at the Kennedy Center. For a launch on June 8 at 6:37 p.m. CDT, the 43-hour countdown would begin on June 5.

STS-117 Commander Rick Sturckow, pilot Lee Archambault, and mission specialists Jim Reilly, Patrick Forrester, Steven Swanson,

John "Danny" Olivas and Clay Anderson are scheduled to arrive at the Kennedy Center on June 4.

During their 11-day mission, the astronauts will work with the space station crew and ground teams to install the girder-like S3/S4 truss segment, unfold a new set of solar arrays and retract one array on the starboard side of the station.

For more information about the STS-117 crew and mission, visit www.nasa.gov/shuttle.

Awards

Continued from page 1

satisfaction and innovative technology breakthroughs.

"Every day, our contractor partners make important contributions to the Marshall Center's mission," said King. "These honorees, along with all of our Marshall contractors, are integral to our success, and I am extremely pleased to

recognize the efforts of these dedicated Marshall team members."

As winners of the Marshall Contractor Excellence Award, these contractors are eligible to be selected as the center's 2007 nominees for the NASA George M. Low Award, the agency's most prestigious award for quality and performance in the aerospace industry.

Repairs

Continued from page 3

Almost 900 of the damage sites were shallow enough to be repaired using a technique called "sand and blend," in which the crushed foam was sanded away by hand using coarse sandpaper and the resulting slight depression was smoothly "blended" into the surrounding foam. This repair process was feasible only where analysis and testing showed adequate foam thickness would remain to protect against ice formation before launch and heating during ascent. Maintaining proper propellant quality (temperature and density) as well as ensuring proper "break-up" performance during tank re-entry into the atmosphere following use were also considerations, as was compliance with surface waviness requirements.

The remaining 400 damage sites were identified as not requiring repair, although they were cataloged because each required the same rigorous engineering analysis as the repaired damage. This barely visible minor damage will be flown "as is," because the conditions and locations of the sites are such that the tank can still

meet all design requirements.

The repaired areas of ET-124 appear nearly white compared to the orange color of the rest of the tank. Chapman said this is not a problem as all criteria have been met to return the tank to a flight-worthy condition. "ET-124 is ready to fly," he added. Only the pencil sharpener area received a special coat of protective dark paint to protect the foam where it contacts the gaseous oxygen vent hood at the launch pad.

This was the worst damage ever seen from a hail storm, NASA managers said. NASA's history of shuttle rollbacks due to hail damage includes STS-38 (Atlantis), which experienced hail damage resulting in rollback Aug. 9, 1990, to troubleshoot a hydrogen leak. Damage occurred while the shuttle was outside the Vehicle Assembly Building and the repairs were made in VAB. STS-96 (Discovery) experienced hail damage at Pad B on May 8, 1999. Rollback to the VAB was required to fix 650 divots in external tank foam insulation. All of these previous repairs performed as expected.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

Classified Ads

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

Miscellaneous

AKC German Shepherd puppies, two females, black/tan, vet-checked/shots, born Jan. 23, \$350. 828-3373

Wooden, roll-top executive desk, lots of storage drawers, \$95 obo. 289-5651

Lily Flagg pool membership, \$700. 468-8177

Ladies Misty Harbor raincoat, size 8P, trench style, bone, \$20. 655-6348

Bassett boys bunk beds w/ladder, guard rail, mattresses & box spring, \$250. 852-0605

Callaway \$1000 Gift Card for \$750, buy direct from Callaway. 337-4180

GM Silverado/Sierra hard top bed cover, red, \$350. 468-0854

New carpet, 11 ft. x 12 ft., blue/tan, low loop, high-grade commercial, \$50. 881-1005

Wii game system, includes baseball, golf, bowling, tennis, boxing games, \$310. 828-1234

XBox system w/controllers, 17 games including Halo 2, DVD, remote, headset, \$200 obo. 882-9591

Hutch mirror, dresser not included, \$15; aluminum mini-blinds, 64 in. by 50 in., \$15. 348-9381

Walnut china cabinet \$250; professional 35mm slide projector \$30; 12x50 Pentax binoculars \$30. 852-6952

GE 5-cycle automatic dryer; heavy-duty Whirlpool washer, large capacity, \$75 each. 837-0327

Exercise Equipment: Kathy Smith Artech Glider, no-impact walker, \$30 firm. 895-6722

Five finished, sampler-type appliqué quilt blocks, includes fabric, patterns, stripping material, \$30. 837-6776

Five-piece solid oak set, two dressers, two hutches, desk, \$450. 337-1471

Compound bow, Hoyt magnatec RH, \$175. 878-4524

Set of four Ultra 14-inch 5-bolt aluminum wheels, fit P235/60R14 tires, \$100. 498-3864

Ryobi 9-inch band saw with stand, \$100; solid oak corner entertainment cabinet, \$250. 503-6773

Two MTX TP112 floor speakers, \$150 for set. 698-1350

Samsung 32-inch HDTV CRT with universal remote, \$475. 655-1986

Vintage school desk, \$12; unused large cat condos, \$10 each; new shop grinder stand, \$6. 325-2919

Vehicles

2006 Chevrolet Equinox LT, black, sunroof, loaded, 22k miles, \$18,000. 335-5896 or 415-2558

2006 Harley Davidson XL1200 sportster, \$8,800. 479-3393

2005 Kawasaki ZX-10, power commander, quick shifter, steering damper, vortex rearsets, 3,500 Miles, \$8500. 394-7588

2003 Chevy Tahoe, leather, third row seat, \$19,900. 468-0854

2002 Triton V8 Eddie Bauer Expedition 6, CD changer, TV/DVD player, third row seating, dual exhaust. 527-2661

2002 Allegro 30DA, 31 feet, two slideouts, 7KW generator, \$55k obo. 232-2223 / 777-5778

2001 Mazda MPV ES minivan, leather, OEM, video system, 82K miles, \$8,200. 337-4321

2001 Ford Expedition Eddie Bauer, 5.4-liter, 83k miles, \$12,900. 830-0305

2001 GMC Sonoma SLT extended cab pickup, fiberglass bed cover, MP3 player, subwoofer, a/c, 79K miles, \$6,900 obo. 289-5651

2000 GMC Sonoma, 4x4, 87k miles, off-road, fully loaded, green, \$10,000. 931-967-7307

1999 Cougar, gold, 5 speed, gray leather interior, 138k miles. Chuck, 961-2409.

1998 Dodge Stratus, 5 speed, sunroof, 78K miles, \$3,000. 797-1300

1997 Harley Sportster 1200, many extras - seats, pipes, saddle bag, windshield. 728-5768 after 5 p.m.

1995 Pontiac Bonneville, gray, 3800 V6, \$3,500. 652-1495

1994 Acura Vigor, maroon, 188k miles, sunroof, 5-disc changer, leather. \$3500 obo. 759-3009

1972 Volkswagen Beetle, a/c, new tires, paint, brakes, 36k miles, \$7,000 obo. 232-2223 / 777-5778

Wanted

Roommate to share three-bedroom house in Madison. 337-4315

Saxophone for beginner band student. Call 837-5113
Child's tricycle, other riding toys in good condition. 881-8807

Drop-ceiling grid parts, older style, 15/16ths width. 233-0705

Free

Eight-month-old female Terrier mix, spayed with all shots. 468-4684

Black-and-white Syrian hamster, male, with cage, food and cedar shavings. 653-5374

Lowrey Mardi Gras organ; Harvard Piano Co. upright piano. Bill, 721-5983

Found

Pliers and pocket knife, in grass near 4610. Call 544-2604 to claim

Marshall Center Director David King thanks North Alabama community for supporting NASA

Marshall Center Director David King hosted the annual Director's Breakfast on May 17 at the Von Braun Center. Attendees included business and community leaders, and elected officials in North Alabama. The annual event gives King the opportunity to discuss Marshall's achievements, current programs and future initiatives. He thanked the North Alabama community for its continuing support of the space program. The 2006 Contractor Excellence Awards were presented at the breakfast. For details, see "Marshall honors 2006 Contractor Excellence Award winners" on page 1.



Doug Stoffe/MSFC

Pirelli award recognizes Chandra podcasts

From the Smithsonian Astrophysical Observatory

The Chandra Education and Public Outreach group has received the 2007 Pirelli International award for physics. The Pirelli award, established in 1996, is the world's first Internet multimedia award aimed at the diffusion of scientific and technological culture worldwide.

The award was presented during a ceremony in Rome, Italy, in early May. The Chandra team was selected for the first of its series of video podcasts, also known as "vodcasts," that illustrate the mission and results of NASA's Chandra X-ray Observatory. In orbit since July 1999, Chandra studies X-rays coming from high-energy phenomena across the universe.

According to the Pirelli jury, the motivation for selecting Chandra was for "the innovative use of new generation multimedia tools toward broadening science communication to the wider public."

The Chandra podcasts are produced once a month and are available at <http://chandra.harvard.edu/resources/podcasts/> and at many popular podcast sources. Along with physics, the categories in the Pirelli award are chemistry, mathematics, life sciences, and information and computer technology.

The Marshall Center manages the Chandra program for NASA's Science Mission Directorate in Washington. The Smithsonian Astrophysical Observatory controls science and flight operations from the Chandra X-ray Center in Cambridge, Mass.

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