



MARSHALL STAR

Serving the Marshall Space Flight Center Community

Feb. 1, 2007

Director David King discusses the 'state of Marshall' during all-hands meeting Jan. 24

By Shelley Miller

A standing room only crowd of Marshall team members gathered to hear the "state of Marshall" from Center Director David King and senior managers during an employee all-hands meeting Jan. 24 in Morris Auditorium. "Today we have a very clear vision ... and I'm awfully excited about our future and the prospects thereof," said King in his opening remarks.

Marshall's Dan Dumbacher, deputy manager of the Exploration Launch Projects Office, and Tony Lavoie, Lunar Architecture team lead in NASA's Exploration Systems Mission Directorate, presented employees with an Ares project year-in-review and a lunar architecture overview, respectively.

A video presentation, highlighting Marshall's 2006

See All-hands meeting on page 5



Emmett Given/MSFC

Marshall Center Director David King, right, recognizes an audience member as he answers questions at the all-hands meeting Jan. 24 in Morris Auditorium. Tony Lavoie, left, Lunar Architecture team lead in NASA's Exploration Systems Mission Directorate, and Dan Dumbacher, center, deputy manager of Marshall's Exploration Launch Projects Office, joined King to present the state of Marshall to employees.

Protecting our spacebound crews

Marshall developing Launch Abort System for Orion crew capsule

By Rick Smith

A small engineering team at the Marshall Center has a uniquely paradoxical challenge ahead of them. "We're working as hard as possible," said Stephen Gaddis, the team's deputy manager, "to perfect a state-of-the-art system we hope NASA never needs to use."

He's talking about the Launch Abort System for the Orion crew

exploration vehicle. It's a primary safety feature, designed to protect future astronauts riding NASA's Ares I launch vehicle to space by separating Orion from the rocket in the event of a mishap during launch or ascent.

See Orion on page 4

Center director to host Q&A session following NASA budget briefing

NASA Administrator Michael Griffin will present the agency's fiscal year 2008 budget proposal in a briefing from NASA Headquarters on Monday, Feb. 5, at 12 p.m. CST. The administrator's briefing will be broadcast live on NASA TV and employees may view it in Morris Auditorium.

At 1:30 p.m., following the administrator's briefing, all

Marshall team members are invited to a Q&A session with Center Director David King in Morris Auditorium to discuss the NASA budget as it relates to Marshall and to answer employee questions.

Employees may submit questions in advance to MSFC-Intercom until 12 p.m. Friday, Feb. 2.

Pamela Cucarola selected as the Marshall Center chief financial officer

Pamela Cucarola has been selected the Marshall Center chief financial officer. She will be responsible for all aspects of the Office of the Chief Financial Officer including formulating, executing and managing Marshall's annual budget of approximately \$2.5 billion.



Pamela Cucarola

Cucarola has dedicated more than 20 years to financial management at NASA. Since September 2005, she has served at NASA Headquarters in the Office of the Chief Financial Officer as lead for the agency's Financial Integration Team, a cross-functional team responsible for initiation, management and completion of cross-functional task team assignments to address the agency's critical financial management challenges. In this role, she created and executed a plan that

addressed a wide range of internal controls and weaknesses, including those in the areas of financial systems, external reporting, organization structure, workforce development and accounting policy.

Cucarola began her NASA career in 1982 as a student intern at the Marshall Center. Since then, she has held a number of

responsible positions at the center. As NASA began development of its first Enterprise Business Systems Modernization Program, she was named deputy project manager for the agency's Integrated Financial Management Project, helping lead NASA-wide implementation of the program. In 2002, Cucarola was selected to manage the implementation of NASA's first standard agencywide financial management system. In 2003, she was selected to provide overall management and technical leadership for implementation projects within NASA's Integrated Financial Management Program.

In 2005, Cucarola was named deputy director of the Budget Office in the Office of the Chief Financial Officer at NASA Headquarters. She was appointed by the NASA administrator to lead the agency's Financial Integration Team.

Throughout her career, Cucarola has received a number of awards recognizing her outstanding performance, including NASA's Exceptional Service Medal and Outstanding Leadership Medal, a Manned Flight Awareness Award and several special service and group achievement awards. In 1996 and 1997, she was nominated for the William A. Jump Memorial Award, given in recognition of outstanding service in administration and notable contributions to the efficiency and quality of public service.

A native of Huntsville, Cucarola earned a bachelor's degree in accounting from the University of Alabama in Huntsville.

Jessica Wallace, an ASRI employee and Marshall Star editor in the Office of Strategic Analysis and Communications, contributed to this article.

'Focus on Marshall' visits emergency operations and Marshall exhibits teams

By Lori Meggs

This month's Focus on Marshall highlights two different Marshall teams: one in the public eye around the country every week of the year and one that rarely sees the light of day — literally.

Marshall's exhibits department is responsible for designing and building the large models of NASA's space vehicles that tour the country to give the public a better understanding of the present and future of space travel. There are Marshall-built exhibits, models, artifacts and artwork in more than 100 museums around the country, including the U.S. Space & Rocket Center in Huntsville.

The exhibits team also designed the Vision for Space Exploration Experience Dome and Trailer exhibits, two high-tech experiences that tour the country and use 3-D imaging to allow visitors to simulate walking on the surface of the moon and Mars.

Focus on Marshall shows a few of the models the exhibits team is responsible for, and takes the viewer to the EarlyWorks Children's Museum in Huntsville, where the Dome exhibit is currently on display.

The other segment takes the viewer inside Marshall's Emergency Operations Center in the basement of Bldg. 4202. Cathy Miller is the face behind the voice — Marshall's Emergency Preparedness Officer — who provides our centerwide emergency messages, including severe weather announcements. She will explain how the operations center team works to help keep Marshall employees safe.

"Focus on Marshall" airs on Marshall TV and on Desktop TV the first and third Tuesday and Thursday of each month at 11 a.m., noon and 1 p.m. The program also will be posted on Inside Marshall and the Marshall home page within the NASA portal Web site

Workshop on new risk management requirement to be held at Marshall on Feb. 15-16

A workshop on the Exploration Systems Mission Directorate's new Knowledge Management requirement will be held Feb. 15-16 at the Learning Center in Building 4200. The new requirement involves the conduct of Pause and Learn sessions, as outlined

in ESMD's Risk Management Plan. The workshop is open to all Marshall employees. If any team would like to participate to analyze outcomes, contact Tom Dollman at 544-6568 or tom.dollman@nasa.gov.

A star's death comes to light, thanks to Chandra

From the Smithsonian Astrophysical Observatory

Using NASA's Chandra X-ray Observatory, scientists have created a stunning new image of one of the youngest supernova remnants in the galaxy. This new view of the debris of an exploded star helps astronomers solve a long-standing mystery, with implications for understanding how a star's life can end catastrophically and for gauging the expansion of the universe.

More than 400 years ago, sky watchers — including the famous astronomer Johannes Kepler — noticed a bright new object in the night sky. Since the telescope had not yet been invented, only the unaided eye could be used to watch as a new star that was initially brighter than Jupiter dimmed over the following weeks.

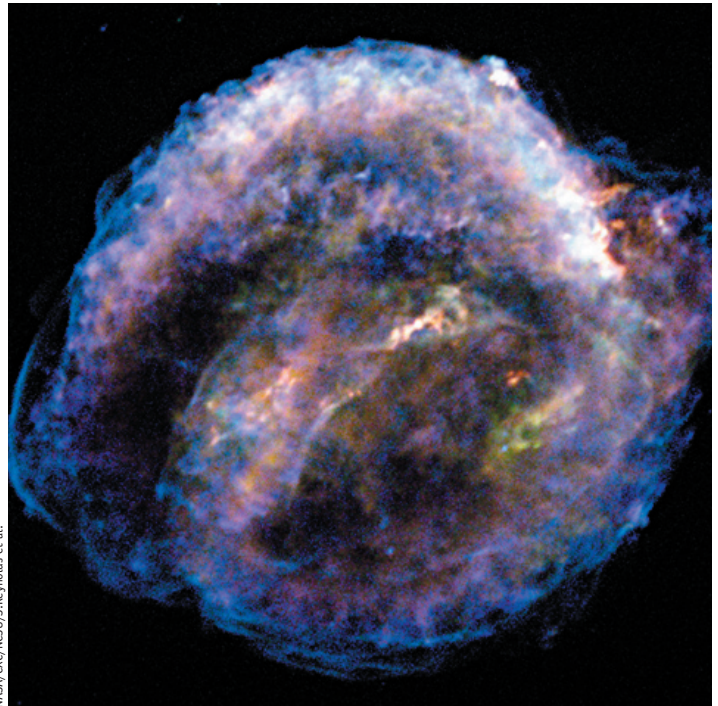
Chandra's latest image marks a new phase in understanding the object now known as Kepler's supernova remnant. By combining nearly nine days of Chandra observations, astronomers have generated an X-ray image with unprecedented detail of one of the brightest recorded supernovas in the Milky Way galaxy.

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

The explosion of the star that created the Kepler remnant blasted the stellar remains into space, heating the gases to millions of degrees and generating highly energized particles.

Astronomers have studied Kepler intensively over the past three decades with radio, optical and X-ray telescopes, but its origin has remained a puzzle.

A team of astronomers, led by Stephen Reynolds of North Carolina



NASA/CXC/NSU/S. Reynolds et al.

Chandra X-ray Observatory image of Kepler's supernova remnant.

State University in Raleigh, was able to use the Chandra dataset to address this mystery. By comparing the relative amounts of oxygen and iron atoms in the supernova, the scientists were able to determine that Kepler resulted from a Type Ia supernova, which occurs when a white dwarf star pulls material from an orbiting companion until the white dwarf becomes unstable and is destroyed by a thermonuclear explosion.

Obituaries

William Herbert Beutjer, 75, of Athens died Aug. 18. He retired from Marshall in 1992, where he was a NASA operations manager of the Huntsville Operations Support Center. He is survived by his wife, Irene Beutjer; five sons, Brad Beutjer of Huntsville, Mark and Tommy Beutjer of Athens, Brad Beutjer of Atlanta, Ga., and Tim Beutjer of Calera; one daughter, Christy Fawley of Peachtree City, Ga.; and two sisters, Lynn Altergott of Athens and Joe Ann McLellan of Wheaton, Ill.

Robert E. Morelli, 73, of Huntsville died Nov. 4. He retired from Marshall in 1994 as an aerospace engineer. He is survived by his wife, Mary Ann Blakemore Morelli; three sons, Rob Morelli of Memphis, Tenn., Mike Morelli of Elkmont, and Matt Morelli of Ardmore; and one daughter, Lance DeFatta of Huntsville.

Lee Roy Hoekenschnieder, 83, of Huntsville died Nov. 7. He retired from Marshall in 1983 as a technical information specialist. He is survived by seven children, Marilyn Renfro, Ginger Finzel, Lee Hoekenschnieder, Edna Dryer, James Hoekenschnieder, Timothy Hoekenschnieder and Lisa Hall, all of Huntsville.

William G. Huber, 75, of Huntsville died Nov. 7. He retired from Marshall in 1994 as an associate director for advanced planning. He is survived by his wife, Nan Huber; one son, Jim Huber of Huntsville; one daughter, Karen Farrell of Huntsville; two stepsons, Jeff Broach of Smyrna, Tenn., and Tim Broach of Huntsville; one brother, James Huber of Harvard, Ill.; and one sister, Mary Carle of Burnsville, N.C.

Orion

Continued from page 1

The Marshall Center is partnering with NASA's Langley Research Center in Hampton, Va., to develop the system. Managed by Langley, the project is part of the Crew Exploration Vehicle program, led by NASA's Johnson Space Center in Houston. Langley oversees system integration and provides oversight and analysis to the prime contractor, Lockheed Martin Corp. of Bethesda, Md., and its key subcontractor, Orbital Sciences Corp. of Dulles, Va.

Marshall's Exploration Flight Projects Office, part of the Science and Mission Systems Office, provides technical and programmatic support and expertise for the project.

Langley's Greg Stover is project manager for the Launch Abort System. He and Gaddis work closely, routinely traveling between centers, to keep their teams moving forward in lockstep.

The Launch Abort System consists of a protective cover that fits over the outer shell of the Orion crew module, an adapter cone and a forward mast assembly — that iconic component that looks like a mini-water tower at the very top of the Ares "stack." The mast assembly contains three solid rocket motors that handle abort and jettison operations and permit attitude control after separation, or control of the module's orientation with respect to its direction of motion.

In a routine launch, the system is jettisoned, unused, some 30 seconds after second-stage ignition. But in the event of an emergency on the pad or during ascent, the motors fire, separating the Orion module from the rocket in less than two seconds and carrying the crew to safety. Parachutes then lower the module safely back to Earth.

Gaddis said the new system is an improvement on Apollo-era escape systems of the 1960s that were designed to lift astronauts off and away from the Saturn rockets in the event of trouble on the launch pad. Orion's Launch Abort System, in contrast, covers more of the ascent trajectory and may be activated during a problematic ascent, as well as on the launch pad.

It also will provide the crew with a "less harrowing" trip home,

he said. "The Apollo [escape system] was a pretty rough ride," Gaddis said, capable of pulling up to six G's in a matter of seconds, or six times standard Earth gravity. The new system will have an active control motor, which provides a much smoother ride and increases crew safety.

"We want to protect not just our crews' lives, but their long-term health and physical well-being as well," Gaddis said.

Advanced technologies include an innovative reverse-flow nozzle for the abort motor, a true departure from Apollo-era designs. The reverse-flow nozzle receives fuel injection from underneath, but exhaust gases are rotated 155 degrees to reverse their direction. This prevents the abort motor from washing the capsule shield with flame as it fires. Gaddis said that the reverse-flow nozzle also will cut the weight compared to the Apollo-era design.

The Marshall team also is developing a pintle nozzle for the attitude control motor. Now being tested by Aerojet Corp. of Sacramento, Calif., the pintle nozzle enables the system to automatically alter the motor's thrust pressure. This helps steady and align the module for parachute deployment — minimizing jarring of the Earth-bound occupants.

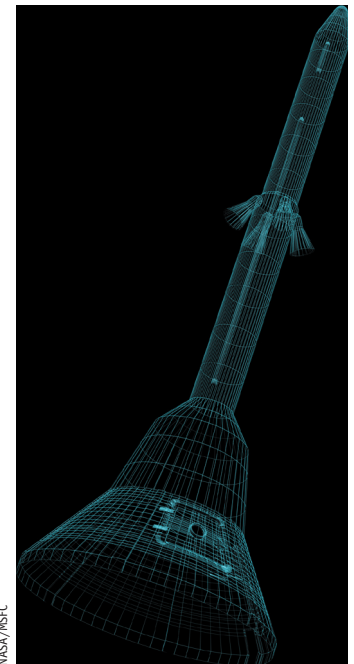
The Launch Abort System team is gearing up for its System Design Review in February, the next step along the path to its first test flight, at White Sands Missile Range in New Mexico in fall of 2008. Ground testing of the system is expected to begin at White Sands this spring.

"The Launch Abort System is scheduled to be the first element of the integrated Orion/Ares I stack to test, and we'll be the first to fly," said Gaddis.

"I'm confident the Launch Abort System will have a long-term impact on NASA's exploration mission," said Daniel Schumacher, who manages the Exploration Flight Projects Office at Marshall. That organization oversees Marshall's work on the Launch Abort System and other Orion-related projects.

"We're continuing to develop one of Marshall's core competencies — development of advanced solid rocket motors — that will support our exploration activities over the next 20 years," Schumacher said. "The Launch Abort System development effort is critical to the overall Constellation Program, and it's a privilege to work on it."

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications. Nancy Bennett, an SAIC employee supporting the Exploration Flight Projects Office, contributed to this article.



NASA/MSFC

A wireframe model of the Orion crew module's Launch Abort System, designed to lift future astronaut crews to safety in the event of a launch or ascent mishap.



NASA/LARC

Researchers at NASA's Langley Research Center in Hampton, Va., conducted spin tunnel testing on a 1:29 scale model of the Launch Abort System in January.

All-hands meeting

Continued from page 1

accomplishments, included the Space Shuttle Program and return to flight of three successful space shuttle missions, which included equipment delivery to the International Space Station to continue its construction; science program achievements and discoveries, many of which are Marshall-managed programs; and milestones in the design, development, testing and system requirements reviews for NASA's new human-rated launch vehicles in support of the Constellation Program.

"We have an esprit de corps here that is unparalleled ...," said King about the center's workforce. "We learned from our organizational climate survey conducted in 2006 that we have the foundations of a healthy culture in place." King added that the center is properly aligned to help meet the goals and objectives of NASA, and stated that he is confident that the center will continue at its current pace.

As for the future, King noted that several strategic areas have been identified that will serve the agency's mission. He said Marshall has proven capabilities ranging from lunar landers and surface mobility to environmental control and life support systems to space and Earth sciences.

Dumbacher updated employees on Marshall's Ares I crew launch vehicle project. He provided a top-to-bottom overview of the project and reminded everyone that the Ares I-1 test flight is in 27 months — planned for launch in April 2009. He added that efforts are "moving

along smartly" for the first test flight of the integrated launch vehicle system and said that 2007 will have many project milestones.

Reaffirming that 2007 will be a busy year for Marshall, Lavoie pointed out that the robotics program has a launch in 22 months — a Lunar Reconnaissance Orbiter mission planned for October 2008. Working in parallel with development of new human spacecraft under the Constellation Program, robots will provide valuable mission experience and insight into the preparations required for extended human presence on Mars and other destinations in the solar system.

Lavoie discussed the proposed Lunar Architecture plans for exploring the moon and paving the way to sustain human and robotic exploration of Mars. He emphasized that the architecture was crafted with a global focus, involving a wide body of individuals, entities and space agencies to define global reasons and global objectives for returning to the moon. Lavoie also provided a glimpse of what an outpost on the moon might look like, noting the culture change for learning how to live off the land instead of bringing all needed resources to the moon.

The all-hands meeting will be available on the front page of Inside Marshall via video files and podcast at <http://inside.msfc.nasa.gov/>. The presentations are available by clicking on Director's Corner. To learn more about the Marshall Center's missions visit <http://www.nasa.gov/centers/marshall/missions/index.html>.

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

Pennsylvania House video cabinet, cherry, holds up to 30" TV, VCR/DVD, \$725. 931-427-2059
John Mayer, Feb. 5, Box 16, Row C, Seats 6&7, \$100 for both. 513-1551
Garden tub, 48"x72", cream marble, \$100. 656-4211
Italian leather sofa, loveseat, and chair, Cream color, \$900; full-size headboard, \$50. 772-1870
Scuba tank, Sherwood A1-3000 psi, new hydro and fill in 12/06, J-valve & boot, \$75. 655-5351
ProForm GR 90 trainer cycle, \$200; home gym, \$100. 256-852-2129
Exercise bike, adjustable tension, adjustable seat, \$25. 859-3136
Craftsman band saw, 12", extra blades, \$150. 256-828-4564
Kid's bedroom set: twin bunk beds, mattresses, dresser, desk, primary colors red, blue & yellow, \$300. 895-5063
Evening wear: black cowl-neck low-cut back w/rhinestone clasp & pleated train, small, \$200. 256-772-6469
Office desk, 82" long, wood-grained Formica top, five locking drawers, one file drawer, \$75. 837-6776
Compact computer desk for small space, particleboard construction, good condition, \$20. 256-777-4439
Coffee table, oak w/glass, \$40. 679-3430
Craftsman wood lathe on 5-drawer metal stand w/storage area. \$300. 852-2255

1930 vintage cable midget upright piano, solid mahogany case, fully refurbished, \$500. 837-2386
Upright frostless Kenmore freezer, 20.3 cu. ft., \$150; Ridgeway grandfather clock, model 135, cherry, \$100. 508-0691
2003 Kenmore Elite washer and dryer, \$300 for set. 658-5685
Bloch child's beige buckle tap-on-tap shoes, size 1-1/2, worn twice, \$24. 882-9411
Fender 5-string jazz bass guitar, candy apple red, \$450. 497-3838
Birdcage, \$25; metal w/tile over the toilet shelf unit, \$35. 864-2889
AKC Lab puppies, 1 black male, 3 chocolate females, \$250 each. 256-508-8495
Two tickets for George Jones concert, Feb. 16, VBC Concert Hall. 837-5578
Corner computer armoire, oak finish, must pick up, \$175. 829-0285
Coat, Virginia Tech Stadium by Nike, new, size medium, \$25. 883-7752
Paint, interior, Navajo white, flat, Sherwin-Williams CHB, 30 gallons, \$27.50 per 5 gallon. 259-2164
Tapestry sofa and loveseat, green, \$450; 3-piece entertainment center, \$450; leather recliner, green, \$50. 520-6950
Oval breakfast table w/4 chairs, oak, \$125; dining room table w/4 chairs, cherry, \$125. 755-2195
HP28 tri-color ink cartridge, unopened box, \$12. 468-2504
Vintage RCA Pro-Wonder video camcorder, VHS CC310, includes pro-edit features, all attachments, best cash offer. 772-6469
Pug, AKC, fawn w/black mask, shots/dewormed, 9 weeks old, \$350. 256-882-2037
Toshiba 27" TV, \$195. 864-8183
Nintendo DS Lite w/charger, \$100. 256-714-7992/Leave number
Antique oak desk and chair, \$125; Pro-Form treadmill, \$200. 256-852-1994
Gas-powered scooter, \$135; Kerosene heater, 22,300 BTU, \$25; mechanics creeper, \$8. 683-9364
Oxygen machine Invacare Platinum 5, Senso 2, home-fill compatible, \$500. 256-351-1051
Adult used ice hockey goalie gear, for price, condition, and size info call 256-777-8229/leave message

Vehicles

1995 Ford Escort, 78K miles, driven around small town, no highway miles, \$2,000. 508-6989
1972 Volkswagen Super Beetle convertible, restored, new paint, tires, rims, top, frame, floor, carpet, \$8,500. 679-1288
2002 Mercury Sable, white, new tires, DVD player, cruise, 53K miles, extended warranty, \$8,000. 256-461-9978
2001 red Mustang, V6/auto, 55.6K miles, sound system, \$8,400. 880-8380
2004 GMC Yukon SLT, leather, sunroof, DVD player, 3rd row seats, OnStar, 80K highway miles, \$17,500. 353-0370
2003 VW Jetta GLI VR6, 6-speed manual, leather, moonroof, power windows/seats/doors, ABS, stability control, \$14,500. 256-682-3863
2003 Honda 450 Foreman, 4x4, ATV, Hunter Green, low hours, \$4,500 firm. 256-694-3118
1998 Jeep Wrangler Sahara, adult owned, air, 5 speed, alloy wheels, hardtop, 98K miles, \$9,800. 837-1774
2004 Toyota Tacoma, 4 door, pre-runner, TDR edition, white, 38K miles, \$18,500. 658-2195
2005 Mustang GT Premium, manual, 11.2K miles, garaged, redfire, leather, \$22,000. 541-2435
1994 Ford E-150 custom van, white, 180K miles, \$3,500. 830-9507 after 5 p.m. 830-9507
2004 Harley Davidson Road King Classic, pearl white, 13K miles, garage kept, \$15,900. 776-0811
2005 Acura TL, leather, V6, loaded, silver, 27.5K miles, \$27,000. 256-508-4801

Wanted

Used Playstation2 gaming console, also interested in PS2 games w/E rating. 256-784-5299

Free

Older side-by-side refrigerator/freezer, needs refrigerant, you haul. 603-4891
Female cat, 9 months old, black w/white markings, free to good home. 828-8005

Found

U.S. currency inside the south entry of Bldg. 4200 near the post office. 544-4680
Black framed sunglasses, yellow tinted, Post Office, Bldg. 4200. 544-4680

NASA spacecraft en route to Pluto prepares for Jupiter encounter

From NASA Headquarters

NASA's New Horizons spacecraft is on the doorstep of the solar system's largest planet. The spacecraft will study and swing past Jupiter, increasing speed on its voyage toward Pluto, the Kuiper Belt and beyond.

New Horizons is the first in NASA's New Frontiers program of medium-class planetary missions. NASA's Discovery and New Frontiers Program Office at the Marshall Center assists the Science Mission Directorate at NASA Headquarters with program management, technology planning, systems assessment, flight assurance and public outreach.

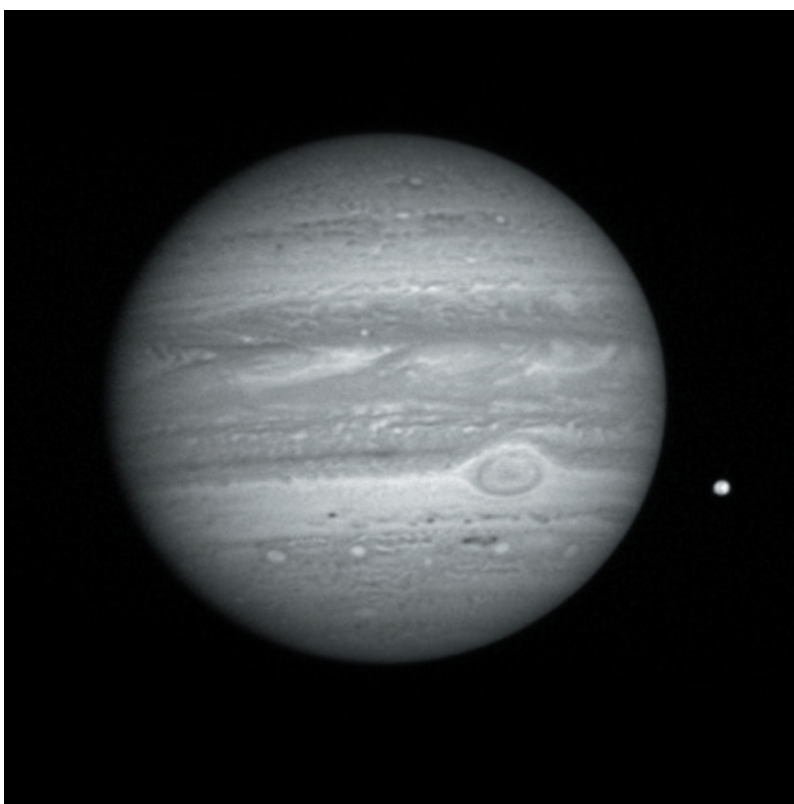
The fastest spacecraft ever launched, New Horizons will make its closest pass to Jupiter on Feb. 28. Jupiter's gravity will accelerate New Horizons away from the sun by an additional 9,000 mph, pushing it past 52,000 mph and hurling it toward a pass through the Pluto system in July 2015.

"Our highest priority is to get the spacecraft safely through the gravity assist and on its way to Pluto," said New Horizons Principal Investigator Alan Stern, of the Southwest Research Institute in Boulder, Colo. The New Horizons mission team will use the flyby to put the probe's systems and seven science instruments through the paces of more than 700 observations of Jupiter and its four largest moons. The planned observations include scans of Jupiter's turbulent, stormy atmosphere; a detailed survey of its ring system; and a detailed study of Jupiter's moons.

The spacecraft also will take the first-ever trip down the long "tail" of Jupiter's magnetosphere, a wide stream of charged particles that extends tens of millions of miles

beyond the planet, and take the first close-up look at the "Little Red Spot," a nascent storm south of Jupiter's famous Great Red Spot.

After an eight-year cruise from Jupiter across the expanse of the outer solar system, New Horizons will conduct a five-month-long study of Pluto and its three moons in 2015. Scientific research will include studying the global geology, mapping surface compositions and temperatures, and examining Pluto's atmospheric composition and structure. The Applied Physics Laboratory in Laurel, Md., manages the mission for NASA's Science Mission Directorate. The mission team also includes NASA's Goddard Space Flight Center in Greenbelt, Md.; NASA's Jet Propulsion Laboratory in Pasadena, Calif.; the U.S. Department of Energy in Washington; Southwest Research Institute; and several corporations and university partners.



NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

Jupiter, as captured by New Horizons about 50 million miles from the planet.

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