



# MARSHALL STAR

Serving the Marshall Space Flight Center Community

July 3, 2008

## Neither rain nor sleet will stop NASA's Ares rockets

By Craig Dunn

**B**arry Roberts wants to help build a better rocket ... one that can fly despite record low temperatures, one that hail and rain can't stop.

Roberts is a rocket scientist, but he's not your typical rocket man. He leads a team of scientists who study terrestrial and planetary environments. That is everything from winds here on Earth to planetary atmospheres, meteoroids, orbital debris and even how a spacecraft can build a charge in space.

Roberts is a member of the Engineering Directorate's Natural Environments Branch at the Marshall Space Flight Center. As you can see, he is not your typical "weatherman" either, though that was once his dream.

He remembers himself as an inquisitive 7-year-old who often carried a logbook to keep notes about weather conditions and weather reports. Roberts also recalls trips with his father to North Alabama television stations to meet local on-air weather



David Higginbotham/MSFC

**Barry Roberts, right, explains a cable connector to Kevin McGrath, a terrestrial environments engineer in Marshall's Engineering Directorate, at an Army weather station on Redstone Arsenal.**

personalities in the 1970s and '80s like H.D. Bagley and Bob Barron. Bagley helped him become a member of the American Meteorological Society when he was only 15 years old.

"I've always been a weather nut as far back as I can remember," Roberts said. "I've always liked science and thought working at NASA would allow me to work in a field I enjoyed and allow me to achieve my dreams."

He received his bachelor's degree in physics from the University of North Alabama in Florence in 1986. During this time, he worked two summers as an intern in Marshall's Earth Sciences Branch. One of his jobs included launching weather balloons.

This experience reinforced his goal to work for either NASA or the National Weather Service.

In 1989, he received a master's degree in mechanical engineering from the University

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## NASA's GLAST Burst Monitor powers up successfully

By Jennifer Morcone

NASA's GLAST Burst Monitor Instrument Operations Center in Huntsville, the focal point for observing gamma ray bursts, was alive with energy as scientists gathered to witness instrument activation the evening of June 25.

The GBM team linked in by teleconference with GLAST mission operations at NASA's Goddard Space Flight Center in Greenbelt, Md., and studied a big screen projecting live

spacecraft information.

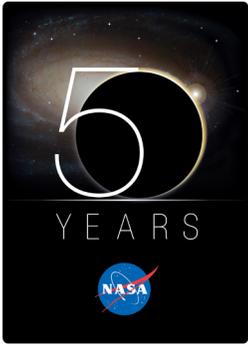
The GLAST Burst Monitor, a space-based instrument for studying gamma ray bursts, is one of two instruments on NASA's GLAST spacecraft, which was successfully launched into orbit June 11. Now in a circular orbit 350 miles above the Earth, the spacecraft is in the process of a two-month, in-orbit checkout. Once fully operational, the Large Area Telescope and the GBM will observe gamma rays ranging in energy from a few

thousand electron volts to many hundreds of billions of electron volts or higher, the widest range of coverage ever available on a single spacecraft for gamma ray studies.

On June 25, one detector was turned on, then off, over a period of 14 minutes to test the high voltage control. The team eagerly anticipated the activation of all 14 detectors on the monitor. Twelve detectors are made of sodium iodide for catching

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# Huntsville earned nickname 'Rocket City'



This year marks the 50th anniversary of NASA. In two years, the Marshall Space Flight Center will also mark its 50th anniversary. Huntsville, home to the Marshall Center, has been known as "Rocket City" since the 1950s.

The adoption of the nickname started when the rocket team led by Wernher von Braun moved to Huntsville in 1950 to begin work on Army missiles and rockets. The Marshall Center was formed in 1960 by transferring thousands of Army engineers, scientists and administrators into NASA. The Army continued its mission in Huntsville and the Marshall Center expanded to meet the demand for the Saturn V moon rockets,

other NASA launch vehicles and requirements for space exploration.

The nickname Rocket City stuck. A look through the Huntsville telephone books during the 1950s and 1960s reveals the pervasive use of the name. Barbershops, taxi cabs, hotels, motels, sports teams, dance teams, as well as the city itself, used the Rocket City label.

Over time, businesses and other institutions have adopted new slogans to describe the missile and space activity in Huntsville. However, the term Rocket City remains one of the most common ways to identify the community.

Von Braun was enthusiastic about Huntsville from the beginning. "For me, it was love at first sight," he said. The advantages of Huntsville included the existing Redstone Arsenal facilities, abundant low-cost electric power from the Tennessee Valley Authority, the Tennessee River — both for water supply and transportation — and the open space. "In selecting this site, of course," von Braun recalled, "in our field, we had to consider that these rockets would be making a lot of noise."

After the arrival of the Army's missile agency in April 1950, Huntsville started its meteoric growth, from a population of 16,000 in 1950 to 48,000 counted in a special census in 1956. The 1960 census put the population of the city at 72,000; another special census in 1964 gave the population as 123,000; and in 1970 it was 136,102. According to the Huntsville/Madison County Chamber of Commerce figures, the city's population had grown to more than 156,000 by the year 2000. At the same time, Madison County's overall population had grown to more than 275,000.



From the Marshall Center's earliest days in the 1960s, people from Huntsville and the surrounding area flocked to the Marshall Center to get a glimpse of the progress the center was making in space exploration.



Huntsville earned the nickname "Rocket City" in the 1950s and 1960s based on the Army's missile and rocket development work and NASA's space exploration efforts at the Marshall Center.



Downtown Huntsville was the focal point for many celebrations related to space exploration in the 1960s.

# NASA modifies Ares V design, takes another step toward future moon missions

From NASA Headquarters

NASA has announced design refinements to the Ares V rocket — the heavy-lift cargo vehicle that will return humans to the moon to establish a long-term lunar outpost in the coming decade.

The modifications, announced June 23, were the result of a nine-month study led by the Exploration Systems Mission Directorate at NASA Headquarters in Washington. Their goal: to ensure Ares V can safely deliver the Altair lunar lander, four astronauts and cargo anywhere on the moon and return the crew to Earth at any time.

The new Ares V configuration adds approximately 16 feet to the rocket's planned height, making it 381 feet tall. The heavy lifter will use six RS-68B liquid oxygen and liquid hydrogen engines on a core stage and two, five-and-one-half-segment solid propellant rocket boosters. This combination will permit Ares V to send more than 156,600 pounds of cargo and components into orbit for transport to the moon and later to Mars and other destinations.

"These modifications are a natural evolution of the Ares V concept

after three years of work and exhaustive assessment of more than 1,700 concepts," said Steve Cook, manager of Ares Projects at the Marshall Space Flight Center, which manages design and development of both the Ares I and Ares V rockets.

"Our analysis confirms the robustness of the fundamental Ares approach," Cook said. "These changes give us approximately seven additional metric tons of lift capability, ensuring a capable, versatile architecture serving our missions to the moon and to Mars as well."

Steve Creech, Ares V integration manager for the Ares Projects,

agreed. "Developing a vehicle as capable as Ares V, both in terms of payload mass and volume, will not only enable humans to return to the moon, but also to undertake other missions we can't even dream about now," he said.

Creech and Cook both praised the diligent, thorough work to date of the Ares Projects team and its partners across the Constellation Program.

"This team continues to step up to each challenge,"

Cook said. "It's a blessing to be a part of such a high-performance work force."

The current Ares V development phase will culminate in a Systems Requirements Review for NASA's lunar transportation architecture in 2010.

For more information about the Ares V launch vehicle, visit <http://www.nasa.gov/ares>. For more information about the Constellation Program, visit <http://www.nasa.gov/constellation>.



Artist rendering of Ares V booster separation

## Obituaries

**Michael J. Inabnet**, 82, of Huntsville died June 7. He retired from the Marshall Center in 1981 as an engineer.

**James Marchant Jr.**, 90, of Huntsville died June 12. He retired from the Marshall Center in 1974 as an aerospace engineering technician supervisor.

**Bill Baker**, 75, of Huntsville died June 19. He retired from the Marshall Center in 1988 as an engineer.

**George Curtis Bucher**, 82, of Grant died June 20. He retired from the Marshall Center in 1980 as a space scientist.

**Robert L. Kerschner**, 89, of Huntsville died June 25. He retired from the Marshall Center in 1976 as an electronics technician.

**Henry Bascom Floyd III**, 80, of Huntsville died June 26. He retired from the Marshall Center in 1976 as an engineer. He is survived by his wife, Rubie Fore Floyd.

# Roberts

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## *Continued from page 1*

of Alabama in Huntsville. "My first job here at NASA was in 1989 working on Space Station Freedom in the Environmental Control and Life Support Branch," Roberts explained. "I worked on the air conditioning, or environmental control, for the International Space Station."

In 1997, he transferred to the Electromagnetics and Aerospace Environments Branch, a predecessor to the Natural Environments Branch. He then returned to school to work on his master's degree in atmospheric science at the University of Alabama in Huntsville. He received his degree in 2005.

### **More than a weather forecaster**

Today, as lead for the terrestrial and planetary environments team, Roberts leads 14 team members.

"When most people think of weather, they are really thinking about forecasting, but we don't do forecasting here," Roberts said. "We try to characterize the Earth's atmosphere and its surface, or the terrestrial environment that an aerospace vehicle will be exposed to during its operational lifetime. The vehicle will be exposed to weather conditions while it is sitting on the launch pad, and must fly through the atmosphere to get to space and return to Earth."

For each of these conditions, the team describes and envelops the naturally occurring terrestrial environment for the design engineers, and then works with the engineers to define launch vehicle constraints, or the range of environmental conditions the vehicle can be built to withstand.

"We look at various aspects such as temperature," Roberts said. "For example, records at the Kennedy Space Center in Florida indicate temperatures range from a low of 19 degrees Fahrenheit to a maximum of 100 degrees Fahrenheit. NASA engineers will want to design components exposed to the outside air to withstand this temperature range while the vehicle is on the launch pad."

### **Developing a road map for Ares**

When Ares Projects first started almost three years ago, the terrestrial and planetary environments team was on board. "One of our first jobs was to help create a document called the Constellation Program Design Specification for Natural Environments," Roberts said. "We started with the space shuttle requirements, which are often difficult to interpret, and tried to develop definitions of the terrestrial environment that would be easy for the engineering community to use and understand."

The design specification document, a one-stop shop for all natural environments, assists engineers in all phases of development of the Ares rockets that will take crews to the International Space Station — then to the moon and beyond.

The terrestrial and planetary environments team negotiates with design engineers and program and project managers to determine which environments the vehicle can be designed to withstand. The environments the vehicle cannot be designed to withstand — usually due to cost or technology constraints — are dealt with in terms of operations constraints, or are accepted as risks.

"The shuttle is able to launch 80 to 90 percent of the time. Engineers hope to achieve a 95 percent launch capability with the new Ares rockets," Roberts said.

Managers are optimistic that rain and hail damage may not be an issue for the Ares upper stage thermal protection foam. "Engineers are doing analyses to determine the cost of designing a vehicle that can withstand various sizes of hail," Roberts said. "Then they will weigh the increased cost to beef up the vehicle compared to the possibility of taking a launch delay at some point in the future."

### **Building a strong team**

Roberts is proud of his team and their many accomplishments. "The more we can learn about an environment, the better we can model and define it, and help the engineering community design more robust vehicles," Roberts said.

"We are always striving to improve terrestrial environment models and add better information to our ever growing databases — not just for the launch facilities at Kennedy Space Center, but for other locations around the world," he said. "By keeping up with the most current technology in areas such as atmospheric measurement systems, it allows us to help engineers edge closer to the golden icon we are going after: building the perfect spacecraft."

The Natural Environments Branch at Marshall is unique within NASA. Not only does it support engineers at Marshall, it also supports many other customers, including Johnson Space Center in Houston; Kennedy Space Center; NASA's Ames Research Center at Moffett Field, Calif.; White Sands Missile Range in Las Cruces, N.M.; and NASA's Jet Propulsion Laboratory in Pasadena, Calif.

The group also is an associate member of the Range Commanders Meteorology Group whose members are from other NASA centers; several National Oceanic and Atmospheric Administration centers; and the Army, Air Force, Navy and Marine ranges. These groups work to gather up-to-date environmental information for use with a broad range of NASA and military programs.

Roberts has a high level of enthusiasm for his current role as leader of the environments team. "I have the best job in the world and feel that the work we do here is vital to the success of NASA and the development of new launch systems," Roberts said.

*Dunn, an ASRI employee, supports the Office of Strategic Analysis and Communications.*

# GLAST

## Continued from page 1

X-rays and low-energy gamma rays, and two detectors made of bismuth germanate for identifying high-energy gamma rays.

At precisely 7:45 p.m. CDT on June 25, the high voltage switched on and the room erupted in cheers. All 14 detectors powered on successfully and the team began studying the data pouring in from the spacecraft.

"Everything is working great. I feel a little numb," said Charles "Chip" Meegan, GBM principal investigator and an astrophysicist at Marshall. "The detectors all powered up successfully and the background rate is pretty much what we expected it to be. That tells us the instrument is working as expected and we have the sensitivity we need to see 200 bursts per year."

Alexander Van Der Horst, a NASA Postdoctoral Program Fellow with Marshall, cranked up Kool and the Gang's song "Celebration" as the team shared the good news with the NASA Goddard-based GLAST team.

"Now we're eagerly anticipating our first burst and the many years of excellent science ahead," said Meegan.

More energetic than X-rays, gamma rays are the highest energy

form of electromagnetic radiation. When a burst occurs, the GBM will detect gamma rays from the explosion and, within seconds, identify the location of the burst and transmit this information to scientists on the ground. Operations center scientists will examine data from gamma ray bursts and swiftly disseminate this information to the wider scientific community — allowing ground-based instruments to observe these bursts quickly.

Located at the National Space Science and Technology Center in Huntsville, operations personnel and scientists working in the GBM Instrument Operations Center will scrutinize the health of the monitor and enjoy a first-hand peek at ground-breaking new gamma ray science. A complementary operations center is located at the Max Planck Institute for Extraterrestrial Physics in Garching, Germany, allowing scientists to look at real-time data during their normal work day, offset seven hours from Huntsville. Huntsville-based operations center staff will host regular meetings via teleconference to Germany to discuss data analysis, and German colleagues will assist in operations and monitoring instrument performance.

*Morcone is a member of the Public & Employee Communications Office in the Office of Strategic Analysis & 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, July 10, is 4:30 p.m. Thursday, July 3.*

### Miscellaneous

LifeGear deluxe inversion table, ankle ratchet system, folds for storage, \$100. 658-3104  
GE Drop-In Range, white, \$150; GE microwave oven, \$75. 890-0499  
Samsung 19-inch SyncMaster LCD monitor, \$125; Samsung 17-inch SyncMaster 710N monitor, \$100. 656-6464  
Living room set, sofa, coffee table, two end tables, \$185. 270-9113  
Cherry/iron kitchen set, oval table, leaf, six chairs, baker's rack, custom top, \$700. 325-1017  
Mahogany dining room table, two extensions, pads, \$400; four-drawer pine chest, \$100. 881-4708  
Trek 1200 road bike, black/pink, \$300 obo; Trek 1000 road bike, blue/black, \$300 obo. 843-513-7939  
Peg Perego high chair, \$100; swing, \$50; ExerSaucer, \$50; walker, \$20; Pack-n-Play, \$80. 426-4769  
Computer desk, gray/black, will e-mail pictures. 880-2270  
Heritage Collection cribs, mattress, bumper pads, sheets, \$100 each; Heritage Collection changing table, \$100. 656-2965

Mirage speakers, two OM-7 towers, two Omnisat satellite speakers, stands, \$1,500. 679-2165  
Huntsville Memory Garden, Garden of Devotion, six adult spaces, \$2,195 each, negotiable. 859-4002  
Dorm refrigerator, microwave, white, \$40 each, \$80 for both. 883-5168  
Browning compound bow, practice arrows, broad-head arrows, \$120; 1986 Glasstream fish-and-ski boat, \$1,500. 270-1123  
Dell Dimension 8100 Desktop, 1.3-GHz, 80G HD, 768 MB RAM, 17-inch CRT monitor, \$100. 772-3584  
Bowflex Xtreme Home Gym, 210 pounds, 65 exercises, \$550. 457-5173  
Two tickets, Kenny Chesney concert, July 5, Nashville, Tenn., \$200 for pair. 303-4900  
Utility trailer, 4 feet by 8 feet, single axle, tilting, wood floor, \$385. 325-2919  
Simplicity zero-turn mower, 44-inch deck, 18HP Kohler Command engine, less than 45 hours, \$3,000. 830-4085  
Red high-back camper shell, fits 8-foot F-150 truck bed. 895-0593  
Pitbull puppy, 6 months old, \$100 obo; Siamese/Minx cat, \$50; six mixed puppies, free. 227-6540  
Yukon hyperextension lower-back exercise machine, \$120. 880-6335  
Lexmark E232 laser printer, very low on toner, \$15. vincent@vazzo.com  
2008 Quicken Deluxe, new in sealed box, \$20. 683-7683  
Utility trailer, 8 feet, \$200; 35mm slide projector, \$25; wing-back chair, \$35. 852-6952

### Vehicles

2007 Chevy Tahoe LT, 5.3 V8, 4x4, silver, leather, third row, 20k miles, \$35,000. 565-9918  
2006 Sunny Brook 267 Sunset Camper, seats 6 or more people, \$13,500. 498-5117  
2006 Nissan Pathfinder, leather, all power, 36,500 miles, \$17,900 firm. 975-5690  
2004 Toyota Tacoma Doublecab Prerunner, V6, SR5, TRD, new Michelins, 59k miles, \$15,900. 777-4439  
2003 Jeep Cherokee Laredo, 2WD, leather, cruise, CD, 59,500 miles, \$9,500. 655-6701  
2002 5th Wheel camper, sleeps 8, kitchen, bath, slide-out, \$14,500. 721-1260  
2001 Honda CRV LX, black/gray, new timing belt/battery,

103k miles, \$8,000. 883-6894 or 468-6894  
1999 Chevy Tahoe Z71, two door, loaded, \$6,800. 337-5294  
1999 Toyota 4-Runner Limited Edition, white, brown interior, sunroof, CD, A/C, \$7,000. 694-1260  
1998 Mercury Force, 120HP, outboard boat motor, needs work. 586-0013  
1997 Chevy Camaro Z28, automatic, black, leather, T-tops, CD, 157k miles, \$6,000 obo. 565-9918  
1996 Chrysler Town and Country LXi, fully loaded, 130k miles, \$3,700 obo. 828-5371  
1995 Chevy van, \$2,800. 479-2631  
1995 GMC truck, automatic, V8, \$2,800. 468-9377  
1989 32-foot Avalon travel trailer, roll-away awning, refrigerator/ice maker, towing accessories, \$5,500. 509-2828  
1989 Stratos 17-foot boat, 100 Evenrude engine, trolling motor, Stratos trailer, \$4,800. 881-8058 or 679-7227  
1989 4x4 Ford Bronco II, 112k miles, \$2,300. 653-2180

### Carpool

From Muscle Shoals. 436-1106  
From Arab area to Building 4600, schedule flexible. 572-0284  
From Hazel Green area, work 6:45 a.m. to 3:15 p.m. 468-8906

### Wanted

Electrical work, houses to wire, service changes, adding/removing lights plugs/switches. 468-8906  
12V charger for DeWalt Cordless Drill. 881-6887  
Tile work, back splashes, showers, tubs, floors. 679-5799

### Free

Two 1-year-old male orange/white tabby siblings, neutered, all shots up to date. 714-1357  
Sectionalized tower, 65 feet, repeater antenna, must take down with proper equipment. 971-0499  
Five sections of wooden fence, pointed tops, stained redwood, 6 feet tall, 8 feet wide. 837-6776

### Found

Book, "Best Friends," Building 4203 parking lot. 544-1967



Emmett Given/MSFC

## Marshall exhibits at Huntsville Air Show encourage visitors to look to the future

Former astronaut Jim Halsell, left, captivates an audience at the Huntsville Air Show on June 28 with stories about his missions to space – and a glimpse of where NASA's next-generation rocket fleet will take us. Halsell, who commanded five space shuttle missions, is vice president and program manager for the Ares I upper stage team at ATK Launch Systems in Huntsville, one of numerous NASA contractors and partners nationwide who support development of the Ares I rocket that will return explorers to the moon in the coming decade. The Marshall Space Flight Center's three exhibits tents were not damaged by the severe weather which caused injuries and one fatality at the air show.

## NASA chief engineer lauds Marshall team members

Dr. Michael Ryschkewitsch, NASA's chief engineer at NASA Headquarters in Washington, addresses Marshall Space Flight Center award recipients and their colleagues at the 2008 NASA/Marshall Honor Awards ceremonies June 24. Ryschkewitsch joined Marshall Center Director David King to present awards and accolades to 184 individuals and 60 teams from across the center's civil service and contractor workforce and among Marshall's business partners around the nation – all of whom have significantly contributed to the nation's space program and NASA's ongoing mission of exploration and discovery.



Doug Stoffer/MSFC

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