



# MARSHALL STAR

Serving the Marshall Space Flight Center Community

April 29, 2010

## Extensive Marshall work preceded Hubble launch 20 years ago

By Mike Wright

The Hubble Space Telescope – which the Marshall Space Flight Center started planning for NASA in 1971 – has now been in space more than 20 years. The telescope was initially referred to as the Large Space Telescope.

On April 24, 1990, astronomers from around the world waited for the telescope launch with almost child-like anticipation of unlocking universal mysteries. However, engineers at Marshall who had spearheaded the telescope's singular development reflected that day on the 20 years of hard work that they had devoted to transforming a dream into a reality.

*See Hubble on page 6*



This new Hubble photo is of a small portion of one of the largest seen star-birth regions in the galaxy, the Carina Nebula. Towers of cool hydrogen laced with dust rise from the wall of the nebula. The scene is reminiscent of Hubble's classic "Pillars of Creation" photo from 1995, but is even more striking in appearance. The image captures the top of a three-light-year-tall pillar of gas and dust that is being eaten away by the brilliant light from nearby bright stars. The pillar is also being pushed apart from within, as infant stars buried inside it fire off jets of gas that can be seen streaming from towering peaks like arrows sailing through the air.

NASA, ESA, and M. Livio and the Hubble 20th Anniversary Team

### Marshall Center successfully completes ISO 9001/AS9100 audit

By Amie Cotton

National Quality Assurance, USA (NQA) – an industry-recognized registrar for quality management and environmental system standards – has recommended the Marshall Space Flight Center for continued registration to ISO 9001:2008 and AS9100B. The certification for AS9100B also has been renewed for an additional three year period based on the successful closure of the findings from the Triennial audit conducted last October.

ISO 9000 is a family of quality management

*See Audit on page 10*

### Marshall's Henderson, Lyles named Distinguished Engineering Fellows at University of Alabama

The College of Engineering at the University of Alabama in Tuscaloosa has named two Marshall Space Flight Center employees and graduates of the university to its class of 2010 Distinguished Engineering Fellows.

Robin Henderson, associate director of the Marshall Center, and Garry Lyles, associate director for technical management in the center's Engineering Directorate, were among seven alumni who received the honors at a ceremony in March in Tuscaloosa.

*See Honored on page 4*

# Director's Corner

## Delivering the Dream

This week close to 700 space operations leaders from around the world have gathered in Huntsville to share best practices for space operations. The conference gives the global space operations community a chance to form new relationships and build on those relationships as we move through the 21st century.

The theme is "Delivering the Dream," and the conference delivered on that theme by opening with a welcome from NASA Flight Engineer and Science Officer TJ Creamer from the International Space Station. TJ called Operations teams "the backbone" of the missions we fly, and he is right. Operations teams are the ones working in the trenches and figuring out how to get things done.

Marshall has provided NASA with mission-critical design, development and integration for 50 years, and our Mission Operations has been an integral part of the mix from the beginning. Our Mission Ops teams will continue to serve NASA as we go forward.

It has been a privilege to partner with AIAA in hosting this biannual global event, and I am grateful to Mike Fawcett, Mike Kearney and the rest of the Marshall team for everything they have done to make it a successful event.

I take my hat off to Marshall's Mission Ops teams for their continuing support of NASA and the global space community.



A handwritten signature in black ink that reads "Robert Lightfoot".

**Robert Lightfoot**  
*Marshall Center Director*

## ***NASA names deputy chief information officer***

*From NASA Headquarters*

NASA Chief Information Officer Linda Cureton has announced the appointment of Deborah Diaz as the agency's new deputy chief information officer. Diaz will be a key member of the office that provides information technology services to all staff.

Cureton said, "I'm delighted that we are filling this position with a seasoned, hands-on technical leader who can immediately and seamlessly assist with implementing strategic changes and rebuilding the Office of the CIO."

Diaz joined the Office of the Chief

Information Officer in December as associate chief information officer for architecture and infrastructure and director of the Information Technology Infrastructure Integration Program, a new initiative to consolidate the agency's information technology and data services.

Previously, Diaz was the chief information officer for the U.S. Department of Homeland Security's Science and Technology Directorate, where she developed and implemented \$1 billion worth of scientific programs and IT infrastructure. She also served as the senior advisor on IT interoperability

and wireless technologies. As deputy CIO at the U.S. Patent and Trademark Office, she helped transform electronic commerce and managed complex IT initiatives to modernize business processes and data exchange systems.

Diaz also served as deputy associate administrator of citizen services at the General Services Administration and as a member of the President's Management Council, where she pioneered many of the first e-Government initiatives. Her recognitions include two "Federal 100" awards and the "Top 10 – IT Innovative Leaders in Government" award.

# Testing future engine technology is a work of art at NASA

By Kim Newton

An engine nozzle turns a dramatic array of colors during a recent hot-fire test at NASA's White Sands Test Facility near Las Cruces, N.M.

A team of engineers from Glenn Research Center in Cleveland, the Marshall Space Flight Center and Johnson Space Center in Houston conducted tests on a cryogenic liquid oxygen and liquid methane engine to measure the engine's performance for future use with in-space vehicles.

Last month, eight altitude chamber tests were performed using an Aerojet workhorse engine to gather design data for future lander and in-space engines. Using the altitude chamber, which simulates the space-type vacuum environment, engineers were able to attach a larger nozzle and vary the propellant mixture ratios to test the engine's overall operating capability. This technology could be selected for future use with vehicles designed for transport, descent or ascent to another planetary body or asteroid.

The nozzle, or large bell-shaped hardware, directs the flow of the combustion products from the liquid-methane fuel and liquid-oxygen oxidizer mixture, and accelerates the exhaust gases to generate thrust. The nozzle material is made of columbium and heats up during the test causing the color change. The nozzle is radiatively cooled and once the engine shuts down, the nozzle returns to its previous color.



Testing of the Aerojet liquid oxygen/liquid methane ascent main engine technology workhorse engine.

Another test objective was to look at the specific impulse, or gas mileage, this engine could provide to a space vehicle. Specific impulse is simply a measurement of the amount of thrust that can be attained per mass of rocket propellant consumed. The higher specific impulse attained improves the overall rocket performance and reduces the weight of propellants that need to be carried on the vehicle.

Overall, the test series was successful and valuable performance data was obtained. Data received from the tests is currently being reviewed to ensure the engine performed as expected on a continual basis with each individual test.

Engineers will continue to vary and refine the engine test parameters to evaluate the technology further. Developing technology is a test-rich process to ensure as many unknowns are worked out on the ground before this technology is put into application in a space environment.

The cryogenic liquid oxygen and liquid methane effort is part of the Propulsion and Cryogenics Advanced

Development project at Glenn, which is developing cryogenic propulsion technologies for future space exploration missions. The project is funded by the Exploration Technology Development Program in NASA's Exploration Systems Mission Directorate.

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

## Obituaries

**Marion Kirk**, 78, of Huntsville died April 10. He retired from the Marshall Center in 1987 as a quality assurance specialist.

**Archie LeRoy Jackson Jr.**, 77, of Huntsville died April 9. He retired from the Marshall Center in 1992 as a mission operations integration supervisor.

# Engineering Director Dan Dumbacher presented with Distinguished Engineer Achievement Award



Dan Dumbacher

By Holly Snow

Marshall Space Flight Center's Engineering Director Dan Dumbacher was recently presented the Distinguished Engineer Achievement Award by the San Fernando Valley Engineers Council. The award citation names Dumbacher as an individual who

is outstanding in professional qualities and has a top reputation for engineering accomplishments and leadership.

The 55th annual National Engineers Week gala, hosted at Universal City, Calif., on Feb. 20, was attended by more than 600 individuals honoring the profession's contributions to society.

When asked about this honor, Dumbacher said that he accepted on behalf of the entire engineering team at Marshall. "Over the last year, we have delivered

many accomplishments on behalf of America's space program," Dumbacher said. "Our successes are too numerous to mention: We safely flew the space shuttle and expanded the International Space Station's volume and capabilities, as well as upgraded the Hubble Space Telescope. We managed science operations and life support systems on the station, as well as designed, developed and tested scientific spacecraft, the J-2X engine, and the lunar lander test bed. The successful Ares I-X test flight was another of our accomplishments, and we are poised to continue this impressive list of engineering feats in the years ahead."

The Engineers Council is a not-for-profit society organized in 1955 to advance education in engineering and the sciences, encourage students to select engineering careers, and recognize significant accomplishments.

*Snow, a Schafer Corp. employee, supports the Office of Strategic Analysis & Communications.*

## Honored *Continued from page 1*

Henderson, who earned a bachelor's degree in industrial engineering from the University of Alabama in 1983, has been Marshall's associate director since 2004. She served as chief operating officer of the National Space Science and Technology Center in Huntsville from 2002 to 2004. From 1998 to 2002, she was deputy manager of Marshall's Microgravity Research Program Office. She began her NASA career in 1983 as a technical analyst for the Hubble Space Telescope Project Planning and Control Office.

Henderson has received numerous awards, including the Presidential Rank Award for Meritorious Executives in 2006, NASA's Outstanding Leadership Medal in 2005 and NASA's Exceptional Achievement Medal in 1996. She resides in Decatur with her husband,

Cecil. They have three grown children, Matt, Lydia and Adam, and one grandchild, Mya.

Lyles, who received a bachelor's degree in mechanical engineering from the University of Alabama in 1975, has served in his current position since 2007. From 2005-2007, he was chief engineer for exploration systems at NASA Headquarters in Washington. Previously, he managed a series of propulsion offices and oversaw projects dedicated to furthering developing of next-generation launch vehicles and propulsion systems. He joined NASA in 1976 as a propulsion systems analyst.

Lyles received the NASA Distinguished Service Medal in 2006 for his contributions to launch vehicle design. He resides in Madison with his wife, Diane. They have four children,



Robin Henderson



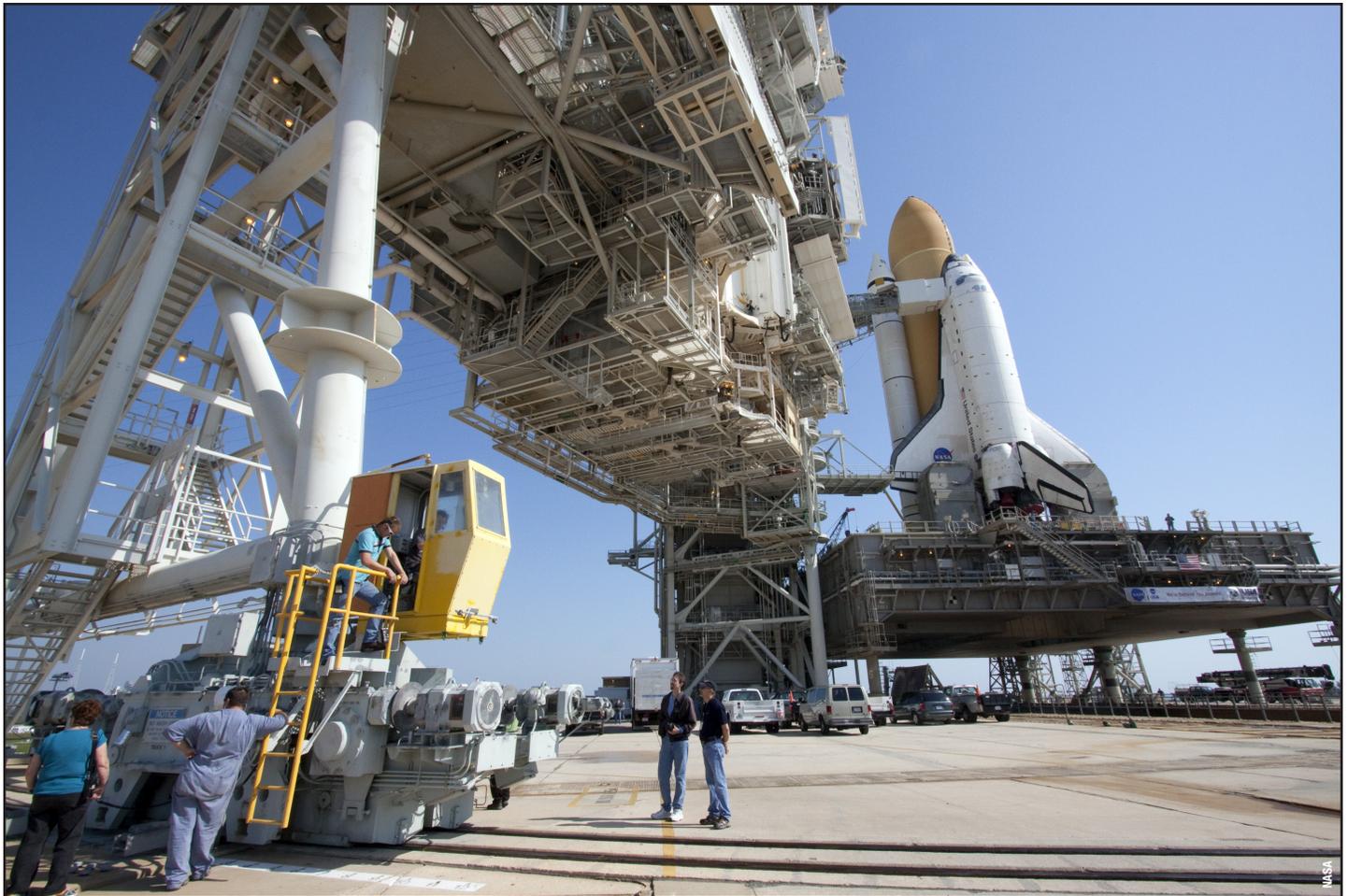
Garry Lyles

Will, Katie, Nathan and Zachary, and one grandchild, Thai.

The Distinguished Engineering Fellows program, begun in 1988, has presented the award to approximately 300 alumni from the nearly 17,000 graduates of the University of Alabama's College of Engineering.

For more information about the award and the recipients, visit <http://www.coeweb.eng.ua.edu/alumni/Fellows/fellows.htm>.

# Space shuttle Atlantis moves to launch pad



Technicians prepare to close the rotating service structure around space shuttle Atlantis after it arrived at launch pad 39A at Kennedy Space Center, Fla., on April 22. Preparations are under way for the launch of Atlantis on the STS-132 mission, targeted for May 14 at 1:19 p.m. CDT. Atlantis' 12-day mission to the International Space Station

will deliver the Russian-built Mini Research Module-1 that will provide additional storage space and a new docking port for the Russian Soyuz and Progress spacecraft. The six-member crew will include Commander Ken Ham; Pilot Tony Antonelli; and Mission Specialists Garrett Reisman, Steve Bowen, Michael Good and Piers Sellers.

## Golf tournament to benefit Marshall Association scholarships set for May 25

The Marshall Association and the Marshall Space Flight Center's NASA Exchange Council will co-sponsor a golf tournament from 9 a.m. to 3 p.m., May 25, at The Links on Goss Road on Redstone Arsenal. The tournament is open to everyone.

Proceeds from the tournament will support Marshall Association scholarships. The organization grants two scholarships annually to college-bound children of Marshall Association members.

To participate, Marshall team members can sign up

from 11 a.m. to noon outside the cafeterias in Building 4203 and 4471 until April 30. The cost is \$45 and includes green fees, golf cart rental, and a burger or hotdog lunch with chips, cookies and drinks. Awards will be given to first-, second- and third-place golfers.



In the event of inclement weather, the tournament will be rescheduled for May 26.

For more information about the golf tournament, visit [http://inside.msfc.nasa.gov/marshall\\_association/index.html](http://inside.msfc.nasa.gov/marshall_association/index.html), or call Melanie Stephenson at 961-1219 or Kiera Spann at 961-0970.

For more information about the scholarships, visit [http://inside.msfc.nasa.gov/marshall\\_association/](http://inside.msfc.nasa.gov/marshall_association/).

The initial recommendation for developing the telescope and Marshall's assignment to start the official planning process started long before the launch.

In 1962, a National Academy of Sciences study group recommended the development of the Large Space Telescope as a long-range goal for NASA. That goal moved into sharper focus in 1971 when the Marshall Center awarded a \$400,000, 12-month contract to Itek Corp., of Lexington, Mass., a Large Space Telescope definition study.

By May 1972, NASA was ready to proceed with detailed planning for the Large Space Telescope, and assigned the management responsibility to Marshall. Goddard Space Flight Center in Maryland was chosen to lead development of the scientific instruments and the scientific control center. The European Space Agency contributed the solar arrays, high-resolution camera and supporting personnel. A status briefing held later in the year at Marshall provided industry representatives with an updated report on NASA's plans to develop the multi-purpose optical telescope and launch it sometime in the 1980s using the space shuttle.

Marshall selected two primary contractors to build the telescope. Perkin-Elmer Corp. of Danbury, Conn., was chosen to develop the optical system and the guidance sensors. Lockheed Missiles and Space Company of Sunnyvale, Calif., was selected to produce the protective outer shroud and the spacecraft which supported the optical system. Lockheed also assembled and integrated the finished product.

The major optical element for the telescope, the Large Space Telescope Primary Mirror Blank, was delivered to Perkin-Elmer in early 1979, thus beginning the long process of grinding and polishing the mirror. By spring, the preliminary design review for the telescope was in progress at Marshall.

While development of the Hubble Space Telescope was still in progress at the contractor plants in the late 1970s, the Marshall Center was focusing on the telescope's future

in orbit. A series of telescopic servicing simulations began in the Neutral Buoyancy Simulator at Marshall and suited-crew tests were performed to evaluate methods and equipment

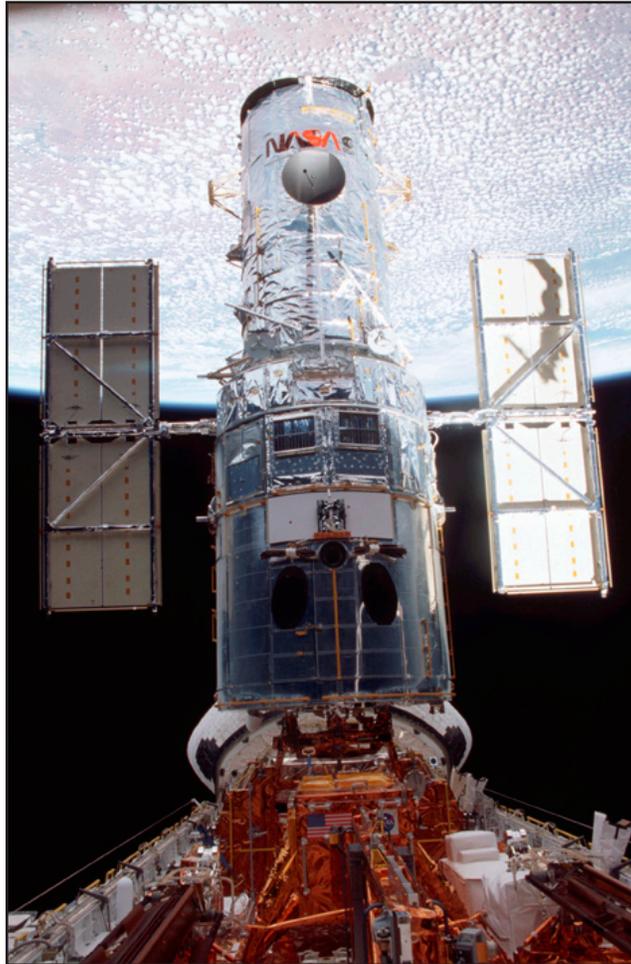
which might be used to perform in-orbit services for the telescope.

As NASA entered the 1980s, a number of important milestones in the space telescope program had been completed. Several problems had been encountered, however, and Andrew J. Stofan, deputy associate administrator for Space Science, explained those problems to the U.S. House Subcommittee on Space Science and Applications. An in-depth review of the Space Telescope Program was conducted to assess the anticipated additional costs and possible impact on the launch schedule.

By May 1981, technicians finished shaping and polishing the primary mirror. By summer, telescopic solar-wing deployment tests were under way at a British Aerospace Engineering plant in England. A few months later, a subcontractor for the telescope's titanium ring sent that element to the prime contractor, and the half-ton ring was designed to support the optical system as well as the spacecraft.

In December 1981, the telescope passed another major milestone, the coating of the telescope's 94-inch primary mirror. In early 1982, Marshall's Test Laboratory started a 14-month test of the electrical performance of the solar cells making up the solar arrays for the telescope. While these tests were in progress, technicians at Perkin-Elmer were examining the reflectivity of the primary mirror prior to its placement in storage.

During 1982, the Critical Design Review for the spacecraft was completed, and the first space telescope scientific instrument, the High Speed Photometer, was fabricated. Other events in 1982 included initial manufacturing of all major subsystems at Lockheed, completion of the fabrication of the major components of the Optical Telescope Assembly,



After five days of service and upgrade work on the Hubble Space Telescope, the STS-109 crew photographed the giant telescope in the shuttle's cargo bay. The telescope was captured and secured on a work stand in space shuttle Columbia's payload bay using Columbia's robotic arm, where four of the seven-member crew performed five space walks, completing system upgrades to the telescope.

*See Hubble on page 7*

and initial work on final assembly of the telescope.

In May 1983, NASA's airplane, named "Guppy," was flown to Marshall for acceleration tests with the Space Telescope Optical Assembly shipping container. Later in the year, NASA officially named the new telescope in honor of Edwin P. Hubble, one of America's foremost astronomers.

Work on the Hubble Space Telescope continued in 1984. Tests conducted on the telescope's fine guidance sensors ensured they would meet their pointing and tracking requirements. By May, Marshall engineers had developed an intricate balance-beam device for ground installation of the Hubble's scientific instruments and Fine Guidance Sensors.

As part of a 16-hour operation performed by the contractor, the 2.4-meter primary mirror was cleaned, and a remeasurement was taken of the mirror's reflectivity at ultraviolet wavelengths.

Before the end of 1984, NASA transported the Optical Telescope Assembly from the manufacturer in Danbury, Conn., to Lockheed in Sunnyvale, Calif. At approximately the same time, the last Hubble elements were delivered to Lockheed for integration into the main telescope structure. Assembly of the primary structures was completed near the end of July 1985. In May 1986, Marshall staffed the Huntsville Operations Support Center to gather engineering data on the Hubble during a test to prepare for its launch and mission. Lockheed conducted a 60-day thermal vacuum test at Sunnyvale under conditions similar to those the telescope would experience in orbit.

As NASA prepared for delivery of the final elements of the telescope that same year, Marshall's Jim Odom, then



The Hubble Space Telescope was deployed April 25, 1990. The photograph was taken by the IMAX Cargo Bay Camera mounted in a container on the port side of space shuttle Discovery during the STS-31 mission.

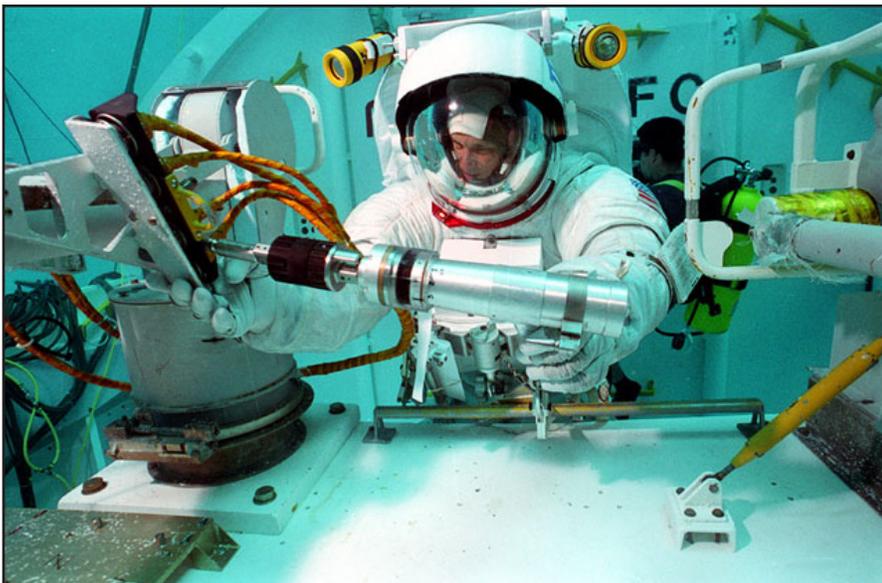
manager of the telescope project, said, "It's only a matter of time now until we place the observatory in orbit and perhaps unlock incredible secrets of the universe."

In 1987, a three-day ground test was conducted, simulating 28 orbits of typical Hubble science operations and involving five of the telescope's science instruments. Goddard and Marshall, supported by their respective contractors, performed the test. In 1988, NASA conducted a five-day Hubble ground system test.

Additional testing continued in 1988 and 1989. Finally, in October 1989, the Hubble Space Telescope was shipped from Lockheed to the Kennedy Space Center in Florida to be prepared for launch aboard STS-31. On the morning of April 24, 1990, space shuttle Discovery left the launch pad to begin the STS -31 mission and the deployment of the Hubble Space Telescope.

Even though initially impaired by a flaw in its main mirror – it was expertly made but to the wrong "prescription," causing its images to be blurred – Hubble's position above the distortion of Earth's atmosphere enabled it to begin making major discoveries. This happened even before astronauts initiated the first in a series of repair and servicing missions that spanned from 1993 through 2009.

When corrective optics were installed during that dramatic first servicing mission, the universe suddenly snapped into sharp focus, and initiated 20 years of spectacular



Astronaut Storey Musgrave conducts Hubble Space Telescope training in Marshall's Neutral Buoyancy Simulator in 1993.

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# Hubble *Continued from page 7*

images and discoveries which have forever changed how humans view the cosmos.

Soon after the telescope launched in 1990, Fred Wojtalik, who served as project manager on Hubble at Marshall and was involved in the project for eight years, talked about its technical challenges. "We've done things on the Hubble that have never been done before," he said a few days prior to the launch. "We've had to tackle problems others said could never be solved."

One of the most important decisions that NASA made related to the telescope was making the Hubble repairable by astronauts in orbit,

Wojtalik said. "This was something we had to jump through hoops to make happen." However, he said, the successful repair missions that the astronaut crews have conducted proved that the effort was worth it.

Jim Odom's biggest "worries" about the telescope concerned how its batteries, as well as its pointing system, might perform. "I was in front of both of the horses," Odom said. The success the telescope has experienced over the last 20 years belongs to the entire Hubble team, he added, including former Marshall Center Director William Lucas, who "saw it through difficult times and helped keep it alive."

The Hubble Space Telescope has had a major impact in every area of astronomy, from the solar system to objects at the edge of the universe. To date, more than 3,500 technical publications have reported Hubble results. Hubble's major scientific results have included the accelerating universe and dark energy, the distance scale and age of the universe, the evolution of galaxies, and the birth of stars and planets.

Jean Olivier served as chief engineer and was involved in the project throughout his career at Marshall.

*Wright is the Marshall Center historian in the Office of Strategic Analysis & Communications.*



This is a series of close-up images taken by Hubble of the complex gas structures in a small portion of the Carina Nebula. The nebula is a cold cloud of predominantly hydrogen gas laced with dust, which makes the cloud opaque. It is being eroded by a gusher of ultraviolet light from young stars in the region. They sculpt a variety of fantasy shapes, many forming tadpole-like structures. In some frames,

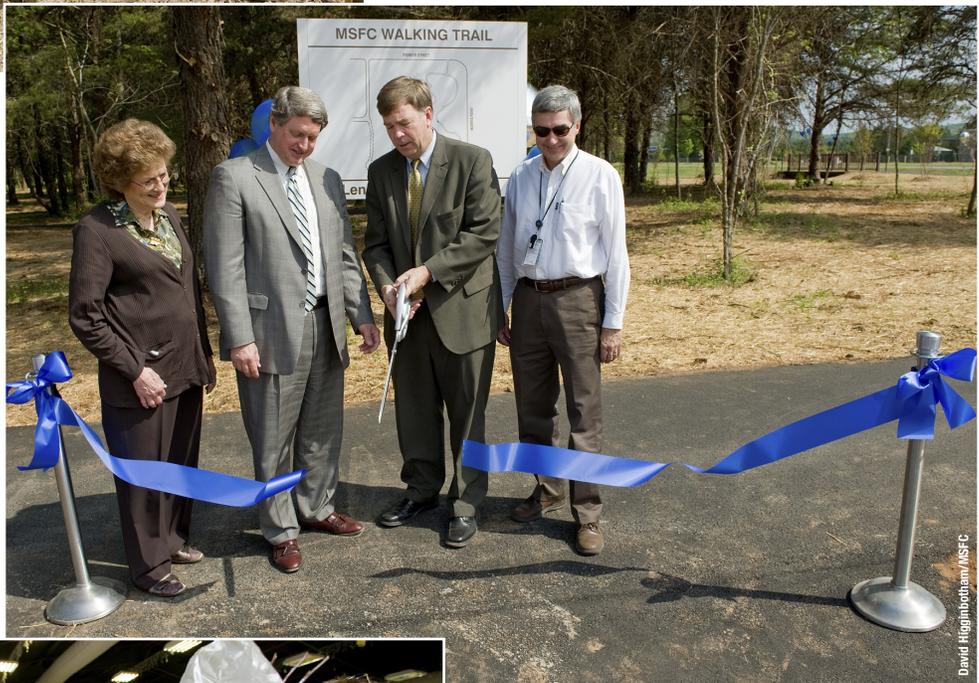
smaller pieces of nebulosity can be seen freely drifting, such as the 2.3-trillion-mile-long structure at upper right. The most striking feature is a 3.5-trillion-mile-long horizontal jet at upper left. It is being blasted into space by a young star hidden in the tip of the pillar-like structure. A bowshock has formed near the tip of the jet. To view photos in color, visit <http://marshallstar.msfc.nasa.gov/>.

# Celebrating 40 years of Earth Day



On April 22, the Marshall Space Flight Center celebrated the 40th anniversary of Earth Day. From left, Huntsville Mayor Tommy Battle, Marshall Deputy Director Gene Goldman and Office of Center Operations Director Ann McNair planted a tree next to Marshall's new half-mile walking trail behind the Wellness Center. The day's festivities included the opening ceremony, the official ribbon cutting for the walking trail and an "environmental expo." Also on Earth Day, children of Marshall team members participated in the national "Take Our Children to Work Day," with activities at the expo, including learning how growing plants helps NASA's mission.

From left, McNair, Goldman, Battle and Edwin Jones, manager of the Performing & Capabilities Management Office in the Office of Strategic Analysis & Communications, cut a ribbon on Earth Day to officially open the center's new paved walking trail. The winding, half-mile shaded trail, behind the Wellness Center, is equipped with benches. To mark Earth Day's 40th anniversary, 40 trees will be planted along the trail, as well as near the center's softball field on Pioneer Street.



During the environmental expo, Amanda Anthony gives Adrian Smyth a tree seedling to plant at home. Both are Jacobs Technology employees, supporting Marshall's Engineering Directorate. Representatives from more than 35 local vendors and organizations were at the expo to demonstrate environmental practices and products to the Marshall team. The event's theme was "Reducing Our Carbon Footprint." A carbon footprint measures the impact human activities have on the environment. It relates to the amount of greenhouse gases produced in day-to-day lives through burning fossil fuels for electricity, heating and transportation.

## ***Six-week series on strategies for coping with loss, uncertainty begins at Marshall on May 6***

Lynn Motley, employee assistance program coordinator at the Marshall Space Flight Center, is presenting a six-week series on strategies for coping with loss and uncertainty. It will begin May 6, from 11 a.m. to 12:30 p.m. in Building 4249, Conference Room 111. Participation is limited to 20.

Motley will present information on dealing with change, loss

and uncertainty. Participants will be involved in an open discussion about coping strategies and have the opportunity to share personal experiences.

Motley notes that changing jobs, moving to a new house, retiring, or a project cancellation can feel devastating to the person going through it, as well as those around him or her. Any significant loss can cause feelings of

turmoil even if it also brings new opportunities.

The series is structured to allow each participant to learn coping strategies for their personal feelings about loss and begin to re-build their sense of competency and confidence in the face of new challenges.

Please contact Motley at [lynn.m.motley@nasa.gov](mailto:lynn.m.motley@nasa.gov) to register.

## **Audit** *Continued from page 1*

systems standards – including record and process management, evaluation of process effectiveness and continuous improvement – maintained by the International Organization for Standardization. AS9100 is a standardized quality management system for the aerospace industry released by the Society of Automotive Engineers and the European Association of Aerospace Industries. NQA evaluated Marshall to both sets of standards during an ISO 9001:2008/AS9100B Surveillance Audit, completed last week.

"I would like to commend and thank each team member who supported this successful effort, once again

demonstrating Marshall's commitment to quality," said Robin Henderson, Marshall associate director, management.

"Our focus on process management is critical to our programs and projects being successful," said Henderson. "Quality reviews, such as this one, provide a needed system of checks and balances to assure we are following the procedures we have defined and documented while facilitating continuous improvement."

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

## ***Nominations open for Space Camp Hall of Fame Class of 2010***

Nominations are now open for the Space Camp Hall of Fame Class of 2010.

The hall of fame is designed to honor graduates, former employees and supporters who have distinguished themselves in their respective careers or made considerable contributions in an effort to help further the



goals of the Space Camp program.

To submit nominations, visit <http://www.spacecamp.com/halloffame> by May 24.

A ceremony to name the 2010 class will be held at the U.S. Space & Rocket Center on Aug. 20. For more information, visit <http://www.spacecamp.com/hof/>.

# Shop at Farmer's Market every Wednesday until fall

The Marshall Space Flight Center's NASA Exchange Farmer's Market will be at the center from 11 a.m. until the vendors are out of goods every Wednesday beginning April 28 until the fall season.

The market will be set up by the



large oak trees in the south parking lot of Building 4203.

Farmers will have strawberries, turnip greens, collards, canned goods and baked goods.

For more information, contact Bill Mayo, NASA Exchange manager, at 544-7564.

## 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, May 6, is 4:30 p.m. Thursday, April 29.

### Miscellaneous

Personal pieces of Silpada silver jewelry. 520-4839

Tennessee Walking Horses. 931-307-9436

Bunk beds, full-size bottom, twin top, red metal frame, ladder, \$50. 931-425-0163

BFGoodrich all terrain tires, 315/70/17, set of four, 2k miles, \$450. 468-7265

Canon 30D digital SLR, \$450. 325-6000

Computer desk, \$25; blue loveseat, \$200; queen bed, frame, \$450; GE microwave, \$80. 922-9387

Two Trail-Gator bicycle tow bars, extra seat position kit, 12-20" bikes, \$90. 604-7087

Thirteen church pews, 9 feet long. 738-3567

Cherry entertainment center, 5'x6' with TV opening of 31" H X 36.5" W, \$100. 527-3486

Pro-form 560 Crosstrainer treadmill, \$250. 508-1731

Chandelier, Cipriani bowl, golden nickel, 6-plus-3 lights,

33"W x 24"H, picture available, \$100. 777-1810

John Deere riding mower, 42 inch, 20 HP, \$1,200. 714-9144

"Jessica McClintock Home - The Heirloom Collection" twin

Sleigh bed, dresser, desk, chair. 651-2234

Holiday Barbies, 1988-2000, never opened, \$500 obo.

684-0200

21-inch Troy-Bilt self propelled mower, Honda engine, \$200.

325-8131

Playstation 3 game, Little BIG Planet, Game of the Year edition, rated E, \$35. 828-1234

Piano, \$700; metal drafting table, \$50; China, \$125; wicker rocker, \$40; quilt chest, \$50. 837-5466

John Deere 42-inch twin bagger, \$150. 233-3443

Toro Personal Pace Super Recycler self-propelled lawn-mower, bagger, two mulching blades, \$200 obo. 694-0491

44-piece Syracuse china, \$500 obo. 883-1096

### Vehicles

2010 Toyota Camry, 3,500 miles, automatic, full warranty, pictures available, \$19,750. 345-2234

2005 Honda Accord Hybrid, gray, navigation, leather heated seats, transferrable warranty, 66k miles, \$14,500. 464-9871

2005 Chevrolet Equinox, new Michelin tires and battery, 40k miles. 335-0055 call for price

2004 Honda CRF250R, \$1,900. 783-3428

2003 SeaDoo GTX DI, trailer, 130 HP, oil injection, 2/3 seater,

\$4,500. 880-9171

2003 Harley Heritage Softail Classic 100th Anniversary, blue, windshield, leather saddlebags, 5k miles, \$12,500. 683-8409

1999 Mercedes E320, four-door sedan, silver, 128k miles, \$7,800. 541-7011 or 534-5142

1990 Blue Toyota extended cab, 4WD, toolbox, bedmat, 167k miles, \$3,500. 931-307-9426

1989 Dodge Grand Caravan, white, 6 cylinder 3.0, auto, air, 146k miles, \$2,100. 227-0339

### Free

Two female tabby cats, 3 and 6 years old, spayed, all shots, food, accessories. 642-6140

### Wanted

Five drawer or more tool box, good condition. 288-6797

Working treadmill with incline. 656-2965

14-foot aluminum jon boat in good condition, no trailer or motor required. 931-438-1730

Reasonably priced, basic western saddle and bridle for Tennessee Walker. 468-8177

Riding lawn mower in good shape, would like to pay less than \$500. 739-2768

Dependable used car in good condition, compact to mid-size, reasonable price. 536-4214

Small walnut china cabinet. 883-1096

Free used dryer for senior citizen, good condition. 683-4873

2010 Safety Day

# A story for the Marshall team by someone who didn't follow safety rules

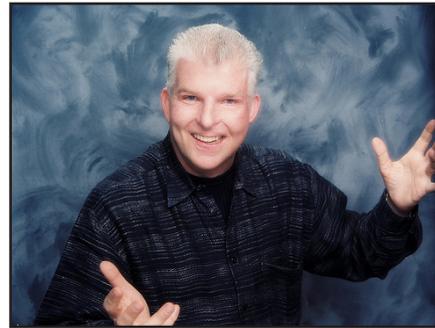
By Jessica Wallace Eagan

A principal goal of the Marshall Space Flight Center is to "protect the safety and health of our people, our partners, the public, and to protect those assets entrusted to us."

To help stay committed to this goal, team members are invited to participate in Safety Day on May 5, beginning at 9 a.m. in Building 4316, with opening remarks from Marshall Director Robert Lightfoot and NASA's Safety and Mission Assurance Chief Bryan O'Connor. The event is sponsored by Marshall's Safety & Mission Assurance Directorate.

"We will devote this day to recognize what the center has accomplished already, and understanding what needs to be done," said Lightfoot. "We must keep safety in the front of everything we do. The more we spend time improving workplace safety, the more we increase our ability to work effectively with fewer injuries and accidents."

The event's keynote speaker will be Charlie Morecraft, motivational safety speaker and former employee for Exxon Corp. He will share his story of how in 1980, he almost lost his life while refining raw product into gasoline because he did not follow safety rules. Burned



Charlie Morecraft

over 45 percent of his body from an explosion, Morecraft learned his lesson in a painful way. From the experience, he shares his message with

others: "Safety

is about going home at the end of the day, kissing your wife and hugging your kids," he said, and "we are each responsible for our own safety."

This year's event theme is "Changing Safety Culture."

"In a healthy safety culture, we report our concerns, we have a sense of fairness, we change to meet new demands, we learn from our successes and mistakes, and everyone does their part," said Dennis Davis, industrial safety branch chief in Marshall's Safety & Mission Assurance Directorate. "All members of our team – regardless of status or occupation – are involved and are actively participating in safely accomplishing our mission. The key is to have leaders and employees who demonstrate their value of safety by 'walking the talk!'"

For more information about Safety Day, visit <https://safetyday.msfc.nasa.gov/>. For more information about Morecraft, visit <http://www.charliemorecraft.com/>. Bus transportation will be provided for the event. The schedule is available on Inside Marshall.

*Eagan, an AI Signal Research Inc. employee and the Marshall Star editor, supports the Office of Strategic Analysis & Communications.*

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