

MARSHALL STAR

Serving the Marshall Space Flight Center Community

April 21, 2011

NASA's next generation space telescope marks key milestone

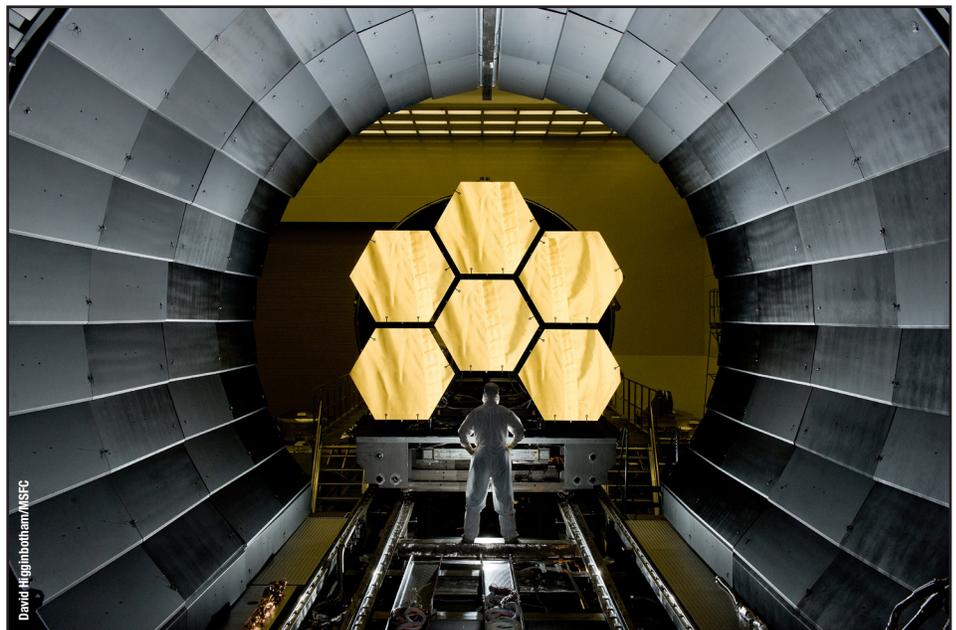
By Kim Newton

The first six of 18 segments that will form NASA's James Webb Space Telescope's primary mirror for space observations began final round-the-clock cryogenic testing last week. These tests will confirm the mirrors will respond as expected to the extreme temperatures of space prior to integration into the telescope's permanent housing structure.

The X-ray and Cryogenic Facility at the Marshall Space Flight Center will provide the space-like environment to help engineers measure how well the telescope will image infrared sources once in orbit.

Each mirror segment measures approximately 4.3 feet in diameter

See *Telescope* on page 6



Marshall engineer Ernie Wright looks on as the first six, flight-ready James Webb Space Telescope primary mirror segments are prepped to begin final cryogenic testing at the Marshall Center.

Marshall Star goes online only beginning June 2; Daily Planet to cease publication

Due to budget constraints, the Marshall Star will only be available online beginning June 2. The last printed issue will be May 26.

To continue reading the Star, simply visit <http://marshallstar.msfc.nasa.gov/>. A link will be sent to the Marshall Space Flight Center workforce every Wednesday when the new issue is posted. Articles also will be available on ExplorNet, the center's new internal social media tool created to increase collaboration, communicate in real-time

throughout the Marshall community and find expertise.

The Star will no longer be mailed to Marshall retirees or to other NASA centers. Classified advertisements also will cease in the Star. However, Marshall team members can post their ads on ExplorNet.

The Marshall Star celebrated its 50th anniversary Sept. 28. For most of the past 50 years, the Enquirer Printing Co. – established in 1870 – has been the Star's printer. Clifford Parker, the company's longtime owner until his son, Shannon, bought the Hartselle-based business in 1998, set up the machines for the very first issue and printed Vol. 1, No. 1. For more about the Star's 50th anniversary, visit <http://marshallstar.msfc.nasa.gov/9-30-10.pdf>.

In addition, the Daily Planet will not be available after May 31. To view the latest NASA news, visit www.nasa.gov.

Marshall to celebrate 'living green' April 21

By Megan Norris Davidson

The Marshall Space Flight Center will celebrate the easy-as-ABC way to living green April 21 in honor of Earth Day.

The festivities, sponsored by Marshall's Environmental Excellence Team, will kick off with an opening ceremony at 10 a.m. in Activities Building 4316. This year's theme is "Sustainability," with the slogan, "Living Green: Easy as ABC."

"Earth Day is a time for all of us to think about how we can protect our planet," said Ashley Boudreaux, a geologist in Marshall's Environmental Engineering & Occupational Health Office and chairwoman for the Earth Day events. "Marshall's new Sustainability Program encourages 'living green' by conserving resources within NASA's programs and projects, reusing and recycling materials, supporting environmentally friendly companies and products, and pollution prevention. Simple steps are often all it takes. We just need to educate each

other of what those steps can be."

Winners of the Earth Day logo and photo contests will be recognized at the opening ceremony. The winner of this year's logo contest is Jean Snowden, a United Space Alliance employee supporting Marshall's Program Planning & Control

Office. Snowden's logo, chosen in a vote by Marshall team members, will be used in Earth Day promotional materials. Photo winners will be announced at the event.

Also during the ceremony, the Environmental Excellence Team will present Environmental Hero Awards to selected Marshall team members for excellence in environmental stewardship through efforts to preserve and protect the environment. Winners of those awards are nominated by their peers.

The City of Madison's Operation

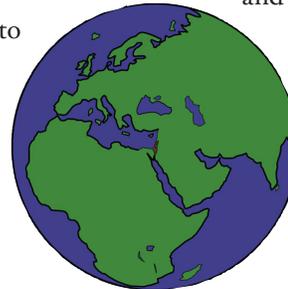
Green Team is donating a tree for the annual ceremonial planting, to be held after the opening ceremony on the Activities Building grounds.

An "environmental expo" will be held from 10:30 a.m.-12:30 p.m. at Activities Building 4316, featuring more than 40 local vendors who will talk with employees about new environmental practices and products. Free tree seedlings will be provided by Wallace State Community College. A "Swap It" event also will be part of the expo, where Marshall team members can trade their used books, CDs, DVDs and video games.

Complimentary soft drinks will be provided, along with door prizes and giveaways for attendees. Recycling stations will be set up at the expo for cell phones and eyeglasses.

For more information about the day's events, contact Earth Day chairman Roger Bunnell at roger.e.bunnell@nasa.gov, or Boudreaux at Ashley.E.Boudreaux@nasa.gov.

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



Thank you from the Academic Affairs Office

The Academic Affairs Office manager and staff would like to express its sincere thanks and gratitude to all the Marshall Center employees who willingly volunteered their service for the 18th annual NASA Great Moonbuggy Race held on April 1-2.

The manager and staff appreciates the dedication, determination and exemplary support provided for the Great Moonbuggy Race.

Thanks again for helping to make this year's race another success.



Shuttle Endeavour set to launch April 29

Space shuttle Endeavour is scheduled to launch April 29 at 2:47 p.m. CDT on STS-134 for a 14-day mission to the International Space Station. The date was announced April 19 at the conclusion of a Flight Readiness Review held at Kennedy Space Center, Fla. During the meeting, senior NASA and contractor managers assessed the risks associated with the mission and determined the shuttle and space station equipment, support systems and personnel are ready for the mission. The Endeavour crew – Commander Mark Kelly; Pilot Greg H. Johnson; Mission Specialists Michael Fincke, Andrew Feustel and Greg Chamitoff; and European Space Agency Mission Specialist Roberto Vittori – will deliver the Alpha Magnetic Spectrometer, right, and connect it to the outside of the space station. The observatory will measure invisible cosmic rays as they traverse the universe. STS-134 is the 134th shuttle mission, Endeavour's 25th flight and the 36th shuttle mission to the space station.



Station astronaut Wheelock visits Payload Operations Center



International Space Station astronaut Doug Wheelock, with assistance from Payload Communicator Reagan Malone, talks to the crew aboard the station during his visit to the Marshall Space Flight Center April 11. Wheelock shared highlights of his Expedition 24/25 mission and thanked the Payload Operations Center team for its support in planning and executing science activities during the 163 days he lived and worked in space. Wheelock launched aboard a Russian Soyuz spacecraft June 15, 2010, from the Baikonur Cosmodrome in Kazakhstan, and docked with the space station two days later. He served as a flight engineer on Expedition 24 and commander of Expedition 25. During his mission, Wheelock and his crew members worked on more than 120 microgravity experiments in human research; biology and biotechnology; physical and materials sciences; technology development; and Earth and space sciences. Wheelock returned to Earth aboard a Soyuz Nov. 25, 2010, landing in Kazakhstan.

Students send 39 rockets skyward during 10th NASA Student Launch Projects

By Rick Smith

Though gusting winds delayed the countdown for a day, young rocketeers from all over America gathered undaunted in a sunny cornfield in Toney, Ala., April 17 to launch 39 rockets they designed and built themselves over the course of the current school year.

The event concluded the launch week activities for the 2010-11 NASA Student Launch Projects – the agency's 10-year-old celebration of innovative young minds, which seeks to inspire them to pursue careers in science, technology, engineering and mathematics. It is organized each year by the Marshall Space Flight Center.

More than 500 students from middle schools, high schools, colleges and universities in 23 states vied to see whose rocket could come closest to the 1-mile altitude goal and safely return its on-board science payload to Earth.

Forty-four teams participated, though five were unable to launch because of mechanical or technical issues with their rockets. Ten preliminary awards were presented, and the grand prize – \$5,000 from ATK Aerospace Systems in Salt Lake City, Utah – will be awarded in May after final post-flight analysis and review are complete.

Teams designed and built their rockets and experiments starting in fall 2010. They maintained websites to document

the experience, and visited schools and organizations in their communities to share their enthusiasm for rocketry and inspire younger students to pursue study of technical subjects critical to the work of NASA and the nation.

Hundreds of flight enthusiasts flocked to the launch site at Bragg Farms in Toney, Ala., to cheer for the student rocketeers. More than 40,000 viewers also watched live via the streaming video service UStream. Archived launch day coverage is available at <http://www.ustream.tv/channel/nasa-msfc>.

NASA held the first student launch event in 2000-01. In response to its growing popularity, NASA expanded it in 2006, creating one division for middle schools and high schools and another for colleges and universities.

The Marshall Center's Academic Affairs Office, part of the Office of Human Capital, manages the rocketry challenge. The project is sponsored by NASA's Exploration Systems Mission Directorate, Space Operations Mission Directorate, Science Mission Directorate and the Education Flight Projects Office in NASA's Office of Education, all at NASA Headquarters in Washington. ATK provided corporate sponsorship. The National Association of Rocketry provided technical review and launch support. Bragg Farms has hosted the launch challenge since 2008.

This year's preliminary awards, sponsored by ATK, included:

- Best Vehicle Design: Utah State University in Logan received the award for the most creative, innovative, safety-conscious rocket design.
- Best Payload Design: For the second straight year, Vanderbilt University in Nashville won the award for the most creative and innovative payload experiment, emphasizing safety and scientific value. Vanderbilt's experiment involved using a novel, liquid-nitrogen injection system during its rocket flight to simulate the working behavior of an airplane engine at cruising altitude.
- Best Web Design: One-man "team" Lucas Kalathas from Shippensburg University in Pennsylvania – who built his school's rocket and payload, designed its website and conducted all outreach activities and design and launch reviews himself – won the award for the best rocketry website: <http://www.shipusli.com>. Fisk University in Nashville received an honorable mention: <http://www.faatm.com>.



One of two teams from Presidio High School in Presidio, Texas, was comprised entirely of siblings, from left, Janet Nieto, Ana Karen Nieto and Hilario Nieto, who talked with Marshall's Steve Cash, right, during the April 15 rocket fair. The annual event gives student rocketeers an opportunity to show off their work to Marshall team members. Hundreds turned out to support the students and wish them luck during the weekend launches.

See *Winners* on page 5

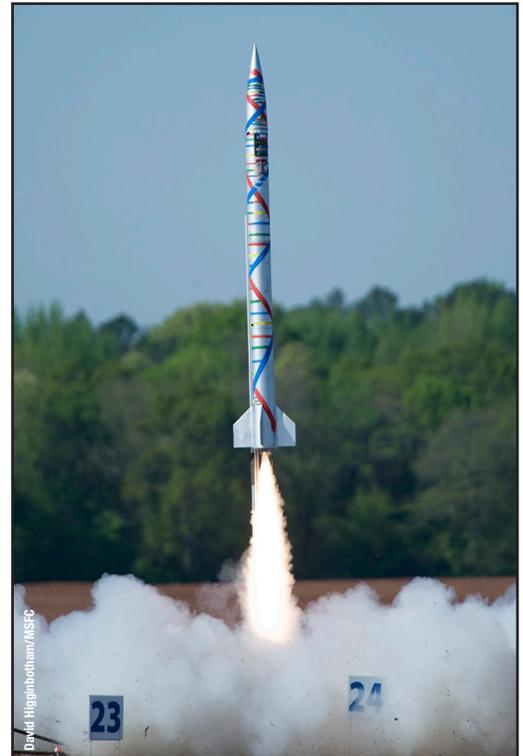
Winners *Continued from page 4*

- Project Review Award: The Massachusetts Institute of Technology in Boston was honored for delivering the best combination of written preliminary design, critical design and flight readiness reviews and formal presentations.
- Education Engagement Award: The University of Alabama in Tuscaloosa won for best inspiring the study of rocketry and other space-related topics. The team held 19 events during the current school year, reaching nearly 3,200 students in classrooms and community groups. Collectively, this year's teams reached more than 21,000 young people with presentations and exhibits about their rocket-building efforts.
- Closest to Altitude Award: The team from the University of Central Florida in Orlando received the university-level award for coming closest to the specified 1-mile altitude goal. The rocket reached an altitude of 5,210 feet – just 70 feet off the mark. Event organizers also recognized a new high school participant, Rockwall-Heath High School of Rockwall, Texas, for setting a new closest-to-altitude record: 5,264 feet, just 16 feet shy of a perfect 1-mile-high launch.
- Peer Awards: All rocket teams submitted votes for peer awards in each division. The "Best-Looking Rocket" awards went to the returning team from Plantation High School in Plantation, Fla., and to the Missouri University of Science & Technology in Rolla – which previously won the same honor in 2008 and 2009. The "Best Team Spirit" prizes were awarded to Hart County 4-H's Team Noble from Munfordville, Ky., and the "Rocket Girls" of the University of Alabama in Tuscaloosa.

All prize-winning teams received plaques and participation trophies from the Marshall Center and ATK. NASA and ATK will pick the final two university division award winners – "Rookie Team of the Year" and "Best Overall Team of the Year" – in May after teams have submitted their post-launch review documentation and science payload reports.

On May 21, NASA's Wallops Flight Facility on Wallops Island, Va., will host a pilot demonstration of a new "Level 2" university challenge. Three veteran Student Launch Projects teams – the University of Alabama in Huntsville, Mississippi State University in Starkville and Mitchell Community College in Statesville, N.C. – will fly rockets to a goal height of 10,000 feet and make a water recovery off the Virginia coast. The pilot event is set for May 21.

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



The Nieto siblings' rocket flies. It was one of 39 student-built rockets launched April 17, each carrying a working science or engineering payload. Painted with a striking DNA helix pattern, this rocket's payload analyzed the DNA of the desert shrub ocotillo, studying the effects of pressure, temperature and acceleration on their samples during flight.



The "Rocket Girls" of the University of Alabama in Tuscaloosa watch their rocket lift off during the April 17 launch event.



Team members from Fisk University in Nashville wait their turn to head out to the launch pad. Rocket experts from the National Association of Rocketry oversaw the launch range and helped students set up their creations.

STS-133 crew visits Marshall Center April 19



Crew members who flew space shuttle Discovery's last mission to the International Space Station visited the Marshall Space Flight Center on April 19. The STS-133 astronauts presented highlights of their 13-day mission in Morris Auditorium, Building 4200, and thanked the Marshall team for its contributions to the successful mission. An autograph session followed. The astronauts delivered and installed the Permanent Multipurpose Module, formerly known as the Leonardo Multipurpose Logistics Module, to the orbiting outpost. Marshall engineers were responsible for developing and integrating modifications that converted the module to a permanent storage fixture for the space station. Clockwise from upper left, during their stay at the space station are Mission Specialists Alvin Drew, Nicole Stott, Steve Bowen and Michael Barratt; Commander Steve Lindsey; and Pilot Eric Boe. Shuttle Discovery launched Feb. 24 from Kennedy Space Center, Fla., and returned March 9.

Telescope *Continued from page 1*

to form the 21.3-foot, hexagonal telescope mirror assembly critical for infrared observations. Each of the 18 hexagonal-shaped mirror assemblies weighs approximately 88 pounds. The mirrors are made of a light and strong metal called beryllium, and coated with a microscopically thin coat of gold to enable the mirror to efficiently collect light.

"The six flight mirrors sitting ready for cryogenic acceptance tests have been carefully polished to their exact prescriptions," said Helen Cole, project manager for Webb activities at Marshall. "It's taken the entire mirror development team, including all the partners, over eight years of fabrication, polishing and cryogenic testing to get to this point."

During cryogenic testing, the mirrors are subjected to extreme temperatures dipping to minus 415 degrees Fahrenheit in a 7,600-cubic-foot, helium-cooled vacuum chamber. This permits engineers to measure in extreme detail how the shape of the mirror

changes as it cools. This simulates the actual processes each mirror will undergo as it changes shape over a range of operational temperatures in space.

"This final cryotest is expected to confirm the exacting processes that have resulted in flight mirrors manufactured to tolerances as tight as 20 nanometers, or less than one millionth of an inch," said Scott Texter, Webb Optical Telescope element manager at Northrop Grumman in Redondo Beach, Calif.

A second set of six mirror assemblies will arrive at Marshall in July to begin testing, and the final set of six will arrive during the fall.

The Webb telescope is NASA's next-generation space observatory and successor to the Hubble Space Telescope. The most powerful space telescope designed, Webb will observe the most distant objects in the universe, provide images of the very first galaxies ever formed and help identify unexplored planets around distant stars. The telescope will orbit

approximately one million miles from Earth.

"The Webb telescope continues to make good technological progress," said Rick Howard, Webb telescope program director in Washington. "We're currently developing a new baseline cost and schedule to ensure the success of the program."

The telescope is a combined project of NASA, the European Space Agency and the Canadian Space Agency. Northrop Grumman is the prime contractor under NASA's Goddard Space Flight Center in Greenbelt, Md. Ball Aerospace & Technologies Corp. in Boulder, Colo., is responsible for mirror development. L-3-Tinsley Laboratories Inc. in Richmond, Calif., is responsible for mirror grinding and polishing.

For more information about the James Webb Space Telescope, visit <http://www.jwst.nasa.gov>.

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

MARS Softball Club season begins; players wanted



The 2011 MARS Softball Club season has begun and new players are needed.

Games will be played Monday through Thursday at either 5 or 6 p.m., and typically, each team plays one game per week. All Marshall Space Flight Center civil service employees, onsite contractors, approved offsite contractors and family members are eligible to participate.

There are three divisions:

- Division A – Intermediate/competitive, mixture of skilled/intermediate players
- Division B – Co-ed intermediate skilled players, minimum of two females on the field

- Division C – Co-ed beginner league, minimum of two females on the field

The club will play on the new field, located across from the Marshall Medical Center and the Marshall Child Development Center. The season will end in August with a double elimination tournament.

Those who are interested in playing softball or who have questions, contact MARS Softball League president Jim Lomas at 544-8305, or vice president Victor Pritchett at 544-5771.

For more information, visit <https://explornet.msfc.nasa.gov/groups/softball-club>.

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Marshall Star Ad Form." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue, April 28, is 4:30 p.m. Thursday, April 21.

Miscellaneous

One double dept lawn crypt, Maple Hill Cemetery, \$3,000. 256-656-1918

Wedding items: satin basket, bible, bearer & ring bearer pillows, two round, open baskets. 256-684-2606

Home entertainment system, two piece, solid wood construction, \$200. 256-617-3334

Dining room set, leaf, six chairs, \$915. 256-961-7963

Ruger .45 ACP P90DC, two magazines with case, \$350. 256-612-7729

Road bicycle, wide soft saddle, straight handlebar, 21 speeds, fits 5'2" to 5'7", \$130. 256-656-0571

Dryer, \$75. 256-837-0327

3,000 magic the gathering cards, Arabian Nights - Urza's Block, \$60. 313-254-4246 or hahnpv@gmail.com

Jessica McClintock heirloom collection sleigh twin bed, desk, chair, dresser, mirror, make offer. 256-651-2234

White Frigidaire washer and dryer set, \$150. 256-464-9055 leave message

Men's 15-speed Roadmaster, 26" tires mountain bike tread, \$50. 256-508-6947

Sporty's complete private pilot flight training course with

DVDs, \$100. 334-703-7685

John Deere front reel mower, model 20SR7, seven blades, high-speed reel, Kawasaki air cooled, \$350. 253-208-2926

Solid oak pedestal table, six chairs, \$450. 256-683-8823

Unibody Apple MacBookPro 13" laptop, 2.56Ghz CPU, 8GB RAM, 320GB 7200rpm drive, extended warranty. 801-710-3850

Intex 18' easy set above ground pool, accessories, additional larger pump, floats, \$450. 256-337-3500

Two enclosed blinds for patio doors, 24x66, hardware, \$100 for both. 256-423-2662 or 256-497-9193

18,000-BTU vent-free natural-gas infrared wall heater, \$80; seven floating geese decoys, \$40. 256-527-0110

Antique baby grand piano, 1931 Vose & Sons, needs some restoration, \$250 obo. 256-714-4923

Backflip Tonneau cover for Dodge Dakota or Mitsubishi Raider Quad Crew Cab 63", \$225. 256-772-9533

Utility trailer, \$195; VCR recorder, \$25. 256-852-6952

Black & Decker drill press, BDDP100 – Type 1, \$150. 256-426-3489

Large entertainment center, cherry finish, \$500 obo. 256-682-5418 or 256-603-3558

Pits, shots/altered, two females, one male. 256-640-6418

Youth ice hockey skates, Alpha Infinity 1.0, size 2jr,3jr. \$25. 256-975-9480

Vehicles

2008 18-ft pontoon boat, \$13,900. 256-301-9592

2006 Honda Accord EX, V6, bronze, leather, moonroof, 90k miles, \$13,500. 256-890-2128

2005 Honda CRV, silver, \$12,000 negotiable. 423-742-0736

2004 Chevrolet Aveo, 52,000 miles, 5 speed, clean, \$4900. 313-254-4246 (cell) or email hahnpv@gmail.com.

2003 Buick Regal, LS, 107k miles, \$4,800. 256-534-2025

2003 Toyota Sequoia Limited 2WD, 4.7L V8, white, gray leather, moonroof, 128k miles, \$13,500. 256-655-3065

2003 Harley Heritage Softail Classic 100th Anniversary, gunmetal blue, windshield, saddlebags, 5k miles, \$10,900. 256-683-8409

2001 Maxima SE, white, leather, loaded, chrome wheels, 119k miles, \$7,450. 256-837-2035

1998 GMC truck, LWB, white, six cylinder, 190k miles, \$4,200. 256-468-9377

1997 Pontiac Sunfire, two door, two new tires, needs paint, A/C compressor, 137k miles, \$1,500. 256-520-3874

1997 Ford F150 XLT, std cab, flareside bed, needs repair, \$1,750. 256-527-8116

Suzuki DR150 dirt bike, \$395. 256-883-2757

Wanted

Used garden tiller, will pickup. 256-658-6353

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

Practice amp for beginning electric guitar student. peter.v.mazurkivich@nasa.gov

T-ball baseball bat and balls, used ok. 256-417-9518

Shuttle Buddies to meet April 25

The Shuttle Buddies will meet at 8:30 a.m. April 25 at Mullins Restaurant on Andrew Jackson Way. For more information, call Deemer Self at 881-7757.

Celebrating 30 years of space shuttle

Shuttle model created by Marshall's Scott Phillips on display in Building 4200 lobby



David Higginbotham/MSFC

In commemoration of the 30th anniversary of the first flight of the space shuttle, a 1:100 scale shuttle model, created by Scott G. Phillips – a logistics engineer with Lockheed Martin Co., supporting the Marshall Space Flight Center's Engineering Directorate – is on display in the Building 4200 lobby until April 29. Two years in the making, the project is made with 20 different woods, with 18 species of wood in the orbiter alone. Pins representing every flight and plates

representing each of the program's orbiters flank the model. "As a shuttle team member for over 30 years, assembling this project was bittersweet as I remembered each and every flight that the pins represent," said Phillips. "When asked where my inspiration came from, I thought about the 30-plus years that I dedicated to the program and all the people whom I came in contact with. It was not as much about the hardware but more about the dedication of those who made it happen." On April 12, 1981, people from

across the world watched as space shuttle Columbia, America's first shuttle, lifted off into the Florida skies at 6 a.m. CST from Pad A of Kennedy Space Center's Launch Complex 39, beginning the STS-1 mission. Columbia returned to Earth on April 14, 1981. Marshall led the development and operation of the shuttle propulsion elements. To read more about the 30th anniversary, visit last week's Marshall Star at <http://marshallstar.msfc.nasa.gov/4-14-11.pdf>.

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