Marshall Star, May 1, 2013 Edition

MARSHALL STAR

In This Week's Star

Puerto Rico Teams Take First Place at 20th NASA Great Moonbuggy Race

By Megan Davidson

It was a big year for student teams from Puerto Rico, who dominated the top spots at the 20th NASA Great Moonbuggy Race. Team 1 from Teodoro Aguilar Mora Vocational High School of Yabucoa, Puerto Rico, won first place in the high school division; racers from the University of Puerto Rico at Humacao claimed the college-division trophy.

The winning teams outraced more than 89 teams from 23 states, Puerto Rico, Canada, India, Germany, Mexico and Russia. Approximately 600 student drivers, engineers and mechanics -- plus their team advisors and cheering sections -- gathered for the 20th "space race," held April 26-27 at the U.S. Space & Rocket Center.

Organized by NASA's Marshall Space Flight Center, the race challenges students to design, build and race lightweight, human-powered buggies. Traversing the grueling half-mile course, which simulates the cratered lunar surface, race teams face many of the same engineering challenges dealt with by Apollo-era lunar rover developers at the Marshall Center in the late 1960s. The winning teams post the fastest vehicle assembly and race times in their divisions, with the fewest on-course penalties.

The team from Teodoro Aguilar Mora Vocational High School, in its third year in the competition, finished the half-mile course in 3 minutes, 24 seconds. The University of Puerto Rico at Humacao, who won second place in the college

NASA's 20th Great Moonbuggy Race
ADDITIONAL AWARDS AND PRIZES

Neil Armstrong Best Design Award (for solving engineering problems associated with lunar travel):
Academy of Arts, Careers & Technology in Reno, Nev.
Southern Illinois University at Carbondale in Carbondale, Ill.

Featherweight Award (for the lightest buggy on the track):
Escuela Superior Rafaelina E. Labron Flores in Patillas, Puerto Rico
Purdue University Calumet Team 1 in Hammond, Ind.

AIAA Telemetry and Electronics Award (for the most innovative onboard data-gathering and delivery system):
Mukesh Patel School of Technology

division in the 2012 race, brought home a first-place win this year, finishing in 3 minutes, 32 seconds.

Finishing in second place this year in the high school division was Jupiter High School Team 1 of Jupiter, Fla. In third place was Jupiter High School Team 2.

International Space Education Institute/Moscow Aviation University "Team Russia" of Moscow won second place in the college division; and Middle Tennessee State University Team 1 of Murfreesboro took home third place.

Race organizers presented both first-place winners with trophies depicting NASA's original lunar rover. Sponsor SAIC of Huntsville provided every participating moonbuggy team with a commemorative plaque. Sponsor Lockheed Martin Corp. of Huntsville presented the first-place high school and college teams with cash awards of $3,000 each. Individuals on the winning teams also received commemorative medals and other prizes.

The race is inspired by the original lunar rover, first piloted across the moon's surface in the early 1970s during the Apollo 15 mission, and used in the subsequent Apollo 16 and 17 missions. Eight college teams participated in the first NASA Great Moonbuggy Race in 1994. The race was expanded in 1996 to include high school teams, and student participation has swelled each year since.

NASA's Great Moonbuggy Race has been hosted by the U.S. Space & Rocket Center since 1996. Major corporate sponsors for the 2013 race were Lockheed Martin Corporation, The Boeing Company, Northrop Grumman Corporation, Aerojet and Jacobs Engineering ESSSA Group, all with operations in Huntsville. Other corporate and institutional sponsors include the U.S. Space & Rocket Center and Science Applications International Corporation (SAIC), both of Huntsville; ATK Aerospace Systems of Salt Lake City, Utah; Davidson Technologies Inc. of Huntsville; the Universities Space Research Association (USRA), headquartered in Columbia, Md.; the U.S. Army Aviation and Missile Research, Development and Engineering Center (AMRDEC) at Redstone Arsenal in Huntsville; Corporate Office Properties Trust (COPT), headquartered in Columbia, Md.; Naval Mobile Construction Battalion Two-Four; Teledyne Brown Engineering and MSB Analytics Inc., both of Huntsville; the American Institute of Aeronautics and Astronautics (AIAA), headquartered in Reston, Va.; the National Space Club, headquartered in Washington; AI Signal Research Inc. and Industrial Fabrication Co., both of Huntsville; National Defense Industrial Association (NDIA); Infotech Resources Inc. of Huntsville; Redstone Federal Credit Union; Qualis Corporation; and the Tennessee Valley chapter of the International System Safety Society, headquartered in Unionville, Va.

For more information about the race, visit: http://moonbuggy.msfc.nasa.gov

For information about other NASA education programs, visit: http://education.nasa.gov

Management & Engineering in Maharashtra, India

Frank Joe Sexton Memorial Pit Crew Award (for ingenuity and persistence in overcoming problems during the race. Sexton, a NASA welder who mentored numerous welders and engineers among the Marshall workforce, worked on the original lunar rover and numerous other space vehicles until his death in 2000):
Fairhope High School Team 1 and Team 2 in Fairhope, Ala.
Texas A&M University-Kingsville in Kingsville, Texas

Crash and Burn Award (for the team that endures the most spectacular vehicle breakdown):
Bevill State Community College Team 1 in Sumiton, Ala.

Spirit Award (for overall team energy, enthusiasm and camaraderie):
Petra Mercado High School in Humacao, Puerto Rico

Rookie Award (for fastest course completion by a new race team):
Escuela Superior Rafaelina E. Labron Flores in Patillas, Puerto Rico
North Dakota State University in Fargo

Most Improved Award (for the most dramatically improved engineering and performance):
Huntsville Center for Technology Team 1 in Huntsville, Ala.
Middle Tennessee State University Team 1 in Murfreesboro

Best Report Award (technical documentation of the equipment and procedures used in design, build, test and the results obtained)
University of Puerto Rico, Mayaguez

System Safety Award
University of Alabama in Huntsville

Lunartic Award (presented by AIAA to the team in each division that wins the Moon Bowl, a lunar science quiz)
New Britain High School in New Britain, Conn.
Accurate Institute of Management & Technology in Uttar Pradesh, India

Best Question of the Rover Pioneers Award (for best question asked during an April 26 event with members of the original lunar rover team)
Cape Girardeau Career & Tech Center in Cape Girardeau, Mo. – Husan Wadi

Image above: Team 1 from Teodoro Aguilar Mora Vocational High School of Yabucoa, Puerto Rico, gets a spirited sendoff at the start line at the 20th NASA Great Moonbuggy Race. The team won first place in the high school division, finishing the half-mile course in 3 minutes, 24 seconds. (NASA/MSFC/Emmett Given)

Image left: A team from the University of Puerto Rico at Humacao pedals over the first obstacle on the moonbuggy course. The team placed first in the college division at the race. (NASA/MSFC/Emmett Given)

Image right: Drivers line up to take their turn on the moonbuggy course. More than 89 teams from 23 states, Puerto Rico, Canada, India, Germany, Mexico and Russia took part in the competition. (NASA/MSFC/Tony Triolo)

Image left: A team from Central Magnet High School of Murfreesboro, Tenn., sails over a gravel pit on the moonbuggy course. (NASA/MSFC/Ray Downward)

Image right: Southern Illinois University at Carbondale Team 1 pushes through a tricky sand obstacle. The team won the Neil Armstrong Best Design Award -- for solving engineering problems associated with lunar travel -- for the college/university division. (NASA/MSFC/Tony Triolo)

Image left: A driver on a team from Christian Brothers University of Memphis, Tenn., puts her best foot forward at the moonbuggy race. (NASA/MSFC/Fred Deaton)

Image right: Jeri Buchholz, assistant administrator for the Office of Human Capital at NASA Headquarters, gives remarks at the closing ceremony of the NASA Great Moonbuggy Race. (NASA/MSFC/Fred Deaton)

Davidson, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

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Hot-Fire Tests Steering the Future of NASA's Space Launch System Engines

By Bill Hubscher

Engineers developing NASA's next-generation rocket closed one chapter of testing with the completion of a J-2X engine test series on the A-2 test stand at NASA's Stennis Space Center and will begin a new chapter of full motion testing on test stand A-1.

Image left: A new record was set on April 4 for J-2X engine test firings, when the engine was fired for 570 seconds on the A-2 test stand at Stennis. With the completion of the test series on this stand, the engine will now be moved to the A-1 test stand where it will undergo gimbaling tests to ensure it can pivot safely, much like it will do as the steering propulsion for the second stage of NASA's Space Launch System. (Image: NASA/SSC)

The J-2X will drive the second stage of the 143-ton (130-metric ton) heavy-lift version of the Space Launch System, or SLS, which is managed at NASA's Marshall Space Flight Center. The rocket will provide an entirely new capability for human exploration and send humans in NASA's Orion spacecraft into deep space.

J-2X engine 10002 was fired for the last time on the A-2 test stand at Stennis on April 17. This engine set a duration record for J-2X engine firings at Stennis' A-2 test stand on April 4 when it fired for 570 seconds, beating the previous mark set less than a month earlier on March 7, when the same engine ran for 560 seconds.

When the engine is eventually used in space, it will need to be able to move to help steer the rocket.

"The A-1 stand is designed to allow us to gimbal, or pivot, the J-2X during a live firing and test the range of motion for the engine's flexible parts," said Gary Benton, manager of the J-2X test project at Stennis. "This type of testing hasn't been performed since the space shuttle main engines were tested on the stand."

Those space shuttle main engines, also called RS-25s, will make a return to the test stand in 2014. A collection of RS-25 engines, used to launch 135 space shuttle missions, will be rated to operate at a higher power level and used to launch the core stage of the SLS.

The SLS will first launch during Exploration Mission-1 in 2017, a flight test that will send an uncrewed Orion spacecraft around the moon.

Hubscher, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

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NIRPS Planning Team Meets at Marshall Center
By Shannon Ridinger

The National Institute for Rocket Propulsion Systems, or NIRPS, team meeting was recently held at NASA's Marshall Space Flight Center. Marshall Deputy Director Teresa Vanhooser and Marshall Associate Director, Technical and NIRPS Director Dale Thomas gave opening remarks and welcomed the group of more than 30 people representing industry, government and academic agencies. The team toured the Marshall Center and met to discuss upcoming milestones for the organization.

Image right: The NIRPS planning team in front of the rocket engine garden at the Marshall Center, before their center tour. (NASA/MSFC/Emmett Given)

NIRPS is a collaboration among government, commercial and academic propulsion communities that serves to maintain and advance U.S. leadership in all aspects of rocket propulsion. The collaboration was formed in 2011 and continues working to serve as a policy steward and technological integrator among the U.S. rocket propulsion base. Currently, 60 industry, government and academic organizations participate in NIRPS activities.

“Our goal with NIRPS is to be the integrator or common ground among the many organizations involved in the rocket propulsion community,” said Thomas. “We believe that by getting us all on the same page, and working to a common goal, we can strengthen the global competiveness of the U.S. rocket propulsion industry.”

“We were very glad to be able to host the team meeting at the Marshall Center,” added Thomas. “The team enjoyed getting to see the capabilities here, and it was a springboard for some productive discussions during our meeting.”

For more information on NIRPS, visit https://nirps.msfc.nasa.gov.

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

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Sustainability Made Easy at Marshall
By Jena Rowe

Many people want to maintain a healthy environment, but they aren't sure how or where to begin. The Environmental Engineering & Occupational Health Office at NASA's Marshall Space Flight Center has provided suggestions to help center team members maintain a sustainable environment and save money beginning with simple adjustments to the way they do daily tasks.

"On one level, sustainability is about maintaining the resources that are available to us on the planet so our children and grandchildren can enjoy the same quality of life that we do," said Donna Leach, sustainability coordinator for Marshall and a member of the Environmental Engineering & Occupational Health Office, which is part of the Office of Center Operations. "On a different level, sustainability should equal affordability. When you do things with a mindset of sustainability you should have not only less of an impact on the environment, but you should be utilizing less money, too."

NASA defines sustainability as the ability to execute our mission without compromising our planet's resources. This is not just a “nice idea." Presidential Executive Order 15314 mandates sustainability goals for all federal agencies. In response to this order, NASA has developed a Strategic Sustainability Performance Plan that defines eight goals for meeting federal sustainability requirements.

At Marshall, sustainability efforts include large-scale solutions for conserving water and energy, reducing the need for toxic chemicals and preventing pollution. However, simple day-to-day actions such as turning off unnecessary lights, carpooling and recycling contribute to the overall goals as well. Below are five things you can do to contribute to sustainability goals and help maintain a healthy environment:

1. Recycle - It's not just about bottles anymore. Almost everything can be recycled. Marshall now participates in single-stream recycling, which means recycled items no longer have to be separated by category. As long as it is not tissue or Styrofoam, it can be recycled.
2. Energy reduction - Unplug electrical devices when not in use. A great way to reduce energy use is to turn off your lights and computer before you leave each day. Using an energy-efficient surge protector is another great way to conserve energy.
3. Water reduction - If you see a leak, please report it to the Facilities Management Office (FMO).
4. Reduce greenhouse gas emissions - Consider holding a video conference or conference call instead of driving to a meeting at a different location. Reducing greenhouse gas emissions can also be achieved by using electronic documents instead of printed documents when possible. If there is a need for a printed document, consider duplex printing. Or, if using a single-sided document, consider reusing the back of the paper as scrap or for printing draft copies.
5. Green purchasing - There is a requirement for all federal agencies to purchase "green" products whenever possible. For more information about green products available to Marshall team members, visit ExplorNet.

Sustainability is an easy goal to achieve when everyone does his or her part. The adjustments to daily tasks are minimal, but the positive impacts on the environment are great.

For more information about sustainability and how you can be involved, please contact Sustainability Coordinator Donna Leach. She is willing to provide 10-minute briefings, or "Tune-Ups," for staff meetings to help team members understand their sustainability responsibilities. You may also visit the sustainability website for more information and available resources.

Rowe, an Analytical Services Inc. employee and the Marshall Star editor, supports the Office of Strategic Analysis & Communications.

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City Honors Dieter Grau, Marshall's First Quality Assurance Director, on His 100th Birthday

By Tracy McMahan

Huntsville Mayor Tommy Battle issued a proclamation naming April 24, 2013, Dieter Grau Day in honor of the 100th birthday of the first director of quality assurance at NASA's Marshall Space Flight Center.

Image left: Stephen Cash, right, director of Safety and Mission Assurance at NASA's Marshall Space Flight Center, presented Dieter Grau, center, the first head of Marshall's Quality Assurance Division, with a gold shuttle coin and other items recognizing Grau's contributions to NASA. Ed Buckbee, left, a former Marshall public affairs officer, joined many others celebrating Grau's 100th birthday. (NASA/SSC)

Grau came to Huntsville in 1950 as part of the German rocket team that accompanied Dr. Wernher von Braun, who later became Marshall's first center director. Grau was trained as an electrical engineer and first worked for the U.S. Army on missiles.

When the Marshall Center was formed in 1960, he transferred to the new NASA field center and became the first head of Marshall's quality division. He was responsible for ensuring the reliability and quality of the entire launch vehicle from early development all the way to readiness to a launch. He was one of the key people to give the go ahead for the launches of the Saturn V that sent men to the moon.

To honor Grau's 100th birthday, Stephen Cash, the current director of Marshall's Safety and Mission Assurance Office, gave Grau a shuttle coin flown in space and a letter from Marshall Center Director Patrick Scheuermann that thanked Grau for his historic role in human space exploration.

Image right: In this 1960s photo of Dr. Wernher von Braun's management team, Dieter Grau, the director of quality assurance, is the first person seated to the right of von Braun, Marshall Center's first director. The city of Huntsville recently honored Grau on his 100th birthday. (NASA/MSFC)

For more information about Marshall's history, visit http://www.nasa.gov/centers/marshall/history/index.html

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

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Marshall Space Flight Center Speakers Bureau Uses Skype to Reach Audiences

NASA's Marshall Space Flight Center's Speakers Bureau volunteer Baraka Truss, a flight systems safety engineer in the Mission Systems Assurance & Technical Support Department, speaks with more than 100 afterschool program coordinators via Skype during the Simply "S.T.E.M.ulating" Afterschool Summit on April 19. Truss shared lessons learned from her experiences communicating to young students about NASA capabilities and science, technology, engineering and mathematics, or STEM, education topics. The event was held in Birmingham. (NASA/MSFC)

Find this article at:

http://www.nasa.gov/centers/marshall/about/star/index.html