National Aeronautics and Space Administration
NASA Marshall Star: June 21, 2007: Vol. 47/No. 39

MARSHALL STAR

Serving the Marshall Space Flight Center Community

June 21, 2007

Marshall Center's STS-117 success story: repaired fuel tank performance, shuttle main engine improvement

By Sanda Martel

It was a picture-perfect beginning for Space Shuttle Atlantis' STS-117 mission — good weather, a smooth countdown and launch on first attempt at 6:38 p.m. CDT, June 8. NASA managers said during a press conference following launch they were extremely pleased with all the outstanding team work leading up to Atlantis' lift off from the Kennedy Space Center, Fla., on its mission to the International Space Station.

Two STS-117 successes belong to the Marshall Center team responsible for the shuttle's propulsion elements — the main engines, external fuel tank and reusable solid rocket boosters with their solid rocket motors. Those successes include the performance of Atlantis' repaired external fuel tank, which received hail damage at the Kennedy Space Center in February, and a space shuttle main engine improvement — the Advanced Health Management System — that shuts down an engine if anomalies are detected.

"It was a great day for the Marshall team," said Steve Cash, Space Shuttle Propulsion Office acting manager. "Two particular things we were obviously watching were the performance of the repaired external tank and data on the main engine safety

See Successes on page 10

Space Shuttle Atlantis landing set for June 21 at Kennedy Space Center

By Sanda Martel

Space Shuttle Atlantis and the STS-117 crew undocked from the International Space Station on June 19 at 9:42 a.m. CDT to begin the journey home from a 13-day mission. At Marshall Star press time, landing was scheduled for 12:54 p.m. on June 21 at the

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On board the International Space Station, front row from the left, are Clayton Anderson, Expedition 15 flight engineer; Sunita Williams, STS-117 mission specialist; and cosmonauts Fyodor N. Yurchikhin and Oleg V. Kotov, Expedition 15 commander and flight engineer, respectively, representing Russia's Federal Space Agency. Middle row, from left, are Lee Archambault and Rick Sturckow, STS-117 pilot and commander, respectively. Back row, from left, are STS-117 mission specialists Patrick Forrester, Jim Reilly, Steven Swanson and John "Danny" Olivas.

Marshall to hold 2007 Annual Honor Awards ceremonies

The Marshall Center will hold its Annual Honor Awards ceremonies in Morris Auditorium on Thursday, June 28. Employees are invited to attend.

There will be two ceremonies held, the NASA Honor Awards at 10 a.m. and the Marshall Center Honor Awards at 2 p.m., recognizing employees who have made significant contributions to America's space program over the past 12 months or longer.

NASA Associate Deputy Administrator Charles Scales will present the awards with Marshall Director David King and Deputy Director Robert Lightfoot.

THE FACE OF MISSION SUCCESS IS:

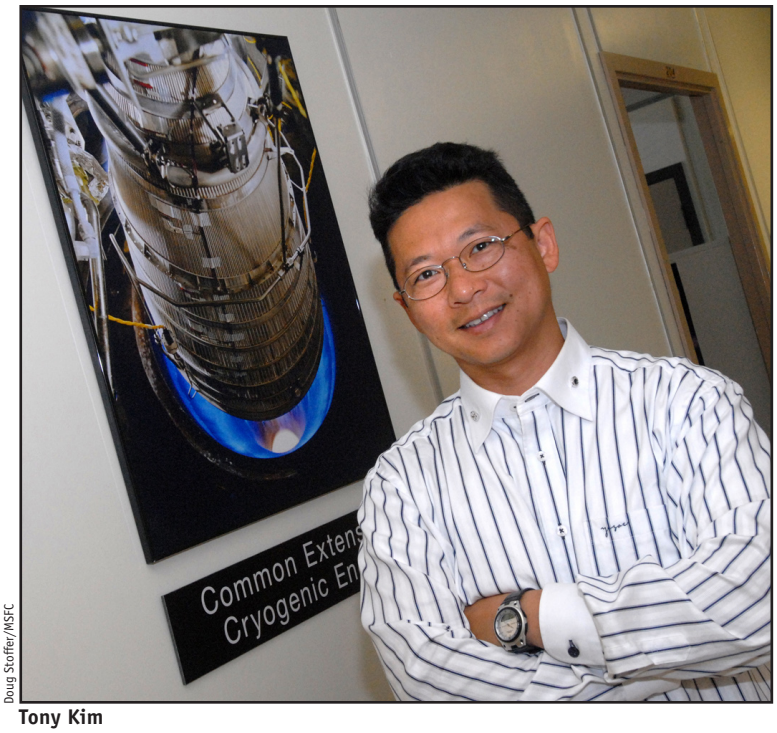
Tony Kim

Liquid Oxygen/Hydrogen Deep Throttling Engine Advanced Capability Development project manager in the Exploration Advanced Capabilities Development Office of the Science & Mission Systems Office

"That's one small step for a man, one giant leap for mankind," said Neil Armstrong. Those were the famous words spoken by the first astronaut who landed on the moon in 1969. Almost 40 years later, NASA is heading toward reliving that historical phrase. Tony Kim, Marshall's Liquid Oxygen/Hydrogen Deep Throttling Engine Advanced Capability Development project manager, and his team are working with the Propulsion Cryogenic Advanced Development Project at Glenn Research Center in Ohio to help NASA reach the goal of returning to the moon.

What is your education background?

I earned a Bachelor of Science degree in aeronautical and astronautical engineering from the University of Illinois in Urbana/Champaign in 1989 and a Master of Science degree in material science from Auburn University in 2001. I also had the opportunity to attend the International Space University summer session program in 1997 at Rice University in Houston.



Doug Stoffer/MSFC

Tony Kim

What are the key responsibilities of your job?

My job is to assure that the Deep Throttling Engine technology is available and can meet the requirements defined by the Lunar Lander Project Office at Johnson Space Center in Houston within schedule and budget constraints. The LOX-hydrogen pump-fed throttling engine will be able to land more payload on the surface of the moon than what was done during Apollo. The requirement for throttling is 10:1 in the current mission architecture. The engine must be capable of safely throttling from 100 percent to 10 percent power level.

As a project manager, I identify and evaluate all types of risks to the technology development effort and determine the use of available resources to provide a valuable asset, such as information or hardware, to NASA and the public. I want to provide something that is useful. I don't like to waste anything. People work hard for their money, and the funds we get from the American people should be used with the utmost integrity and applicability toward the mission defined by their representatives in government.

What services does your job provide in support of the center's mission?

Marshall supports the agency's Exploration Systems Mission Directorate in many major areas. I am working on the development of the throttling lunar lander liquid oxygen and hydrogen pump-fed rocket engine that will support NASA's goal of returning to the moon. It takes six to eight years to design, develop, test and engineer a new rocket engine. The work that my team and I are doing will give greater confidence that the future full-scale rocket engine development can be accomplished on time.

What do you hope to accomplish in your role this year?

We just completed a major demonstration test in April and May to investigate the capabilities and performance of the Common Extensible Cryogenic Engine, a modified production Pratt & Whitney Rocketdyne RL10 engine. The RL10 was America's first liquid hydrogen fueled rocket engine. We are currently analyzing data obtained during testing. This information, plus better-defined requirements, will be used to develop a plan to meet the Lunar Lander Project milestones within budget and schedule constraints.

Teamwork and communication are other key factors that I want to improve. The team consists of different organizations within Marshall and other center and industry partners. This is

See Kim on page 10

2007 NASA/Marshall Center Annual Honor Awards

Presidential Rank Awards

Rank of Meritorious Executive

Robert M. Lightfoot
Office of the Director

Robin N. Henderson
Office of the Director

Teresa B. Vanhooser
Exploration Launch Projects Office

NASA Distinguished Service Medal

Jimmy R. Snoddy Jr.
Engineering Directorate
Received at NASA Headquarters on May 10

NASA Outstanding Leadership Medal

Stephen A. Cook
Exploration Launch Projects Office

Arthur E. Goldman
Shuttle Propulsion Office (Stennis)

Mary E. Koelbl
Engineering Directorate

Anthony R. Lavoie
Science & Mission Systems Office

Joe L. Leopard
Engineering Directorate

Robert M. Lightfoot
Office of the Director

Ann R. McNair
Office of Center Operations

Audrey D. Robinson
Office of Diversity & Equal Opportunity

Bruce K. Tiller
Engineering Directorate

Gary L. Wentz
Engineering Directorate

NASA Exceptional Engineering Achievement Medal

Shannon Bragg-Sitton
Engineering Directorate

Kendall K. Brown
Engineering Directorate

NASA Exceptional Scientific Achievement Medal

Alan M. Title
LMATC/Science & Mission Systems Office

NASA Exceptional Administrative Achievement Medal

Tammy K. Knight
Office of the Chief Counsel

NASA Exceptional Achievement Medal

Robert M. Bagdigian
Science & Mission Systems Office

Amy B. Campbell
Office of Procurement

David L. Earnest
Office of the Chief Information Officer

Patricia Fundum
Engineering Directorate

Gary G. Genge
Exploration Launch Projects Office

Cheryl L. Harrell
Office of the Chief Information Officer

Lawrence D. Hill
Science & Mission Systems Office

Steven Holmes
Shuttle Propulsion Office

Kenneth D. King
Office of the Chief Financial Officer

Robert M. Linner
Engineering Directorate

Dennis R. Moore
Engineering Directorate

Joseph L. Pirani
Engineering Directorate

Carolyn K. Russell
Engineering Directorate

Vicky L. Scherberger
Office of Human Capital

Brian E. Steeve
Engineering Directorate

Samuel Stephens
Shuttle Propulsion Office

Kenneth J. Welzyn
Engineering Directorate

Thomas D. Wood
Engineering Directorate

NASA Exceptional Service Medal

Stephen P. Beale
Office of Procurement

Burton L. Bright
Office of the Chief Information Officer

Joseph A. Brunty
Engineering Directorate

Robert H. Champion
Engineering Directorate

Judy S. Chapman
Shuttle Propulsion Office (retired)

Sharon L. Espey
Shuttle Propulsion Office

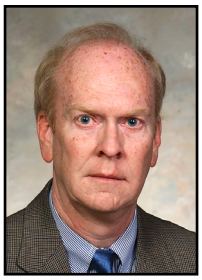
See NASA Exceptional Service Medal on page 6

NASA Exceptional Service Medal (continued)

Michael J. Galuska
Engineering Directorate

Lorna Jackson
Engineering Directorate

Charles L. Martin
Engineering Directorate



Steven D. Morris
Office of Procurement

Melinda W. Niedermeyer
Engineering Directorate

Jay F. Onken
Engineering Directorate

Alan F. Patterson
Engineering Directorate

Kathleen P. Pollard
Exploration Launch Projects Office

Christopher G. Popp
Engineering Directorate

James A. Raby
Engineering Directorate

Jeffrey D. Sexton
Exploration Launch Projects Office

Lawrence Dale Thomas
Engineering Directorate

David M. Whitten
Engineering Directorate

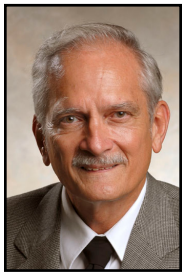
NASA Exceptional Public Service Medal

Gwendolyn R. Artis
GDR Consulting/ Science & Mission Systems Office

David C. Glover
EG&G/Office of Center Operations

Karen Owens
United Space Alliance/ Shuttle Propulsion Office

Stacy H. Painter
Digital Fusion/ Office of the Chief Financial Officer



Ray N. Sparks
CSC/Engineering Directorate

NASA HONOR AWARDS

NASA Group Achievement Award

Advanced Laser Welding Techniques Development Team
Backup Control Center Team
Crew Launch Vehicle Requirements Development Team
DC Metro Lightning Mapping Demonstration Team
Earth Observatory System GSFC to Alaska Satellite Facility via the Department of Defense Team
Electronic MSFC Resources Planning Tool Software Development Team
External Tank Ice/Frost Ramps Foam Loss Team
Fault Detection, Diagnostics, and Recovery Trade Study Team
Floating Potential Measurement Unit Project Team
GBM Team a Southwest Research Institute Team
ISS Water Recovery System Test and Verification Team
NASA's Principal Center for Clean Air Act Team
NISN Certification and Accreditation Team
OGS Water Delivery System Team
POLARIS Team (*Presented at NASA Headquarters, May 10, 2007*)
Real Time Mission Monitor Development Team
Routed Data Infrastructure Refresh Team
Solar-B Mission Operations Support Team
Solar-B Project Support Team
Solar-B Science Instrument Development Team
Space Shuttle Imagery Team
X-37 Approach and Landing Test Vehicle Project Team

NASA HONOR AWARDS

Award External to NASA

2007 Eagle Manned Mission Success Award
Wandaanne A. Sigur, Lockheed Martin/MAF

MSFC HONOR AWARDS

Director's Commendation Certificate Award

Arnold B. Baldwin, Safety and Mission Assurance Directorate
Ellis M. "Mat" Bevill Jr., Shuttle Propulsion Office
Karen Bishop, Engineering Directorate
Lucia Cape, WTI/Office of Human Capital
David W. Cockrell, Safety and Mission Assurance Directorate
Cynthia A. Coker, Engineering Directorate
Chris Coppens, Engineering Directorate
Christopher J. Crump, Engineering Directorate
Karen D. Dugard, Office of the Chief Financial Officer
Robert J. Erickson, Engineering Directorate
Thomas F. Fleming, Engineering Directorate
Timothy T. Gautney, Engineering Directorate
Susan E. Gentile, Office of Human Capital
Charles W. Griffith, Science and Mission Systems Office
David C. Harris, Science and Mission Systems Office
Donna L. Holland, Office of Center Operations
Jeffrey S. Jackson, Office of Procurement
Kathryn L. Kynard, Engineering Directorate
David Long, Engineering Directorate
Paul L. Luz, Engineering Directorate
Teresa Lynn Mayo, Engineering Directorate
James D. Moore, Safety and Mission Assurance Directorate
Kimberly D. Newton, Office of Strategic Analysis and Communications
Jimmy E. Phillips, Office of Center Operations
Terry L. Prickett, Engineering Directorate
Stephen P. Schmieder, Shuttle Propulsion Office
Manuel Schultz, Engineering Directorate
Joey D. Shelton, Exploration Launch Projects Office
Christopher Singer, Engineering Directorate
Charlotte R. Talley, Science and Mission Systems Office
Curtis O. Taylor, Gray/Science and Mission Systems Office
Robert H. Taylor Jr., Engineering Directorate
Terry L. Taylor, Engineering Directorate
Randall J. Thornton, Engineering Directorate
Timothy P. Vaughn, Engineering Directorate
John H. Vickers, Engineering Directorate
Douglas N. Wells, Engineering Directorate
Ronald White, Office of the Chief Information Officer
Jennifer Whitworth, TBE/Engineering Directorate
Deborah Wills, Office of the Chief Information Officer
Danny R. Woodard, Office of Strategic Analysis and Communications
Mark A. York, Office of Procurement

Certificate of Appreciation Award

Phillip A. Allen, Engineering Directorate
Alexis Alvarado, Safety and Mission Assurance Directorate
Nichole M. Benson, CIS/Office of Center Operations
Guy N. Brown, Engineering Directorate
Sherry K. Davidson, Office of Procurement
Kerry M. Funston, Engineering Directorate
Danny W. Harris, Exploration Launch Projects Office
Marianne F. Huie, Engineering Directorate
Charles D. Hunt, Office of Strategic Analysis and Communications
Mark E. Hyder, Office of Center Operations
Mark W. James, Engineering Directorate
Julia W. Khodabandeh, Engineering Directorate
Kesia S. Kimbrough, Mainthia/Office of Human Capital
Kenneth B. Kittredge, Engineering Directorate
Lizette M. Kummer, Office of Procurement
Jeffrey D. Lackey, Engineering Directorate
Gerald E. Lanz, TBE/Engineering Directorate
Tawnya P. Laughinghouse, Engineering Directorate
Marilyn Lewis-Alim, WTI/Office of Human Capital
Sherry Martin, Honeywell/Engineering Directorate
Steven McClard, Science and Mission Systems Office
Paul K. McConnaughey, Engineering Directorate
Heather McNamara-Koehler, Engineering Directorate
Jimmy L. Miller, Engineering Directorate
Brian D. Mulac, Science and Mission Systems Office
Erin M. Muldoon, Engineering Directorate
Amy Rebecca Parkinson, Jacobs/Science and Mission Systems Office
Terry K. Pendergrass, Engineering Directorate
Alison B. Protz, Engineering Directorate
Clarissia R. Smith, Engineering Directorate
Howard A. Soohoo, Engineering Directorate
William A. Till, Engineering Directorate
Steven W. Whitfield, Safety and Mission Assurance Directorate
Ricky L. Wilbanks, Engineering Directorate
Kimberly N. Williams, Office of Procurement

Group Achievement Award

1st Annual Student Intern Luau Team
Ares I/Crew Launch Vehicle Aerodynamic Test Team
Chemical Propulsion Technology Advancement Team
CLV Instrument Unit Component Development Team
Contracting Officer's Technical Representative Training Team
Crew Launch Vehicle Trajectory and Performance Analysis Team
Elementary/Secondary Education Team
Engine Cut-Off Sensor Anomaly Investigation Team
Engineering Constellation Exploration Launch Projects Office Work Package Team
Environmental Management System Implementation Team
ET RTF TPS Mechanical Property Testing Team
External Tank Foam Testing Team

Group Achievement Award

Continued

Higher Education Team
Ice Frost Ramp Test Team
Lunar Architecture Requirements Preparatory Study Team
Michoud Assembly Facility Open House Team
MSFC Constellation Level II Team
MSFC Employee Communication Team
MSFC Mail Room Team
MSFC Program Critical Hardware Move Team
NASA-Air Force Cost Model Development Team
NASA Student Launch Initiative Team
Nuclear Thermal Propulsion Trade Study Team
OGS Water Delivery System Development Team
OSAC JPL Earned Value Management System Validation Review Team
PAL Ramps Removal Team
Solar Sail Propulsion Technology Advancement Team
Space Propulsion Test Capability Team
Tribology Team
Utility Control System Team

Research and Technology Award

Mian M. Abbas, Science and Mission Systems Office
Abdulnasser F. Barghouty, Science and Mission Systems Office
Shawn Fears, Engineering Directorate
Gilmer A. Gary, Science and Mission Systems Office
Paul R. Gradl, Engineeering Directorate
David A. Gwaltney, Engineering Directorate
Alan T. Nettles, Engineering Directorate
Larry E. Newman, MILTEC/Engineering Directorate
Edward A. West, Science and Mission Systems Office

Invention of the Year Award

Anthony R. Kelley, Engineering Directorate
Paul D. Van Buskirk, Quality Monitoring and Control

Software of the Year Award

Ten-See Wang, Engineering Directorate
Yen-Sen Chen, Engineering Sciences Inc.

Patent Awards

Dean C. Alhorn, Engineering Directorate
Judy L. C. Ballance, Engineering Directorate
Joseph L. Bell, Engineering Directorate
Leo Bitteker, Los Alamos National Laboratory
Michael L. Book, Engineering Directorate
Thomas C. Bryan, Engineering Directorate
Jonathan W. Campbell, Engineering Directorate
Eric L. Corder, Engineering Directorate
Richard W. Dabney (retired)
Susan Vinz Elrod, Engineering Directorate
Thomas J. Godfroy, Engineering Directorate
David E. Howard, Engineering Directorate
Richard T. Howard, Engineering Directorate
Charles L. Johnson, Science and Mission Systems Office
Anthony R. Kelley, Engineering Directorate
John M. Rakoczy, Science and Mission Systems Office
Fred Davis Roe Jr. (retired)
Harry F. Schramm, Engineering Directorate
William Herbert Sims III, Engineering Directorate
Dennis A. Smith, Engineering Directorate
H. Philip Stahl, Science and Mission Systems Office
Jason A. Vaughn, Engineering Directorate
Kenneth J. Welzyn, Engineering Directorate

Technology Transfer Award

Robert J. Ding, Engineering Directorate
James F. Dowdy, Engineering Directorate
Cynthia K. Ferguson, Engineering Directorate
Kenneth A. Herren, Science and Mission Systems Office
Daniel E. Irwin, Science and Mission Systems Office
Gary J. Jedlovec, Science and Mission Systems Office
Tom W. Knight, UNITeS/Engineering Directorate
Kevin W. Pedersen, Engineering Directorate
Timothy L. Pickens, Engineering Directorate
John M. Rakoczy, Exploration Launch Projects Office
James A. Richard, Engineering Directorate

Dan Dumbacher to speak at Marshall Association luncheon June 27

The Marshall Association will hold its next luncheon meeting at noon Wednesday, June 27, in Building 4316.

Dan Dumbacher, director of the Marshall Center's Engineering Directorate, will be the lunch speaker. Tickets are $11 for Marshall Association members and $13 for non-members. The cost is payable at the door, but interested employees should contact Beth Shelton at elizabeth.c.shelton@nasa.gov or 544-9212 no later than noon Monday, June 25, to reserve seats.

In an effort to reduce the impact to the scholarship fund resulting from recent increased number of "no shows" (an out-of-pocket expense for the association), the organization will require anyone who makes a reservation but cannot attend to either pay the cost of their lunch or send a replacement attendee.

The Marshall Association continues to seek applications for its 2007 academic scholarships. For more information, visit http://inside.msfc.nasa.gov/announcements/ma_scholarship.html.

Rockets soar during NASA's Student Launch Initiative, University of Alabama in Huntsville takes home top honors

By Sherrie Super

For eight rocket teams from seven Southeastern universities, months of work culminated in high-flying excitement as their rockets lifted off in April and May as part of the NASA University Student Launch Initiative, hosted by the Marshall Center.

A team from the University of Alabama in Huntsville took home top honors in the competition, which encourages college students to tap their science, technology, engineering and mathematics knowledge to design and build their own rockets, complete with a science payload. As the competition winner, the University of Alabama in Huntsville team will have the opportunity — sponsored by NASA and ATK Launch Systems — to see a space shuttle launch. The Boeing Company also served as a major sponsor of the Student Launch Initiative.

The initiative provided all teams with a unique opportunity to gain practical experience in scientific research and in aerospace and engineering activities. Other participating teams were from Alabama A&M University in Huntsville; Auburn University in Auburn, Ala.; Fisk University in Nashville, Tenn.; Harding University in Searcy, Ark.; two teams from Mississippi State University in Starkville; and Vanderbilt University in Nashville.

For the students, the road to the launch was paved with other technical challenges. Along with designing and building their own rocket, they had to develop a Web site charting their progress and demonstrating proof of concept — ensuring the design was feasible and the rocket would perform as intended.

"These students took their classroom knowledge and put it to the real test," said Tammy Rowan, interim manager of Marshall's Academic Affairs Office. "Aside from the technical aspects of this competition, they had to apply other problem-solving skills, whether presenting their financial proposals, developing a budget or pooling talents among team members."

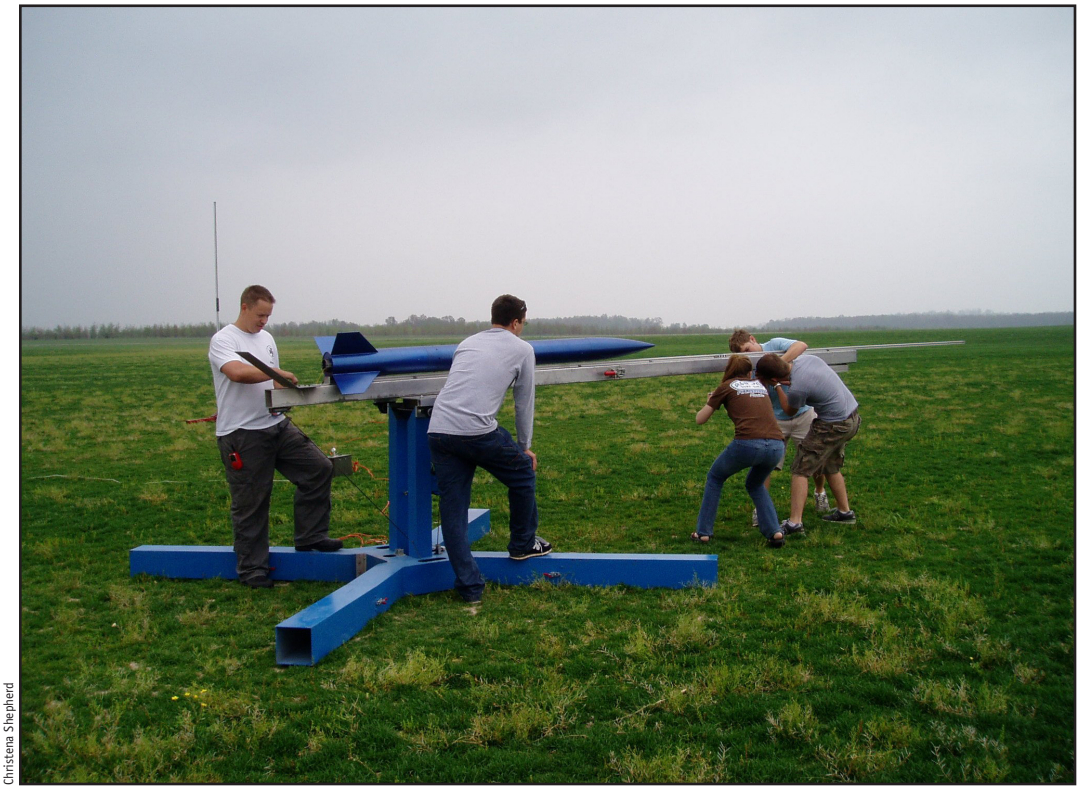
To become eligible for the project, each team submitted a proposal detailing their plans for the rocket and payload. Once selected, the teams received varying levels of project support from the National Space Grant Consortium, an affiliation of more than 550 universities, private companies and local education institutions dedicated to inspiring and training the next generation of America's space workforce.

The high point of the competition was May 5 when seven of the student teams made their way to the open fields of the Mid Tenn Turf Inc. sod farm in Manchester, Tenn., where they let their rockets soar. One team launched April 28 from Redstone Arsenal in Huntsville. Rockets were required to reach an altitude of one mile during flight and to be reusable. After the flight, each team collected data from the payload, analyzed it and reported the results to Marshall Center employees and other volunteers.

For the competition, NASA engineers and scientists evaluated each rocket design, including propulsion systems, materials used for construction, payload and safety features. To select a winner, they also considered the altitude reached, how the teams conducted formal reviews and the teams' Web site designs.

The Marshall Center also hosted a Student Launch Initiative for high school students, with the launch occurring April 28. Both Student Launch Initiative projects are managed by the Marshall Center with support from the Huntsville Area Rocketry Association.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.



Christena Shepherd

A team from the University of Alabama in Huntsville prepares to launch their rocket during the 2007 University Student Rocket Launch Initiative.

Saturn V rocket to roll to new home July 10

The public is invited to the U.S. Space & Rocket Center on Tuesday, July 10, at 9:30 a.m. to see the Saturn V rocket begin the journey to its new home on the museum grounds, the Davidson Saturn V Center. There is no cost to attend.

Marshall Center Deputy Director Robert Lightfoot will speak at the "launch" ceremony called "Rocket Roll." Marshall is coordinating the move that is expected to take four days.

The Saturn V rocket will be the main attraction in the Davidson Saturn V Center, which is scheduled to open in January 2008. The center will be a 68,200-square-foot facility that will serve as the new front door to the U.S. Space & Rocket Center.

Successes

Continued from page 1

improvement system, and we couldn't be happier," Cash added.

"Give me more speckled tanks," said Wayne Hale, Space Shuttle Program manager, referring to external tank ET-124, which received hail damage during February's severe thunderstorm that passed through the Kennedy Center Launch Complex 39 area where Atlantis was poised to lift off March 15. The storm left the tank with more than 4,000 damage sites and caused a launch delay until June. NASA managers decided to roll the shuttle from the pad back inside the Vehicle Assembly Building to repair the tank.

Those repaired areas caused portions of the tank to appear nearly white, contrasting with the orange color of the rest of the tank, thus causing the "speckled" appearance referred to by Hale.

"We've had a lot of work to do these three months and we're glad to report the external tank performed great. This was due to the hard work by repair teams after the hail storm," said Hale.

"The preliminary report is that we lost no foam in areas of interest. We lost some late, as we have on past missions, but the tank performed well, and I think this bodes well for the future," Hale added.

As for the Advanced Health Management System, the engine safety system's performance was excellent, Hale noted. "They (the engines) ran like Swiss watches," he said. The Advanced Health Management System is a modification to an existing main engine controller — the on-engine computer that monitors and controls all main engine operations — that allows a space shuttle main engine to shut down if vibration anomalies are detected. The system was installed in all three engines for the STS-117 launch, but operated in active mode only in position three — engine 2057. Engines in positions one and two operated in monitor-only mode, meaning that although data was collected, the system could not have shut down the engines.

"It's a great improvement in safety that we've been working on for years and we expect to use it on all three engines in later flights," Hale said. The Advanced Health Management System is expected to fly in active mode on all of Endeavor's main engines during the next mission, STS-118, scheduled for launch August 9.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

Kim

Continued from page 2

a very diverse group with differing priorities, and it requires communication to converge on the mission priorities.

Another priority is to enjoy doing my job and to make it enjoyable for those around me. That means treating people with respect and kindness, and meeting my commitment and doing what I say I will do. This creates an environment that avoids some of the "thorns" in life and makes it more enjoyable to work.

What is the biggest challenge you face?

Unknown unknowns! If we know that we don't know something, then we can attack it and apply resources to understand the problem. However, if we don't know what that unknown is, it is like shooting at a target in the dark. It is identifying those unknowns that is a challenge, and that is what I am being paid to do. I am being paid to figure out that I or we don't know something. It is a humbling job.

Limited and changing budget also is a big challenge. Keeping technology funds can be challenging because funding also is needed for existing higher priority flight projects.

On the personal side, how do you like to spend your leisure time?

My family is a high priority, and I do enjoy spending time with my wife of 12 years, Sonya, and my three lovely children Joelle, 8; Noah, 6; and Danielle, 2. I devote a lot of my leisure time to being a good husband and father because I want to improve in this area.

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

Landing

Continued from page 1

Kennedy Space Center, Fla.

The Atlantis crew bade farewell to the space station's Expedition 15 crew Monday, June 18, and the hatches closed at 5:51 p.m. between Atlantis and the station.

Russian flight controllers successfully fired thrusters June 18 to test the operation of the navigation computers that went offline last week, clearing Atlantis for undocking after flight controllers and mission managers were satisfied with the computers' performance.

STS-117 arrived at the station June 10, delivering the Starboard 3 and 4 truss segments to the station. The crew installed the truss segments June 11 and conducted four spacewalks to activate them and assist in the retraction of a solar array on the Port 6 truss. During the third spacewalk, the crew repaired an out-of-position thermal blanket on the left orbital maneuvering system pod.

Atlantis also delivered a new station crew member, flight engineer Clayton Anderson. He replaced astronaut Suni Williams, who is the new record holder for a long-duration single spaceflight for a woman. She arrived at the station in December with STS-116.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

Classified Ads

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

Miscellaneous

Male Siamese cat, female calico cat, indoor pets, declawed, spayed/neutered, $20 each; $30 together. 656-2965

Bianchi Virata 55cm Campy Veloce bicycle, 10 speed triple, steel/carbon, $850. 652-3809

2005 Craftsman lawn tractor, GT5000 Kohler engine, 48 inches, $1,800. 653-9222

Sears sandblasting outfit, homemade blasting cabinet, $65; outdoor lamp on post with sensor, $10. 325-2919

Computer desk/hutch, classic cherry, $100; Ryobi 9-inch bandsaw, stand. $75. 503-6773

GM Silverado/Sierra running boards and fender flairs, victory red, $50. 468-0854

Samsung 32-inch HDTV CRT with universal remote, $415; 19-inch widescreen LCD monitor, $145. 655-1986

160 GB USB 2.0 external hard drive, $75 obo; two HPLJetIII printers, parts/repair, $30. 227-5671

Atec Axis softball pitching machine, 4 dozen softballs, $1,000. 837-8030 after 6 p.m.

Bathroom vanity, American classic white, 24x19, fully assembled, $100. 534-2368

XBox 360, 20GB, 2 games (Lost Planet, Ghost Recon), 2 controllers, $450. 468-8939

36-inch Toshiba television, media console, $125 obo. 851-0192

8-foot pool table, slate top, leather pockets, accessories, $1,200. 652-2929

Antique furniture, original pieces: 1840s Victorian server, mahogany; 1860s Eastlake lamp table, walnut. 852-1726

Two "Thomas the Tank Engine" twin comforter sets, sheets, pillowcases, $25 each. 851-7406

Pair of Peavey PA speaker cabinets with covers. 16x12x48, need new speakers, $75. 655-5483/852-2438.

Two chrome wire spoked wheels, 15x7 multi-bolt pattern, $200. 773-0194

Croscill standard comforter set, plum, taupe, tan, four matching sheer curtain panels, $150. 773-0194

Whirlpool fridge, $100; Hotpoint stove, $100, Frigidaire stove, $75; Chevy motor parts. 665-4578

Blue sofa, $75; mauve sofa, $150; swivel rocker, $25; rolltop desk, $75; computer desk, $25. 534-0939/527-6898

Coffee Table, 38x38 glass top, beveled edges, walnut base, ball and claw legs, $125. 508-3408

Misty Harbor & Fleet Street ladies raincoats, 8P, $20/$25; Red Flame honeysuckle bush, $20. 655-6348

Unfinished small wooden drop-leaf table, two chairs, $100. 508-9552

GE 15-cycle washer/dryer, white, 9 months old, $400. 348-3109

Welso Force Quadra 8-station exercise equipment, 40 exercises, $200 obo. 337-0435

Yamaha PSR-175 keyboard, dust cover, stand, music holder, adapter, $200. 341-8470

Intex 18x48 frame pool, disassembled, $285; 18-foot round leaf net, solar cover, $35 each. 830-4846

17-inch aluminum wheels from 2005 Tahoe, $125; Toyota stereo, tape deck, CD player, $50. 461-9404

Two ball and claw end tables with beveled glass inset, $40; two crystal lamps, $15. 682-5418

Pistol Crossbow, 3 bolts, $25; lawn mower trailer, can deliver, $65. 325-6000

Ruger Super Redhawk, 44 magnum, rings, box, Hogue grips, $420. 379-3606

Scotts/John Deere 20hp riding lawnmower, 48-inch cut, 400 hours, $1,000. 883-4735

Two Broyhill chairs, $185 each; foosball table, $295; two headboards, $25 and $65. 683-7015

Utility trailer, 4 feet by 8 feet, sideboards, light kit, $300. 348-7146

Vehicles

2007 Toyota Tacoma PreRunner double cab, TRD Sport, white, V6, automatic, tow package, $25,500. 232-4379

2006 Lexus RX330 SUV, light green, leather, heated front seats, sunroof, 25k miles, $33,500 obo. 882-9053

2006 Chevy Cobalt, black, 4 door, leather, OnStar, satellite radio, 5k miles, $15,200. 651-7307

2005 Hyundai Elantra, blue, 5 speed, new tires, 31k miles, $9,800 obo. 503-7327

2004 Nissan Quest SL minivan, DVD entertainment system, $12,500. 881-3527

2004 Altima 2.5S, 5 speed, silver exterior, gray interior, 50k miles, $12,500. 426-5764

2003 Chevy Tahoe, low miles, lots of options, $18,500. 468-0854

2002 Nissan Pathfinder SE, green, automatic, Bose, new tires, running boards, 77k miles, $13,500. 205-529-2964

2002 White Ford Windstar SE, full power, sliding doors, VPS, 97k miles, $7,500. 325-1126

2002 Nissan Pathfinder SE, greenish-bronze, automatic, Bose, new tires, running boards, 76k miles, $13,500. 205-317-9723

2002 Kia Sedona. 233-6197

2000 GrandAm GT, 4 door automatic, leather, power windows/locks/mirrors, 118K miles, $5,500. 757-9914

2000 GMC Sonoma, 4x4, 87k miles, off-road, fully loaded, green, $9,000. 931-967-7307

1999 Chrysler Town/Country minivan, 87k miles, $7,900; 2000 VW Jetta, 78k miles, $8,400. 508-8246

1997 Chevy Pickup 4x4, V8, automatic, 75k miles, $8,500. 233-7583

1996 Honda Accord EX, black, 180k miles, $4,300. 653-9222

1995 Cadillac Seville, amethyst, 102k miles, $3,500. 881-3173

1995 Buick Park Avenue, amenities, 103k miles, $3,950. 308-0049

1992 Toyota 4Runner 4x4, V6, 5-speed, SR5 package, 105k miles, $4,750 obo. 258-0288

1991 Volvo 240 sedan, burgundy, a/c, sunroof, 139k miles, $1,800. 881-2211

1978 Corvette, silver with red interior, $11,500. 852-5628

Free

Assorted ceramic molds, you haul (Guntersville). 505-3363

Wanted

Bernina editor program. 837-6776

Dorm refrigerator. 883-2757

Small refrigerator, 3-4 cubic feet, in good condition. 682-2043

Marshall Center engineers honored at Joint Army-Navy-NASA-Air Force conference

By Lori Meggs

Several Marshall Center engineers were honored at the Joint Army-Navy-NASA-Air Force Interagency Propulsion meeting held recently in Denver.

The multi-agency group coordinates fundamental research, exploratory development and advanced development programs; promotes and exchanges technical information; and accomplishes problem solving in the areas of joint agency interest on propulsion systems used in final products ranging from rockets to satellites.

Two Marshall engineers in the Propulsion Systems Department of the Engineering Directorate won "Best Paper" awards. Mike Guidos won for his paper, "Transient Simulation Studies Utilizing the Integrated Powerhead Demonstrator Engine System Model." Tom Zoladz was honored for his paper, "Characterization of Pump-induced Acoustics in Space Transportation System Main Propulsion System Liquid Hydrogen Feedline Using Airflow Test Data."

The Liquid Propulsion subcommittee presented Doug Blackwell with a Distinguished Recognition Award for his long-term dedication to the development and successful operation of launch and space travel systems. Blackwell, a former Marshall employee, is a Marshall Center consultant with Lee & Associates in New Market.

Clark Hawk, a propulsion professor and director of the Propulsion Research Center at the University of Alabama in Huntsville, also received an award for his dedicated support to the field of liquid propulsion.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

Doug Stoffer/MSFC

From left, the Marshall Center's James Cannon, chairman for the Joint Army-Navy-NASA-Air Force Interagency Propulsion meeting, recently presented awards to Clark Hawk, a propulsion professor from the University of Alabama in Huntsville; Tom Zoladz, an engineer in Marshall's Propulsion Systems Department; and Doug Blackwell, a Marshall Center consultant with Lee & Associates in New Market.

Obituaries

Samuel D. Anderson Jr., 90, of Huntsville died June 2. He retired from the Marshall Center in 1980 as a mail clerk. He is survived by his wife, Doris M. Anderson.

Robert Bolling Stacy, 80, of Huntsville died June 9. He retired from the Marshall Center in 1981 as an engineer.

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