Space Systems Company–Michoud Operations

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Mission Success

Bulletin

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ET-120 performs in spectacular fashion

External Tank-120 shattered any doubts that it wasn't ready to fly when on October 23 it shouldered the shuttle stack load and rocketed *Discovery* and her crew into orbit.

"While all launches are special to us, this one was especially significant because of the long history of ET-120," ET Program Manager **Wanda Sigur** said in praising employees. She called Michoud's ET team a "world class aerospace workforce."

"We delivered it three times to NASA, mated it to two Orbiters three different times, tanked it twice before its final tanking for STS-120, and used it as a test article for Return to Flight prior to refurbishment – this tank went through far more than any other External Tank."

ET-120 also impressed NASA shuttle officials with its performance.

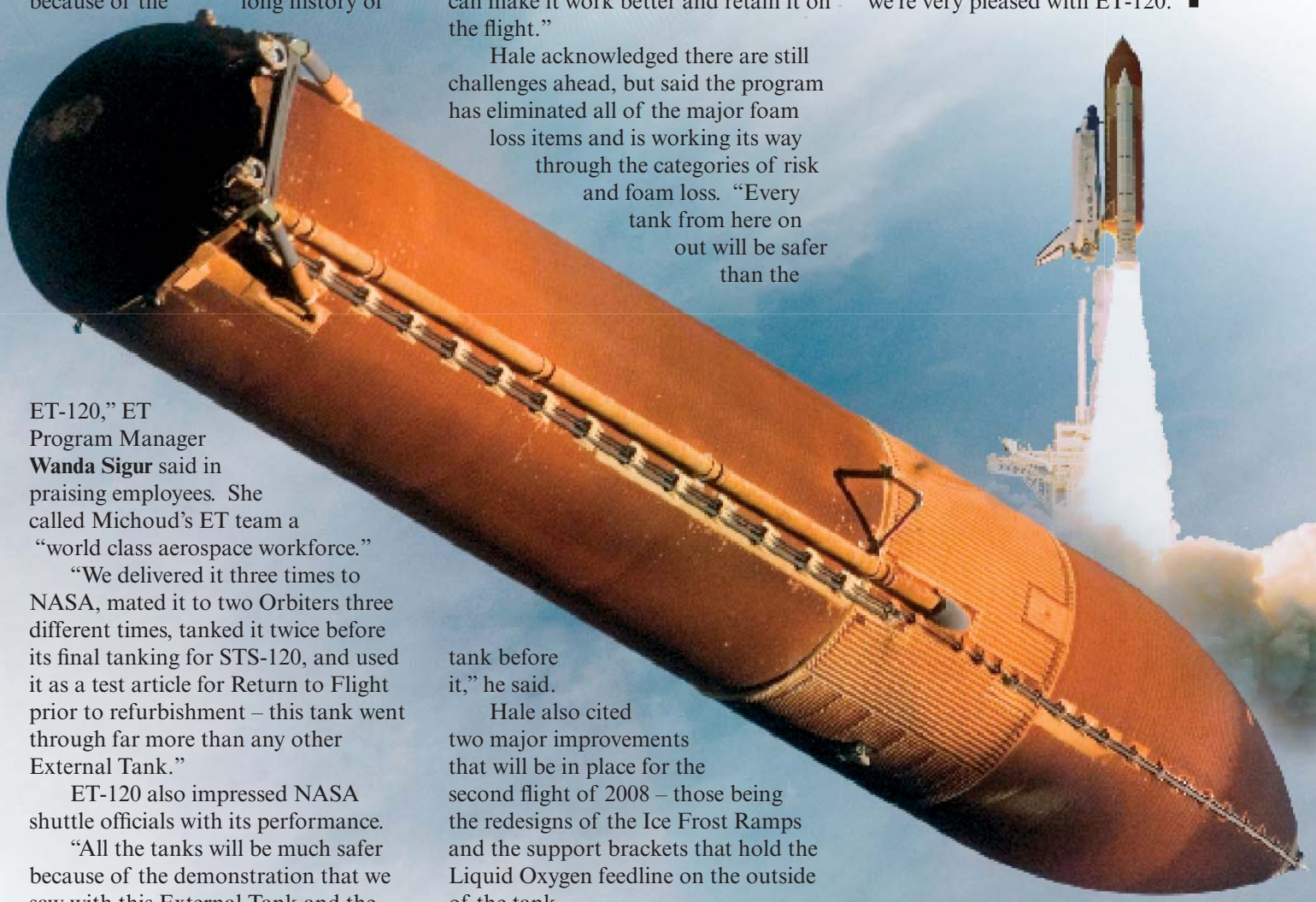
"All the tanks will be much safer because of the demonstration that we saw with this External Tank and the outstanding performance that we saw from the Ice Frost Ramps as they were modified for ET-120," said **Wayne Hale**, NASA shuttle program manager. "All in all, ET-120 was one of the great learning tools that the Space Shuttle Program has ever had, helping us to understand how foam works, how we can make it work better and retain it on the flight."

Hale acknowledged there are still challenges ahead, but said the program has eliminated all of the major foam loss items and is working its way through the categories of risk and foam loss. "Every tank from here on out will be safer than the tank before it," he said.

Hale also cited two major improvements that will be in place for the second flight of 2008 – those being the redesigns of the Ice Frost Ramps and the support brackets that hold the Liquid Oxygen feedline on the outside of the tank.

Other ET-120 systems such as structural, electrical, and propulsion also performed nominally as expected.

Ben Ferrell, manager, Operations & Integration, said there was some typical erosion and charring of foam in addition to a few observations that were in-family to recent missions. "All in all, we're very pleased with ET-120." ■



Atlantis ready to go

Taken from near the top of the Vehicle Assembly Building at KSC, the photo depicts* Atlantis *about to mate with ET-125 on November 4.* Atlantis *rolled to the pad November 10. The fourth mission of the year, STS-122 is targeting December 6 for liftoff.* Atlantis *will carry the* Columbus *laboratory to the International Space Station.

Lockheed Martin awarded $14M FAST contract

The U.S. Air Force Research Lab (AFRL) recently awarded Lockheed Martin a $14 million contract to demonstrate integrated airframe technologies for its Future Responsive Access to Space Technologies (FAST) program.

Lockheed Martin will integrate composite structures, thermal protection systems and structural health monitoring systems technologies as part of a full-scale airframe demonstration program to reduce risk in the development of an Operationally Responsive Space (ORS) capability for the nation.

Michoud Operations will lead an industry team that includes Space Systems – Denver, LM Aeronautics in Ft. Worth, and Andrews Space, Inc. in Seattle. The contract is one of three tasks in a series of ground experiment tests including key technologies for an ORS system that the Air Force lab is researching over the next four years.

"This activity is an essential effort to demonstrate low-mass composite structures technologies needed for future Air Force launch vehicles," noted **Bobby Biggs**, Michoud Operations FAST program manager. "Lockheed Martin composite cryogenic tank and structures technologies have been integrated to provide the Air Force a low-risk solution for future ORS capabilities."

According to **Ed Pendleton**, AFRL's FAST airframe experiment program manager, "The FAST program is a set of ground experiments that will advance and transition a set of technologies and support the future acquisition of a variety of reusable high speed air and space vehicles. We chose Lockheed Martin because of its expertise in aerospace composites, thermal protection, structural health management, integration, and propellant tanks."

The program represents critical enabling ground experiments for vehicle design, integration, and operation technologies.

"This is the perfect example of horizontal integration, bringing both Lockheed Martin's space and aeronautics technologies together to meet the Air Force need," said **Mike Gnau**, Lockheed Martin deputy director of advanced programs. "We look forward to assisting the Air Force Research Lab with ground experimentation and simulation to investigate the performance and operability of the FAST airframe as well as helping to design and test potential follow-on experiments." ■

Making up schedule

Technician Troy Smith prepares the ET-126 Liquid Oxygen feedline heater trough where the 17-inch feedline emerges from the Intertank prior to Thermal Protection Systems closeout. The tank will serve as the launch-on-need tank for STS-122, which is targeted for launch December 6 with* Atlantis. *Lockheed Martin is scheduled to deliver ET-126 to NASA on November 21 for immediate shipment to Kennedy Space Center. The tank is slated to fly with* Endeavour *on STS-123 in February 2008.

MS&TC delivers AEHF-2 propulsion core early

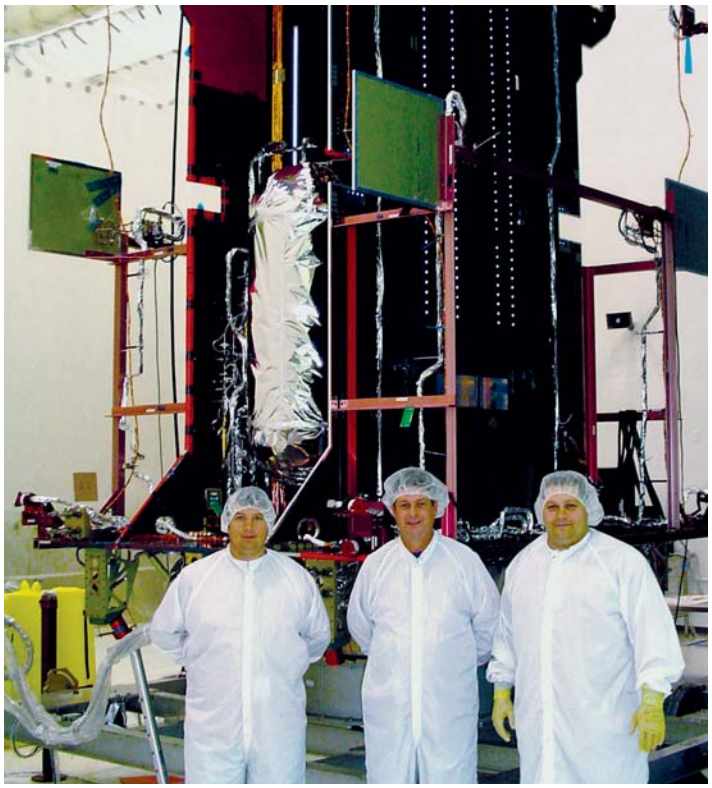
Congratulations to Mississippi Space & Technology Center (MS&TC) employees at Stennis Space Center who delivered the AEHF-2 satellite propulsion core on October 27, 18 days ahead of schedule.

Employees completed the satellite core October 27 and shipped it on November 9 to the Space Propulsion Center in Sunnyvale where it will undergo final assembly, integration, and test. AEHF-2 will launch on an *Atlas V* rocket in mid-2008.

The delivery marks a major milestone for the AEHF program, and is the first time since the doors opened at MS&TC five years ago that a core was completed ahead of schedule. In processing AEHF-2, the MS&TC team welded and installed the propulsion system, installed propulsion harnesses and the heating system, built and installed the thermal blankets, and performed high pressure testing and electrical check-outs of the system as part of the core's build-up phase.

"We've seen a remarkable improvement in our cycle time, processes, and procedures as a result of holding numerous LM21 events over the past six months, incorporating our lessons learned from AEHF-1, and making major changes in the way we do business," stated MS&TC Site Director **Laryssa Densmore.**

"The team takes great pride in meeting customer expectations and stands ready for any future challenges, including the delivery of AEHF-3 in early 2008." ■



Propulsion technicians Daniel Croney (left) and Bill Hodgins, and manufacturing engineer Robert DuPont (right) worked on the assembly of the AEHF-2 satellite propulsion core in a Clean Room environment.

Human Resources implements business partner model

In a constantly changing business environment, it is imperative that companies restructure and realign their business models to address these changes effectively. To better address business challenges at Michoud Operations, Human Resources is realigning its structure to form the Human Resources Business Partner or "HRBP" model.

The HRBP model allows HR to take a more proactive role in the organization rather than serve a strictly functional role. With HRBP, department employees will have an HR single point of contact to direct questions and discuss issues. Leaders will have an HR partner accessible each day to help them navigate through business and staff challenges.

The components of the HRBP model are derived from research into the Lockheed Martin Corporate and Space Systems Company HRBP models, through several LM21 events, and feedback from Michoud leaders and employees.

LM21 Kaizen events assigned roles and responsibilities, developed a staffing and training plan, and developed implementation and communication plans.

Dana Smith, the new HR business partner for Materiel Sourcing, talks with Director Rey Abadie about his department's business.

LM21 participant and *Orion* Manager **Melvin Redmond** noted that the most valuable take-away from the events was the input from other Michoud departments. "Each brought their concerns to the table and what the business partner could bring to the different departments. The Human Resources team continually looked to the group for ideas to better serve the Michoud family."

Among other things, HR business partners will help align human capital management to business needs and goals by offering positive employee relations strategies. The HRBP will support leaders with talent management and development, performance management, and staffing plans. Additionally, they will assist with counseling, compensation and benefits, and rewards and recognition.

By working together, employees, leaders, and HR business partners will be more involved in the success of Michoud's individual employees and the overall business. ■

NASA Safety & Mission Success Awareness Day

Remember – safety is unconditional

This year's Safety Day revolved around traffic safety with crashed cars showing what can happen when we speed or run the red light when leaving Michoud. Employees participated in roadway safety tours and motorcycle safety briefings. Some departments played Safety Jeopardy. Others watched retired astronaut Commander Eileen Collins – in a keynote safety talk broadcast from Marshall Space Flight Center – recall some of her harrowing moments while flying and what she did to prevent those experiences from happening again.

Calling all process control champions

Do you think your work is important? Millions of processes take place prior to a mission, and every one of those must be performed correctly. What you do may impact someone else farther down the line.

Initiated in 2000, the NASA Space Shuttle Process Control Focus Group (PCFG) is comprised of representatives from all shuttle prime contractors as well as NASA sites including JSC, KSC and MSFC. The group develops process control plans, shares lessons learned, and establishes and implements best practices across the shuttle community.

"The team originally started as a supplier initiative, so we've always participated," says **Mark Rohlinger**, manager, Procurement Quality Assurance and Lockheed Martin member of the PCFG. "Over the past year, we've begun to focus some of our process control activities normally performed at suppliers internally at Michoud Operations."

The mission of the PCFG is to reduce risk to the shuttle program by decreasing and/or eliminating process escapes. Process control consists of the systems and tools used to ensure that processes are well defined, performed correctly, and maintained so the completed product conforms to established requirements. It's an essential element of managing risk to ensure the safety and reliability of the program.

The first thing the PCFG accomplished was to develop a Space Shuttle Process Control Management Plan that defined key components of a process and developed standards to control those components. Additionally, LM developed its own process control procedure ET 78-1 for its suppliers. ET 78-1 is currently being edited to incorporate Michoud Operations on-site activities.

According to Rohlinger, the PCFG convenes quarterly to share lessons learned as well as develop strategies for process control. Over the past year, NASA has expanded to an agency-wide Process Control Team. That group presented to the Michoud *Orion* team in April, sharing process controls that the ET program had accomplished to date. The team also presented a series of NASA-wide lessons learned and gave an overview of mistake-proofing techniques to help "design in" process control.

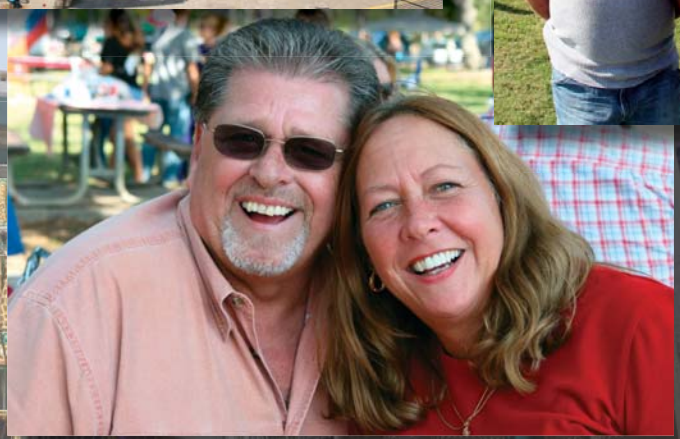
As part of its process control initiative, Michoud is looking for Process Control Champions. A certificate will be awarded to recognize an employee or small group of employees for exercising exemplary or unusually significant process control behavior. To be eligible, nominees must meet one of the following criteria: 1) a significant catch of an escape or process creep that protected shuttle program hardware, people and/or systems; or 2) proactive avoidance of an escape by implementing a preventive step. To nominate a champion, contact Rohlinger at 7-2413.

To find out more about process control, visit Michoud's resource page at: http://omega.maf.nasa.gov/indexjsp?pcType=menu&pcFile=Process or NASA's website at: www.process.nasa.gov/ To download process control videos, go to www.countdownonline.tv/ ■

STS-120 Launch Honorees pose before shuttle stack

It's always a thrill when honorees are able to see a launch, and this group did just that. Touring Kennedy Space Center prior to the October 23rd launch are front row from left: Patti Jones, Geneva Robertson, Marie Cousin, Debbie Pastoret, Debbie Benz, Carolyn Brookter, Manny Zulueta, and Becky Jenner of Arrowhead Products. Back row: Todd Surla, Molen Ursin, John Ezell, John Tonglet, Richard Hibbs, Bob Gallagher, and Mark McCandless.

Fall Festival 2007



Fontainebleau State Park — November 3

Sigur wins black engineer award

The publishers of *U.S. Black Engineer & IT* magazine have selected **Wanda Sigur** to receive one of its highest awards at its 2008 Black Engineer of the Year conference in Baltimore on February 16.

The organization will present Sigur with a "Career Achievement in Industry" award for her accomplishments in engineering.

Sigur, the ET Project vice president who also serves on Lockheed Martin's Executive Diversity Council, said she felt honored by the recognition. "I am truly touched by this award. I believe for our corporation to be technically successful in the future, we must continue to recruit the very best talent wherever we find it with a strong emphasis on under-represented areas."

Sigur began her Lockheed Martin career as a materials engineer in 1979, gaining experience in a number of engineering positions. Along the way, Lockheed Martin tapped her as team lead for the new Super Lightweight Tank project. She was promoted to director, Engineering & Technology Laboratories in 2000, served as Return to Flight deputy manager from 2003-2005, and was named ET vice president in 2005. ■

Wanda Sigur

TRANSITION TOOL CHEST

Keep up with Transition activities at Michoud by going to Gumbo and reading the latest happenings on the Transition Tool Chest.

http://maflm509.maf.nasa.gov/303x/Transition/

LMents mixer leads to successful blend

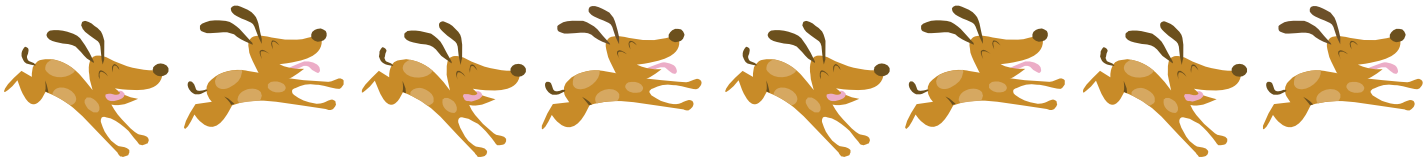
Nearly 100 leaders and zero-to-five-year employees attended the annual LMents Employee/Leadership mixer November 7. The mixer gives early-career Lockheed Martin employees a chance to learn about departments from across the enterprise in a casual networking atmosphere with managers.

Temeeka Alexander, currently an OLDP (Operations Leadership Development Program with home shop Material Science) rotating through Bob Bruce's Enterprise Improvement Team, talks with Jean-Paul Detiege, *Orion* Stress Analysis & LMents professional development chair, and John Welborn, senior manager, Quality Engineering & Reliability Assurance. ■

EVO helps dogs find homes

EVO volunteers Leonard Wiggins (left) and Tyler Spalding helped the Friends of the Jefferson Animal Shelter by bathing and walking dogs on Pet Adoption Day in October. Then they helped the shelter find owners for the dogs.

evo
Lending a Hand
EMPLOYEE VOLUNTEER ORGANIZATION



Milestones

Employees celebrating anniversaries with Lockheed Martin in December 2007

25 Years
Edward Augustus
Isolde Dagg
Neil Duncan
Marion LaNasa
David Wells

20 Years
Richard Hake
Merle Kirch
Chi Tran

15 Years
Dung Tran

10 Years
Ronald Bell
Jorge Chacon'
Marcus Cuillier
Craig Hill
Leonard Holifield
Eddie Johnson
Bryand Mcintosh
Randy Prisco
Robin Roberts
John Shaw

5 Years
James Batiste
Huy Vo

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