Space Systems Company – Michoud Operations

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Mission Success
Bulletin

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on-line
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Endeavour closes out four strong missions for 2008; five flights on tap for 2009

Endeavour landed safely on November 30 at Edwards Air Force Base, California after a mission that saw the STS-126 astronauts struggle to make a new water recycling system work and wrestle with a stubborn Solar Alpha Rotary Joint that positions the solar arrays.

For Michoud employees, however, the joy and satisfaction came from the External Tank's performance at liftoff and ascent on November 14 into the clear Florida skies. "The tank looked phenomenal," observed ET Program Manager **Mark Bryant**. "ET-129 really performed great."

Bryant listed only three small foam losses: on Intertank acreage forward of the Liquid Oxygen feedline fairing; on Liquid Hydrogen (LH2) tank acreage just aft of the "+Y" bipod; and adjacent to the Station 1528 Ice Frost Ramp on the LH2 tank – all consistent with previous flight performance.

During a pad walk-down post-launch, technicians also discovered topcoat and small pieces of foam that had adhered to the gaseous oxygen vent seal, again within Michoud's performance base.

Bryant noted that **LeRoy Cain**, who chairs the Mission Management Team (MMT), said of ET-129. "This is just flat amazing." Subsequently, the MMT cleared *Endeavour* for re-entry with no need for a focused inspection on Flight Day 5. Cain said the Orbiter was easy to clear for re-entry because it was so clean.

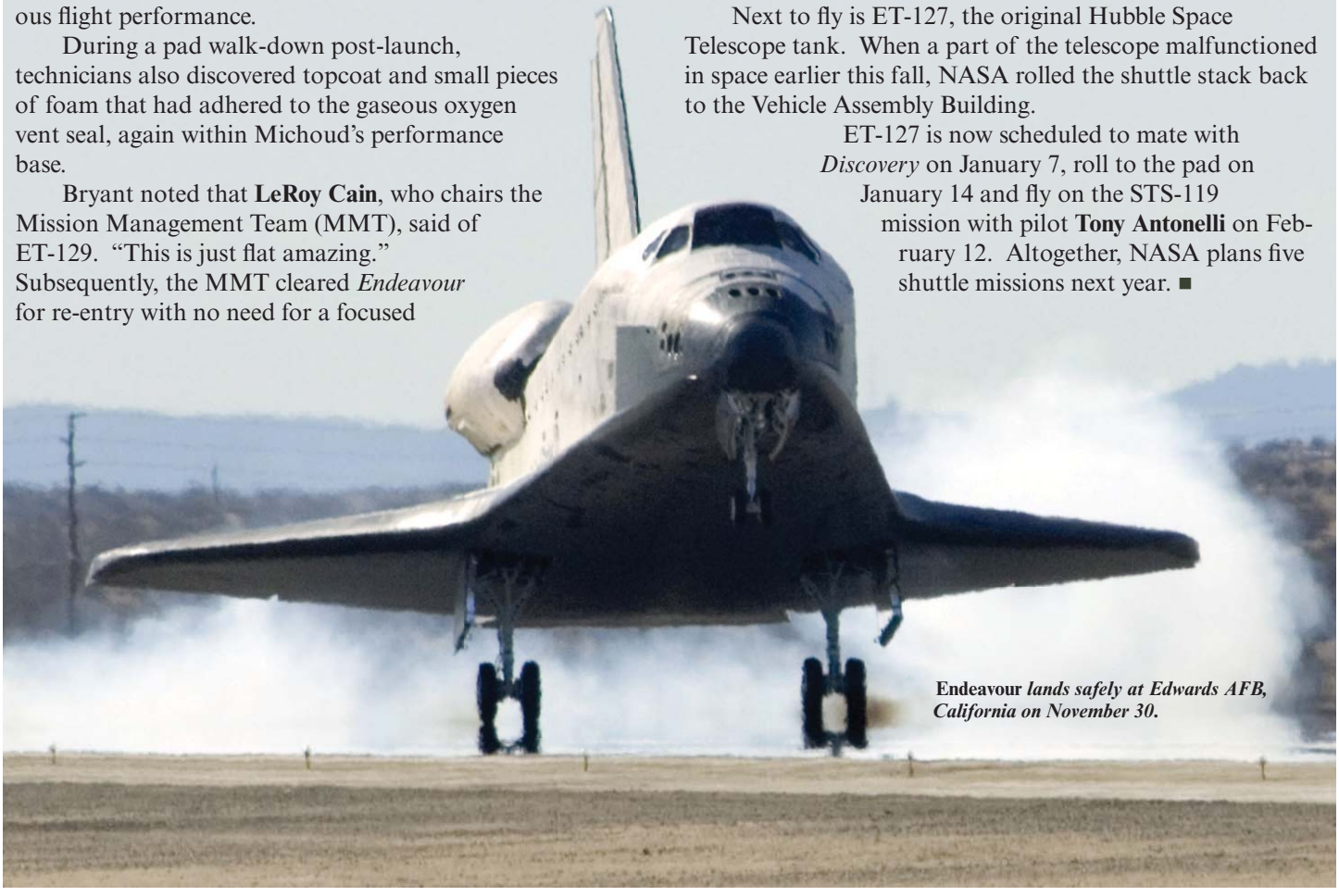
"LeRoy asked me to give kudos to our workforce; he was that pleased with the tank's performance, hence the condition of the Orbiter," Bryant said.

In a post-launch performance review one week after liftoff, observers noted that the ET electrical and propulsion systems performed as expected pre-launch and post-launch. The structural and Thermal Protection Systems also performed nominally post-launch. That assessment will be finalized in a full imagery review during an L+30 day report.

ET-129 joins three other tanks this year that each flew on the first day of their launch windows – ET-125 on February 7, ET-126 on March 11 and ET-128 on May 31 – quite an accomplishment.

Next to fly is ET-127, the original Hubble Space Telescope tank. When a part of the telescope malfunctioned in space earlier this fall, NASA rolled the shuttle stack back to the Vehicle Assembly Building.

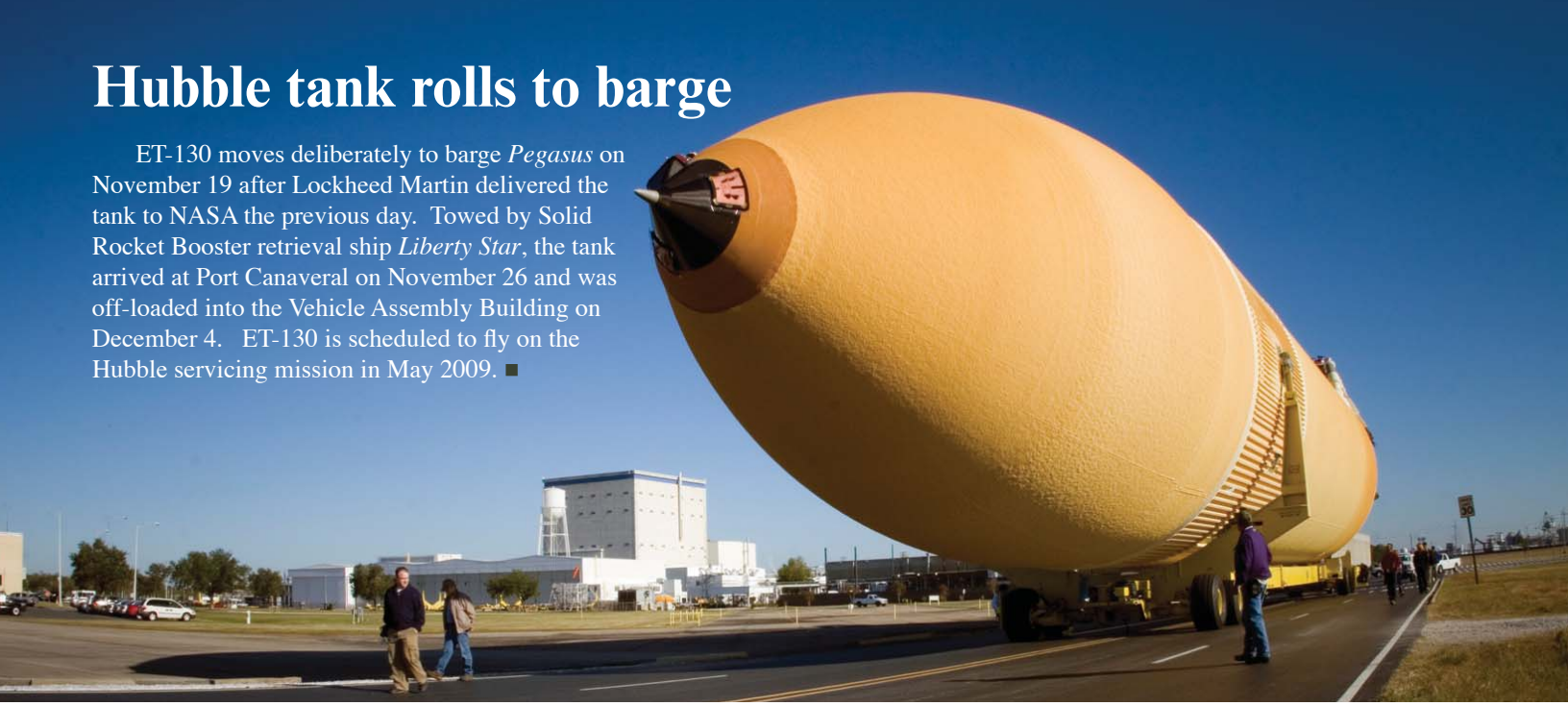
ET-127 is now scheduled to mate with *Discovery* on January 7, roll to the pad on January 14 and fly on the STS-119 mission with pilot **Tony Antonelli** on February 12. Altogether, NASA plans five shuttle missions next year. ■



Endeavour *lands safely at Edwards AFB, California on November 30.*

Hubble tank rolls to barge

ET-130 moves deliberately to barge *Pegasus* on November 19 after Lockheed Martin delivered the tank to NASA the previous day. Towed by Solid Rocket Booster retrieval ship *Liberty Star*, the tank arrived at Port Canaveral on November 26 and was off-loaded into the Vehicle Assembly Building on December 4. ET-130 is scheduled to fly on the Hubble servicing mission in May 2009. ■



External Tank Completion Plan Update

Milestones	Event Date	Description
1	April 25, 2008	Base Incentive
2	May 31, 2008	STS-124 launch / landing June 14
3	July 10, 2008	ET-127 delivery
4	August 6, 2008	ET-129 delivery
5	November 14, 2008	STS-126 launch / landing November 30
6	November 18, 2008	ET-130 delivery

Bryant's first launch as ET program manager

Tradition calls for a cut necktie whenever someone serves their first time on console at Kennedy Space Center, and new ET Program Manager Mark Bryant shows off his severed necktie.

Mark Bryant thought he would be "horribly nervous as lead representative for Lockheed Martin on the Mission Management Team" (MMT) in his new role as ET program manager during the STS-126 launch. But Bryant said his predecessor, **Wanda Sigur**, was there from Denver and shadowed him during the long day.

"Wanda checked in with me often, and actually I wasn't that nervous. You've trained for this. You have great people around you doing their jobs. Chief Engineer **Jeff Pilet** was, as usual, on top of things and kept me apprised of the tank's condition and the Launch Support team. The Mission Support Room and Huntsville Operations Support Center were also on their game. When MMT Chairman **LeRoy Cain** conducted the roll call before coming out of the 9-minute hold, he called us first and I was able to confidently say, 'Lockheed Martin is GO for launch.'" ■

ET-124 Team wins NOVA

Jim Feeley (right), shown here with Lockheed Martin Chairman Bob Stevens, represented the ET-124 Hail Damage Tank team at the NOVA Awards, the corporation's highest honor. After seeing the hail storm damage, some thought the tank would never fly. The team fixed the tank, and it successfully flew June 8, 2007.

Lockheed Martin rated "Excellent" in past Award Fee period

In evaluating Lockheed Martin's performance for the Award Fee period April 1 to September 30, NASA has assigned the company a rating of Excellent with a score of 94.

ET Vice President **Mark Bryant** called the score "an outstanding one, with good performance from all employees. We certainly made the case to the customer how we executed through the entire period. We do realize though that we have some continuing areas of performance that the customer has identified, and we will focus on those."

The Areas of Emphasis for the period included the following:

- developing and implementing ET producibility enhancements to support the shuttle manifest
- retention of critical skills
- timely reporting of schedule impacts
- effective implementation of transition activities associated with the Manufacturing Support & Facilities Operating Contract (MSFOC)

In the evaluation NASA listed a number of Significant Strengths and only one Significant Weakness.

Among the Significant Strengths, NASA noted that Lockheed Martin:

- proactively recognized the challenges of meeting the manifest by initiating and incorporating production enhancements in both design and process. By "working less" and "working smarter," substantial reductions in tank production times have been realized.
- acted proactively in engaging the workforce to keep employees energized and motivated and has done an excellent job in identifying critical skills and implementing a multi-phased plan to retain those skills for ET completion.
- provided support in many different areas of transition and retirement, and that the Transition Property Assessment was completed ahead of schedule.
- performed in an excellent manner on ET-128 with all systems performing nominally at launch on May 31 – and that Ice Frost Ramp, new titanium Liquid Oxygen feedline support yokes, engine cut-off sensor, propulsion systems and producibility design changes met all expectations.
- delivered ET-127 and ET-129 over the course of 28 days to support the Hubble repair mission. ET deliveries at this rate had only been executed early in the shuttle program, well prior to recent safety and debris requirements.

Among Strengths in the report, NASA noted that:

- Lockheed Martin aggressively attacked and resolved several supplier flight hardware issues – listing for example suppliers of propulsion lines, feedline brackets and phenolic isolator.
- the downward trend in Non-Conformance Documents per tank can be attributed in part to producibility initiatives implemented in the Vertical Assembly Building and Final Assembly.
- in terms of safety, Lockheed Martin's Day Away from Work rate was 0.27, which is significantly lower than the industry average of 39.7, and that no OSHA or NASA reportable incidents occurred during the period.

The Significant Weakness noted that three barrymounts had been installed on ET-127 before a quality inspector noticed an orange dot on the hardware indicating the parts were non-production units. Lockheed Martin investigated and found that the boxes and acceptance tags were not clearly marked "NPU." Michoud Operations removed and replaced the NPU hardware and took immediate action to prevent recurrence.

In terms of the Michoud Operations & Maintenance (MOM) contract, the final MOM Award Fee evaluation period has been moved to a different cycle to coincide with contract transition, and will be announced later. ■

McBain named ET project deputy

Lockheed Martin has appointed **Mike McBain** as deputy project manager for the External Tank Project, effective December 1. He will report to **Mark Bryant**, vice president, External Tank Program.

McBain will support and assist Bryant in managing the successful execution of all aspects of the ET Prime Contract, including on-time deliveries, cost and technical performance.


Mike McBain

McBain brings a wealth of knowledge and experience to his new position, having held various leadership roles in Materials and Processes, Composite Research and Development, and TPS Verification & Validation during Return to Flight.

Previously, he served as manager of Materials Science. McBain received a Mechanical Engineering degree from the University of Illinois and joined Lockheed Martin in 1986. ■

Lockheed Martin pursues Loaned Labor concept

What comes next for employees after ET fly-out?

One possibility is Michoud's Loaned Labor Program, which is managed and funded in a similar way to production programs like ET and *Orion*. Rather than flight hardware, human skill sets are the end product here.

Loaned Labor matches the skills and talents of employees with opportunities outside the corporation.

One of several programs being pursued for new work, Loaned Labor is attempting to provide an alternative to downsizing. Through the program, Michoud Operations has partnered with the State of Louisiana and other local industry leaders to try and preserve the experienced workforce here.

"The biggest challenge for Lockheed Martin is to be cost competitive from a pricing perspective," according to **Judy Russell**, Loaned Labor project manager. "There's plenty of opportunity for job placement – from project management, estimating, engineering design, IT, to touch labor like welding and fabrication. The jobs are there when you explore industries like construction, oil and gas, shipbuilding, and defense here in the Gulf Coast region. It's just a matter of finding a happy marriage with our workforce and the work out there."

Russell knows it may be a challenge placing employees because Lockheed Martin's rates with benefits factored in are higher than rates on the street.

"Currently, Michoud is setting a precedent – if even a small part of Loaned Labor works," she says, "then that could create the business model to be utilized throughout the corporation."

When implemented, program goals include Lockheed Martin keeping its workforce intact to help bid and prepare for future work with *Ares V*; employees keeping their benefits and pensions intact; and the industry partner filling a need with qualified Michoud personnel.

"Using resources in Business Development, HR, Contracts and Legal, as well as Estimating, we put together a proposal for Loaned Labor. It's a team effort where we're working to build the future of Lockheed Martin here at Michoud." She emphasizes the partnerships are with multinational corporations who understand the need for a skilled workforce and can navigate the legal and logistical challenges behind Loaned Labor.

"We've had many conversations about the new program with corporate, Space Systems, and our Michoud leadership, and everyone we have briefed calls the program innovative and has encouraged us to proceed."

A recent survey showed that 85 percent of Michoud employees wish to stay in the Greater New Orleans area and to remain with Lockheed Martin. To participate in the Loaned Labor program after your ET completion date, send a resume to Judy at Building 101, 1st floor, Column EC28. ■

Longtime employees thrilled to see *Endeavour* launch

On Friday night, November 14, a large group of Michoud employees gathered under the stars at Kennedy Space Center to watch *Endeavour* and ET-129 blast off. This was the first group of employees to see a launch since Lockheed Martin received NASA approval to tap Award Fee funding and send employees who had never seen a launch before in person to KSC.

Fingers crossed, the 103 veteran employees waited nervously as the countdown proceeded. Then the night erupted into a ball of light as *Endeavour* lifted off.

"It was awe inspiring with the full moon rising behind the shuttle – just unbelievable," recounted **Glen Gilmore**, a Facilities mechanic who has worked 23 years for Lockheed Martin.

Vickie Schmersahl, a Facilities supervisor and 25-year employee, said she prayed for the astronauts and their families. "I was feeling such pride to be a small part of this wonderful program."

"It sent chills down my spine – very exciting," commented Communications secretary **Lorri Manning**, a 31-year employee.

The Orbiter roared into the crystal clear sky at 7:55 p.m. Some spectators missed Solid Rocket Booster (SRB) separation two minutes into flight because smoke from lift-off obscured the SRBs. But then *Endeavour* emerged from the other side of the haze, and those on the ground could watch the shuttle until about seven minutes into flight.

"I've been on the External Tank Project since 1980 and to this very day, when the Shuttle Main Engines & SRBs fire and the shuttle lifts off the pad, I still get chills, said planning manager **Steve Enxing**.

Likewise for Facilities engineer **Will Henderson** who remembers being filled with pride, patriotism and optimism watching liftoff.

Russell Arthur with Space Flight Awareness said the 103 joined 17 Launch Honorees so altogether 120 Michoud employees watched the launch. Plans are to take 52 more employees to the next launch, STS-119, on February 12.

"It was nice of the company to do this," said pipefitter **Gilbert Atilano**, a 24-year veteran. ■

Several of the employees who saw their first launch at KSC gathered back at Michoud for a photo – kneeling from left: Tony Flot and Mike Parquet. Second row: Lorri Manning, Paula Frazier, Richard Treat and Gilbert Atilano. Third row: Glen Gilmore, Vickie Schmersahl, Will Henderson and Paul Herrin.

Employees take control of their careers at job fairs

An Open House/Job Fair in October at the Career Transition Center across the street on Old Gentilly Road gave employees first affected by the ET workforce reduction a glimpse into opportunities across Lockheed Martin Corporation.

Hiring managers discussed potential job openings with 241 employees who attended the fair. Since then, 17 of the 42 employees affected by the October layoff, or 41 percent, have been able to find new jobs with assistance from the Center.

"The employees found resume and cover letter writing, interviewing techniques, networking and computer workshops most useful," said Human Resources Manager **La Wanda Moorer-Spencer**.

Open daily from 8 a.m. to 5 p.m. until ET contract end, the Center also assists with unemployment benefits, health care options, Social Security and veterans' benefits and financial planning.

Lockheed Martin, the Louisiana Workforce Commission and Drake Beam Morin, a career services agency, developed the concept for the Center, which opened September 29.

Next, the Center hosted the Training & Education Fair on November 6, and 238 Michoud employees attended. Sponsored by Human Resources and the Louisiana Workforce Commission (LWC), the fair provided employees with training opportunities both on-site and off. In addition, employees were able to request training that will help them meet their transition needs.

LWC members assured employees of the State's commitment to support their transition needs by ensuring that workers leaving the ET Program have the necessary training to find their next job – within the State of Louisiana.

Representatives from 10 local community colleges, technical schools and universities discussed degree and certificate program training with employees interested in welding, electrical, machining, pipefitting and other vocations. Each explained schedules and financial aid options.

"Plan, do your homework, complete your self assessment and résumé," suggested **Brian Keating**, project manager for an LWC branch. "Be proactive in seeking training and educational prospects before your ET Completion Dates because sometimes the window of their opportunity is small, and there are often prerequisites, which could delay the process."

Carlie Gervais provides Joe Bernhardt with a schedule for the upcoming curriculum at Nunez Community College in St. Bernard Parish.

A preferences survey identified the training that employees wanted. HR tabulated the results and is assessing feasibility, funding approval and scheduling options with state and school representatives. Employees pinpointed Green Belt, SAP, Project Management, ProE, Program Management, NDE Composites, CAD and Statistical Process Control. Employees who completed the survey will receive a response to their training requests and notification of next steps.

"I'm glad to see over 10 percent of our employees proactively shaping their career options post-ET," explained **Michael Neff**, manager, Training & Development. "Early planning and action will pay off in future success."

For more information about jobs or training or education, contact Neff at 7-2184 or visit the Transition Tool Chest on Gumbo at http://maflm509.maf nasa.gov/303x/Transition/ ■

Two receive Snoopy awards

Astronaut **Lee Morin** presents Silver Snoopy awards to **Robert "OP" Landry** (left) and **John Singelmann** on October 23.

Landry received his award for outstanding performance as a millwright repairing production rotating equipment in support of the ET Project.

Singelmann was cited for his attention to detail and for being extremely safety conscious as the lead-prime mover in the movement of ET flight hardware. ■

Safety winner

James Cousin

James Cousin in Major Weld is the October grand prize winner of the Safety department's "Are you Safe? Doing it Safely" campaign.

Cousin received the award for discovering a Roll Ring finger clamp with plates in place and loose in the production weld area. Recognizing that the plate was not attached and could have fallen, Cousin quickly alerted his supervisor, avoiding a potential injury to another employee and damage to flight hardware.

Billie Hill and **Cyril Richard** were the October bi-weekly winners. ■

Doll receives NASA's Star award for ET-120 redesign

External Tank-120 played many interesting roles in the shuttle's return to space following the *Columbia* accident; engineer **Jimmy Doll** made sure its last assignment aboard the STS-120 mission was both successful and satisfying.

NASA originally designated ET-120 as the first Return to Flight (RTF) tank for the STS-114 mission in 2005 and subjected the tank to two tanking tests on the launch pad at KSC. During propellant loading, ET-120 developed Thermal Protection Systems (TPS) cracks, which were relevant to ongoing debris investigation and mitigation efforts.

Michoud engineer Jimmy Doll (right) accepts the Star Award from NASA Space Shuttle Manager John Shannon.

As a result, ET-120 was replaced by ET-121 on STS-114. With the loss of foam from the Protuberance Airloads Ramp during the ascent of STS-114, NASA returned ET-120 to Michoud shortly after Hurricane Katrina. Michoud engineers and technicians removed the foam in problematic locations and dissected it to determine cause and corrective action.

The knowledge gained by examining ET-120 would prove invaluable for redesign work post-RTF. However, replacing the missing TPS still required new foam applications.

Doll led a team that quickly assessed restoration work needed on ET-120, and through a series of reviews and Technical Interchange Meetings with NASA received approval for the work. The team completed major design changes and restoration in just over nine months, compared to almost a year for most RTF tanks.

The changes included the switch to BX-265 as the base foam for Ice Frost Ramp pours, a more robust solution less prone to cracks and delaminations that greatly reduced debris potential and increased overall safety.

Following thousands of miles logged at sea and repeated propellant tankings, ET-120 finally flew aboard STS-120 in October 2007, some 2½ years after its first flight attempt. Visual imagery from the ascent demonstrated the design change's performance as the Ice Frost Ramps remained in pristine condition. As a result, the redesign has been used on subsequent tanks.

For his efforts on ET-120, Doll recently received the NASA Star Award. ■

Michoud engineers receive Exceptional awards

On November 19, five engineers – **Dina Nguyet** (from left), **Steve Kair-Chuan**, **John Quintini**, **Bob Meibaum** and **Andrew Pratt** – accepted awards for Exceptional Engineering in support of Space Systems operational excellence.

Nguyet, Kair-Chuan, Quintini and Meibaum comprised the EAGLE development team, testing and delivering the next generation ET launch support software. NASA funded the work and has been pleased with the results. EAGLE is now used for ET propulsion launch support at Marshall Space Flight Center, by Lockheed Martin management at Kennedy Space Center and in the Mission Support Room at Michoud.

Pratt has performed his duties with distinction and volunteers for additional assignments that are necessary to program success. He recently served as team lead for the "Path to *Orion* Composite Fabrication" Operational Excellence event. ■

Over 3,500 people had fun and relaxed at Fall Fest this year. The game booths raised $3,820, which was presented to Children's Hospital on December 8.

NASA honors ECO System team members

Ed Mango (right), NASA deputy director of Launch Vehicle Processing at Kennedy Space Center, and Vice President Manny Zulueta congratulate Ken Barkman of the Engine Cut-Off (ECO) System team on November 20. Mango and Zulueta recognized 100 people on the team during the awards. Kudos also go to KSC Operations and Huntsville Technical Operations team members. False readings from the ECO sensors twice delayed the STS-122 launch in December 2007. The team played a critical role in the ECO sensor investigation and feed-through connector changeout. STS-122 successfully launched February 7 of this year.

Honorees pose before STS-126 shuttle stack

Selected for their outstanding work performance, Launch Honorees spent several days at Kennedy Space Center. The group included from left: Tommy Barrett, Dameon Bickham, Mike Huff, Horace Brookter, Rusty Carpenter, Glenn Cotty, Kevin Davis, Craig Clauss, Herb Guynes, Donna Hutson, Jerry Pax, Chris Bourgeois, Tim Bordelon, Jack Burks, Gene Flores, Frank Gause and Vince Conese (Supplier – AMI Metals).

Milestones

Employees celebrating anniversaries with Lockheed Martin in December 2008 & January 2009

35 Years
Cheryl Bourgeois
Pam Ramirez

30 Years
Mario Arthur
Troylynn Bass
Jeff Beale
Conrad Carriere
Antoine Dupre
Ram Goswami
Karl Keys
Tommy McCain
Shelly O'Neal
Dane Pearl
Eric Rabalais
Dale Shorba
Dennis Silbernagel
Hal Simoneaux
Lee Stewart
Dan Swords

25 Years
Mark Arthur
Harold Barrios
John Eaton
Norm Elfer
Kevin Gauley
Dave Goga
Kimberly Hammers
Charles Kirch
Oscar Lewis
James Stephenson
Todd Surla
Glen Wadge
Michael Zimmerman

20 Years
Judy Biancone
Susan Daigle
Keith Domingue
Edward Dragon
Gregory Lee
Johnny Seither
Dianne Turner
Cathy Voelkel

15 Years
Benny Acosta
Jeff Henton

10 Years
Cassandra Bolden
Jeremy Bordes
Marc Moody
David Petry
Raymond Phebus
Delton Rodriguez
Ryan Rudewick

5 Years
Jed Aucoin
Thomas Bernard
Dominick Bertucci
John Bosnyak
André Charbonnet
Jean-Paul Detiege
Jeffrey Dunnam
Michelle Evans
Len Fortenberry
Patrick Garrity
Dale Heintzelman
Gregory Huston
Wesley Lawler
David LeBlanc
Nguyet Lien
Anabel Salinas
Michael Smith
Jonathan Swift
Melanie Wallo
Leonard Wiggins
Alva Williams

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