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STS-122 set to launch February 7

Michoud team installs upgraded ECO system wiring connector on ET-125.

Space Shuttle *Atlantis* is scheduled to launch February 7 after the shuttle passes its final reviews and NASA is comfortable with the fix to the engine cut-off (ECO) system connector. *Atlantis* tried to launch twice in December but both times faulty ECO system readings canceled the attempt.

Brian Knipfing of the Kennedy Space Center (KSC) Operations group led the Lockheed Martin support on the NASA troubleshooting team. As a result of the team's findings and direction, Lockheed Martin sent a 43-person contingent to KSC on December 26 to coordinate with personnel there and remove and replace the external component of the ECO system connector on ET-125.

Sent to Marshall Space Flight Center for testing, the removed connector showed signs of circuit instability and demonstrated similar performance to that seen during

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The crew removed and replaced the ECO system external connector at its closed-in work site alongside ET-125 and next to the plus side Solid Rocket Booster on Launch Pad 39A.* Atlantis *is to the left.

NASA extends External Tank contract

NASA signed a $465.7 million contract modification with Lockheed Martin Space Systems to extend and align the Space Shuttle External Tank production contract with the shuttle launch manifest through its retirement in 2010.

The modification supports the agency's priorities of safely flying the shuttle, completing construction of the International Space Station, and NASA's long-term plan of returning astronauts to the moon and beyond.

The cost plus award fee/incentive fee contract will come to an end on September 30, 2010 and brings the total value of the contract, awarded in October 2000, to $2.94 billion. The contract calls for the delivery of 17 External Tanks to NASA.

"Of the 17, two tanks have flown (ET-123 and ET-124), two are at Kennedy Space Center being processed to fly (ET-125 and ET-126), 11 more are scheduled to be delivered – from ET-127 through ET-137 with ET-138 listed as a manufacturing article, and ET-122 will remain at Michoud," explained **Brad Cartwright**, director, Contracts.

Work under the contract will be performed at Michoud, Marshall Space Flight Center, and Kennedy Space Center.

"This extension aligns the ET contract with the current flight manifest," said **Wanda Sigur**, vice president, ET Project. "There's a lot of work to do to finish this contract and these tanks, and I know our ET team can do it safely while ensuring Mission Success." ■

Chip Jones named Michoud Chief Operating Officer

Chip Jones

Marshall Space Flight Center Director **Dave King** has appointed **Chip Jones** as chief operating officer (COO) for the Michoud Assembly Facility. A familiar face to Michoud, Jones served as ET resident manager from 2004 to 2005, overseeing the ET's manufacturing activities. As COO, he will be responsible for day-to-day management and operation of the 832-acre facility, which employs more than 4,000 workers.

Besides being responsible for the design, manufacture, and assembly of the External Tank, Michoud also has been selected to support the Constellation Program for NASA's exploration missions to return to the moon and travel beyond. Work has already begun for the *Orion* crew exploration vehicle, while planning is under way for the *Ares* launch vehicles, all part of the Constellation Program.

"Jones will be responsible for ensuring that NASA is well-positioned to support large-scaled manufacturing necessary for all those current and future launch systems," King said. "Varied technical expertise and solid business acumen, combined with his thorough knowledge of NASA's mission to return to the moon, make him the ideal person to serve in this position."

Previously, Jones managed manufacturing and assembly for the *Ares I* Upper Stage, and was responsible for delivery of all development, test, and flight hardware for NASA's newest launch vehicle, which will send crew members on board the *Orion* crew launch vehicle into space.

An electrical engineer, Jones joined NASA in 1981, working on robotic and computer-controlled welding systems. Interested in metals development, testing, and welding, he led the use of robotic welding for International Space Station structures and development of Friction Stir Welding for the ET.

He holds an electrical engineering degree from the University of Alabama in Huntsville and has completed graduate studies in control systems. ■

STS-122

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tanking. NASA and Lockheed Martin engineers had hoped for this result, meaning they were able to replicate the problem.

While testing continued at MSFC, **Kenny Reaume** of KSC Operations led the effort to prepare upgraded connector assemblies at KSC. Coordinating with United Launch Alliance (ULA), the crew worked alongside ULA technicians who soldered the connector pins to the socket to reduce motion between the pins and socket that might cause an electrical failure. The ECO system connector routes signals from sensors inside the Liquid Hydrogen Tank to shuttle computers to detect excessively low fuel levels that might impact the ability of the vehicle to reach the required orbit.

"We crimped the pins to the wire, then ULA soldered the pins to the socket, then we completed the connector assembly process," explained **Mike McGehee** who headed the Michoud team along with **Eugene Sweet** and **Mike Holcomb**.

The wires have been spliced and tested on ET-125, McGehee said. At press time, the Michoud and KSC Operations team was busy reinstalling cable tray covers and performing a series of Thermal Protection System closeouts. That includes several foam pours and sprays to finish the job. United Space Alliance (USA) will perform the final acceptance testing upon completion of the foam closeouts.

Out on the launch pad at Kennedy Space Center, technician Ray Clark of Production Operations examines ET-125's internal ECO system connector socket.

The team is also performing the same connector task on ET-126, which now is scheduled to fly in March with *Endeavour*. However, ET-126 is in the Vehicle Assembly Building at KSC, not out on the launch pad where ET-125 stands. NASA recently mated the Solid Rocket Boosters to ET-126.

McGehee said the team has already removed foam, cable tray covers, and the cover plate to expose the ET-126 connector. Concurrently, technicians are soldering the pins to the new connector socket to be used on ET-126. The team will continue working on ET-126 into February, in conjunction with USA Orbiter processing.

"This team has put forward an extraordinary effort in performing an intricate, out-of-position modification on the launch pad," McGehee said. "We're proud of the hard work and dedication that they continue to display." ■

STS-124 crew visits their tank, ET-128

In December, STS-124 astronauts inspected their tank, ET-128, that is scheduled to fly crew members into orbit later this spring. Clockwise from bottom left: **Ken Ham** (pilot), **Akihiko Hoshide** (mission specialist), NASA Resident Manager **Pat Whipps**, **Mike Fossum** (m.s.), **Ron Garan** (m.s.), NASA's **Steve Holmes**, **Karen Nyberg** (m.s.), **Butch Wilmore** (ET-assigned astronaut), and **Mark Kelly** (commander).

Also connected to ET-128, a team of NASA technical experts converged on New Orleans earlier this month to review the final certification of newly designed ET-128 hardware – Liquid Oxygen titanium feedline support brackets and Liquid Hydrogen Tank Ice Frost Ramps -- which are in the process of being implemented on the tank. ■

NASA breaks ground for new R&D building

This rendering (right) depicts the concept for a new 120,000-sq.-ft. Research & Development Administration Building to be constructed at Michoud. The building, to be completed in December 2010, is funded by the state of Louisiana, through the University of New Orleans Research & Technical Foundation and the La. Office of Economic Development, as part of a NASA partnership.

Turning the first shovelfuls of dirt at the groundbreaking ceremony December 18 are from left Sheila Cloud, NASA's Michoud transition director; then La. Governor Kathleen Blanco; Robert Lightfoot, deputy director, Marshall Space Flight Center; and Michael Olivier, then La. secretary of Economic Development.

Taking it to the top

Earlier this month, Transportation & Handling carefully lifted the ET-129 Liquid Oxygen Tank/Intertank combination up into Cell A where it will be mated with its Liquid Hydrogen Tank. NASA hopes to launch at least five Space Shuttle flights this year. If so, ET-129 would be the fifth one in 2008.

Orion team keeps making steady progress

The fourth quarter of 2007 kept the *Orion* team busy. Having completed the Systems Definition Review in August, the team is finalizing required development activities for designing and building the first *Orion* units. The group released development drawings for the Crew Module rings, barrel panels, longerons, and forward bulkhead; and the vendor completed final machining of the Crew Module forward bulkhead development article for this month.

In November, *Orion* completed the first development weld on the recently repaired Universal Weld System (UWS) in the National Center for Advanced Manufacturing (NCAM). Damaged during Katrina, the UWS repair and check-out activities represent an important achievement for NCAM and *Orion*, and the kick-off weld demonstrated the excellent working relationship between NCAM and *Orion*. The UWS machine will be used to weld the first four Crew Modules, and to meet *Orion* needs, the State of Louisiana and NCAM have already committed to the procurement of a second UWS, scheduled for delivery in late 2009.

Another important milestone reached in December was the successful completion of the first periodic technical review (PTR1) at Michoud. Representatives reviewed major work products for Ground Test Articles (GTA) for the Crew Module, TPS, and Service Module and recommended the design to proceed. This decision clears the way for meeting the first production weld on the Crew Module GTA in May 2008.

Requirement and vehicle configuration changes have increased the *Orion* work scope at Michoud. The scope increases stem from new requirements in materials and processes, the change to an Encapsulated Service Module, and the addition of an Alternate Launch Abort System.

This month the *Orion* team participated in another PTR1 design and requirements review designated for three flight test articles: PA2, a pad abort test; and AA2 and AA3, ascent abort test articles to be launched on a NASA booster. The launch abort system atop the *Orion* capsule will be capable of pulling the spacecraft and its crew to safety should there be an emergency on the launch pad or at any time during ascent. The goal of the PTR1 is to synchronize efforts in advance of committing significant design resources. Lockheed Martin needs to meet this milestone to meet three flight tests – two in 2010 and one in 2011.

Orion Program Manager **Jim Bray** believes Michoud benefits from having dedicated individuals with Human Space Flight experience. "Outstanding performance on the ET and *Orion* programs provides value to NASA, and makes securing new work on *Orion* possible. This is an exciting time for the *Orion* team as we get closer to putting products on the floor. 2008 will be a big year as we start production of three Crew Modules, three Alternate Launch Abort Systems, and one Service Module." ■

O&C Bldg continues transition to *Orion* assembly site

The *Orion* team at Kennedy Space Center successfully completed a nine-day outage at the Operations & Checkout (O&C) Building over the holidays to complete the demolition phase. The work prepares the historic building for its transition to serve as Lockheed Martin's final assembly facility for the *Orion* crew exploration vehicle.

The majority of the work in 2007 removed the building's existing obsolete systems and infrastructure. This year will focus on bringing the new facility systems on-line. The overall goal is to make the O&C Building fully operational and certified for *Orion* production by the end of this year. Construction begins on the first Orion test article in 2009.

Lockheed Martin will build the Crew Module, Service Module and also be responsible for final assembly completion of the Launch Abort System at the O&C. After receiving structural components from Michoud, work crews will integrate all of *Orion's* subsystem elements, perform final acceptance testing, and deliver the vehicle to NASA.

The first *Orion* manned flight to the International Space Station is on the books for 2014. ■

Renovation makes Building 420 more productive

As ET-126 rolled out of Building 420 bound for Kennedy Space Center this past November, an army of demolition workers descended on the Command and Control areas to gut the walls and ceilings, and give the building an "extreme makeover."

The facility, which serves as the Final Test & Checkout for the ET before it ships to KSC, had been in desperate need of repairs after Hurricane Katrina damaged it. According to **Rick Zerkus**, Building 420 staff member, the governing rule is that construction cannot get in the way of the hardware build.

"All this work being done – from installing a new HVAC system to tooling modifications – will increase ET production efficiency. For example, we moved 4,000 pounds of tooling off of the stands so we can now safely accommodate another six to ten workers performing closeout operations."

The renovation modified the work stands by adding split levels and staggered drop-down platforms to eliminate the use of temporary scaffolding. New diving boards have also been added to allow mechanics access to difficult-to-reach areas. An additional mobile stand was brought in so much of the shake-down work now can be done without the need for extra lifts.

"The Tooling & Design department has been really helpful," Zerkus stated. "They understand the urgency of the tank build and worked hard to complete these modifications."

The work also included safety considerations. A continuous breathing air system has been installed, eliminating the need to use bottled air during Thermal Protection Systems closeout sprays. Also, crews mounted new safety tethers above the forward platforms so overhead crane operations will no longer be impeded.

The renovation work re-arranged much of the building's layout to accommodate a more efficient workflow. The Crew Area, Tool Crib, Engineering Support, and No Fail Team moved to the first floor with easy access to the cells through the blast doors. On the 3rd floor, the Command Center moved across the hall to a more spacious location, and Safety & Product Assurance personnel will have more room to spread out in their new office. The two control rooms will remain in place as entrances into the cells. Crews are also expanding the employee break room, making it easier for employees to find a seat and relax.

"This new environment will help us be more productive," Zerkus added. "It's a work area that reflects the pride and dedication we have for our jobs. ET-128 is coming soon, and we'll be ready." ■

Rick Zerkus points out the new stand with split-level tooling modifications and work platforms in Building 420.

Huntsville employees on another safety streak

Lockheed Martin Huntsville Technical Operations is still at it. NASA recently recognized the Michoud branch at Marshall Space Flight Center for achieving one million work hours without a lost time accident. The organization, which numbers about 65 people, accumulated its sparkling safety record over a seven-year stretch. Currently, the streak stands at 1,114,629 hours through December 2007.

Making this even more significant is the fact that two-thirds of the group is regularly involved in hazardous operations and/or working in potentially hazardous environments, and often working large amounts of overtime.

The work includes fabricating composite nosecones for the External Tank; performing Research & Development support for Thermal Protection Systems, welding technology, and composite materials and components; and supporting various test programs.

Dave King, director, Marshall Space Flight Center, presents the safety award to Lynda Johnston, Huntsville Technical Operations manager, Safety & Quality.

Prior to the previous lost-time accident in 1999, the group had received similar recognition, achieving 1,137,487 hours over a period that began in January 1993. All told, over the past 14 years the Huntsville employees have worked almost 2.25 million hours with only one lost time accident. Also, they have worked 808,580 hours (over the past 5½ years) since the last OSHA recordable accident of any kind.

"There's a lot of opportunity in activities such as these for something to go wrong, which makes me especially proud of our employees' safety record," said **Charlie Garner**, HTO director. "We have an excellent safety program, but it's the skill and attitude of the individuals doing the work that makes them successful." ■

Mission Impossible – don't you believe it

(At the request of Kathy Eaton, manager, Health Services – Marlene Theriot wrote this story in hopes of motivating others to improve their health.)

I work as a Lockheed Martin paramedic. What follows is my personal Mission Success story. My mission – lose 73 pounds. I began last May when I weighed 248 pounds with a body mass index (BMI) of 33. A healthy BMI for females is 19 to 24.9.

I inventoried my eating habits and made a plan of action. The plan included changing my eating habits and to exercise for at least 30 minutes every day. I began researching the connection between weight loss, proper nutrition, and physical activity and recognized the need to start resistance or weight training to enhance my fitness level.

Taking advantage of the corporate discount offered to Lockheed Martin employees, I began weight training and doing at least 30 minutes of aerobic exercise a day at a popular North Shore health club. My diet was and still is calorie and fat restricted. I decided to eliminate fried foods, sweets, white starches and red meat and instead eat fresh fruit, non-fat dairy, chicken, turkey, tuna, salads, and green vegetables.

Supplementing my diet with protein shakes to ensure that I consumed a minimum of 60 grams of protein daily, I allowed myself one cheat meal a week. I also began to drink half of my body weight in ounces of water daily.

During the first three months of my mission, I lost an average of three pounds of fat a week. My initial goal – weigh less than 200 pounds. Then one morning the scale read 199.7. I was beyond excited.

The pounds continued to fall off but at a slower rate. I followed instructions and intensified both the resistance and aerobic training. At the end of 2007, the scale reads 178.2 pounds for a total weight loss of 69.8 pounds, just 3.2 pounds from my goal.

My blood pressure is now within the American Heart Association's normal range, and I have significantly reduced my risk for developing diabetes, breast cancer, and stroke. Co-workers, family, and friends have been a great support system.

In closing, I would hope that just one person reading this article will get motivated to eat less and move around more. ■

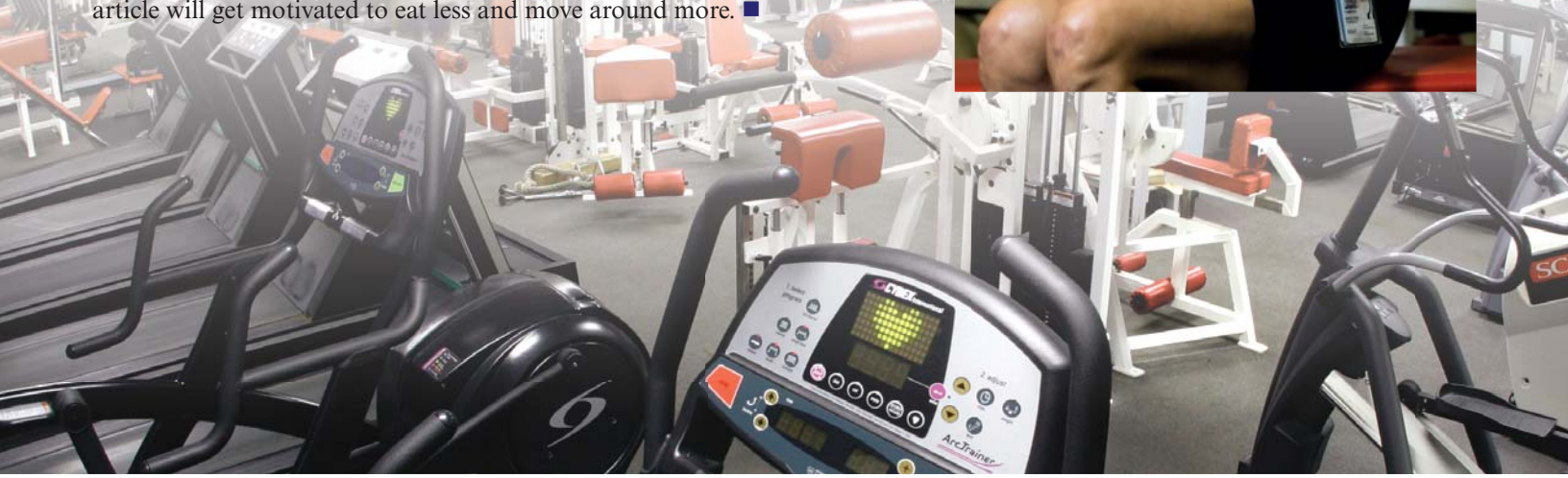
Ready to get into shape?

This past year, 196 Lockheed Martin employees at Michoud took advantage of the $250 Fitness Reimbursement by joining a qualified health club or fitness center. This year Corporate Payroll is screening Fitness Reimbursement forms. To fill out form C-547-1 and receive the $250 this year, go to LMPeople. Under Pay & Benefits, click on Health & Wellness, read the entire article, and near bottom under Requesting Reimbursement, click on the 2008 form, C-547-1.

Marlene Theriot

Before

After



Holiday Schedule for 2008

New Year's Day	January 1
Mardi Gras	February 5
Day after Mardi Gras	February 6
Independence Day	July 4
Labor Day	September 1
Thanksgiving	November 27
Day after Thanksgiving	November 28
Christmas	December 25
	December 26
	December 29
	December 30
	December 31
New Year's Day	January 1
January 2, 2009	

Important Dates

January 28	22nd anniversary of *Challenger* accident
January 30	STS-122 Executive Flight Readiness Review
February 1	5th anniversary of *Columbia* accident
February 5	Mardi Gras
February 7	Launch of STS-122, *Atlantis*
Mid March	Launch of STS-123, *Endeavour*
April 24	Launch of STS-124, *Discovery*

Emergency Information

To find out work status at Michoud, go to www.mafstatus.com
or call 257-1MAF or 1-800-611-3116, check ETV or listen to WWL-870 radio or visit
wwl.com or watch WWL-TV, Channel 4 or go to wwltv.com

Milestones

Employees celebrating anniversaries with Lockheed Martin in February 2008

25 Years
Roseann Augustine
Ron Baillif
Hayward Ducre
Barry Erminger
Arnold Fazande
Barbara Messa
Rudolph Tillman
Denise Younger

20 Years
Michael Amman
Dan Kilroy
Glenda Pates
Thomas Piff
Joseph Simpson
Bryant Smith

10 Years
Pamela Ford
Benjamin Hendrick
Benjamin Jacobs
Jessica Jacques
Dominic Kiper
Joseph Pierre
Lynn Smith
Lucius Watts

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