Space Systems Company–Michoud Operations

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Mission Success Bulletin

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on-line

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Atlantis/ET-133 launch on first try

After attempting to launch STS-127 and STS-128 multiple times this summer, it felt good to get *Atlantis* and ET-133 off on the first try, November 16. And the performance was just as good as the feeling.

"STS-129 was a phenomenal countdown without issues, and then electrical, propulsion and structural performed right down the pipe, just like they're supposed to," summed up **Mark Bryant**, ET program manager.

The earliest observation was a small foam loss on the +Y bipod closeout at 171 seconds (2:51 into ascent), after the critical time period, which ends at 135 seconds. Other very small losses came late in the ascent from a Liquid Hydrogen (LH2) Tank Ice Frost Ramp, a Liquid Oxygen feedline yoke base closeout, and the LH2/Intertank flange area.

Bryant said the launch team did not see any foam loss from the Solid Rocket Booster cameras. "What I wish we had not seen are eight losses on the back side of the Intertank, but they're benign with no risk to the Orbiter. We had 26 losses there on ET-131 in July."

The ET program manager said the fishbone team had reconvened to evaluate the losses and compare them to previous ones. "Initial assessments show that we think it's probably the same cause as ET-131, which was inadequate surface cleanliness or preparation of the Intertank. The losses line right up where we had placed platforms to clean the tank, very much like ET-131 where we had platform location issues. It's hard to get to the substrate to clean properly when someone has to kneel down or reach up in an area."

Already, Michoud technicians have pulled 48 bond adhesion tests at KSC on ET-134's Intertank, slated to fly in February. Bryant said the crew pulled 10 more on the +Z side around the area where platforms were located, just to build more confidence, and those were completed with positive results.

"We'll look at it to make sure it's attributable to the same approximate root cause and if so, our flight rationale holds. We'll buttress our testing a little more and cover a little more territory on the +Z side."

Overall, Bryant called ET-133 "a really good performance" and credits employees for the achievement.

With five shuttle flights remaining, next up is STS-130 *Endeavour* & ET-134, scheduled for launch February 7. The mission will deliver the *Tranquility* module, along with the *Cupola* module, the control room for robotics with seven windows that provides a 360-degree view of the space station. ■

Michoud's Award Fee scores rated "Excellent"

NASA has again graded Lockheed Martin as Excellent with a score of 100 on the final Operations & Maintenance assessment (April 1-June 30) and a score of 94 on Production (April 1-September 30).

Associate Administrator of Space Operations **Bill Gerstenmaier** noted "the O&M score is a direct reflection of the outstanding teamwork and helpfulness of your team in transitioning the facility to a new contractor."

NASA graded Michoud with "Significant Strengths" in several O&M areas, including the Manufacturing Support & Facility Operations Contract (MSFOC) turnover plan completion and phase-in period. Lockheed Martin also earned high marks for supporting an unannounced La. Dept. of Environmental Quality hazardous waste inspection and an EPA Spill Prevention, Control, and Countermeasures inspection. One inspector noted that Michoud had an outstanding reputation and approach to regulatory compliance.

Michoud also earned an O&M "Strength" for the support of redundant pump station permitting that allowed NASA to meet construction milestones to enhance the facility's ability to withstand storms.

On the Production side of Award Fee, Gerstenmaier indicated that three shuttle flights (STS-125/ET-130, STS-127/ET-131 & STS-128/ET-132) highlighted the period, but that ET-131's performance was substandard and definitely 'out of family'. He said, however, that he was impressed the Michoud team was so forthcoming on ET-131 issues.

"This type of self-reporting strengthens the working relationship between the contractor and government teams. After significant deliberation, the Performance Evaluation Board determined that the Intertank foam problems observed on ET-131 should not affect this period's production score, in that the issues that likely caused the foam loss were executed more than five years prior, and the current management did an outstanding job in assessing the issue and mitigating possible future occurrences."

Award Fee scores

Operations & Maintenance - 100

Production - 94

NASA graded the following Production areas with Significant Strengths:

- Managed critical skills retention to deliver ETs on time; when issues arose, had excellent recovery plans
- Organized workforce morale events, including 29 flight honorees, 136 employees who had special launch viewing opportunities, Q&A leadership meetings with over 350 employees in small groups across the factory, three town halls with over 150 employees, and three breakfasts with 60 employees
- Responded quickly with additional Non-Destructive Evaluation data on ET-133 & ET-134 LO2 Ice Frost Ramps
- Delivered ET-132 (April 28) & ET-133 (July 29) early using producibility enhancements
- Demonstrated outstanding efforts toward continuous improvements in debris mitigation and producibility
- Held multiple Kaizen events focused on critical path production efficiencies; eliminated unnecessary process steps and re-sequence planned work; reduced schedules of Final Assembly by 29% & Detailed Fabrication by 34%
- Successfully completed welding and proof testing of all pressure vessels for remaining ET builds
- ET systems performed nominally on STS-125/ET-130 Hubble launch in May
- Electrical, structural and propulsion systems performed nominally including Ground Umbilical Carrier Plate (GUCP) on STS-128/ET-132 in August
- Managed cost control within 1% of Fiscal Year 2009 budget
- Continued downward trend on number of Non-Conformance Documents
- Emphasized importance of Golden Egg program to suppliers in delivering quality hardware and taking care in shipping to minimize chance of damaging one-of-a-kind hardware
- Made significant progress in reducing open Corrective Action Problem Summary (CAPS) documents

NASA also listed Strengths such as ET-132 marking the initial flight of a Friction Stir Weld (Barrels 3&4 of LH2 tank) on a human-rated launch vehicle, and the significant progress made in inspecting the Thermal Protection Systems (TPS) on Hurricane Katrina-damaged ET-122.

Several "Weaknesses" included multiple TPS loss events on ET-131's Intertank, and the hydrogen leak at GUCP that caused multiple launch scrubs and delays for STS-119 & STS-127.

ET Program Manager **Mark Bryant** called the Award Fee scores "amazing". "We've been O&M contractor since 1983, and what a phenomenal way to close out operations and maintenance activities at Michoud with a 100 score. The team diligently executed on the O&M scope right up to the end and did not get distracted by the transition."

Bryant said he was also gratified by the Production score because of the GUCP leakage and Intertank foam losses.

"We responded beautifully to those challenges, and that made a big difference. Also, everyone gets credit for all the structured improvement events on the floor. We improved our delivery commitments to the customer, and then beat those delivery commitments. Great testament to the team, staying focused in what is certainly a challenging environment for people to work in now." ■

New crew shifts over to External Tank-122

As ET-138 methodically winds its way through the final stages of production in the Vertical Assembly Building (VAB), some employees in areas where ET work is complete are now free to work Return to Flight modifications and Hurricane damage repair on ET-122 in Building 420, Position I.

"We've had two waves of employees," said **Rickie Zerkus**, manufacturing senior staff. "Technicians and support personnel from the high bay and the VAB."

To begin the transition process, Lockheed Martin requisitioned an area in Building 420 from NASA to assign the incoming workforce tool boxes and lockers. The area also serves as a comfortable place to assemble during crew meetings.

"Right there they start the ownership, and if you establish ownership, it eases the pain of the move because a lot of the folks are coming from areas where they have worked 25-plus years," explained Zerkus.

"The move to 420 was an easy one for me," said **Wendell Cannon**, a 27-year Thermal Protection Systems mechanic from Intertank Position III and Cell J. "I'm performing small PDL foam pours on ET-122, which are not that unfamiliar to me, and the work extends my end date, which is also good."

Before beginning any assignments, every crew member who moves over to Building 420 participates in safety briefings and tours of the building to become familiar with the safety aspects, the role the building plays in the build process, how work is performed in the area, and to learn their responsibilities and gain insight into ET-122's production schedule.

"Our primary goal is to keep them safe," stressed Zerkus. "Our second goal is to our product and Mission Success,"

To continue the success and buy-in from the workforce, subject matter experts from both TPS and Electrical & Mechanical recently participated in the latest ET-122 Kaizen event. The activity identified and prioritized more than 150 Non-Conformance Documents, some of which have 10 or more items, and 90 percent of them are Hurricane Katrina-related.

Wendell Cannon, Thermal Protection Systems mechanic, routs out damaged foam from an Ice Frost Ramp on ET-122's Liquid Hydrogen Tank in preparation for a PDL pour repair as Quality Control inspector Michael Gough looks on.

The Visual Management Board, a successful element of a previous Kaizen event in Final Assembly, will be used to track day-to-day progress of activities, objectives and critical path items.

The crew in Building 420 working on ET-122 will focus their attention on completing the outlined PDL foam and SLA hand-pack repairs, beginning Intertank mechanical modification work, changing out the two diffusers, and preparing the tank for future work in Cell A. ■

Honorees see *Atlantis* launch on first try

Lockheed Martin Launch Honorees saw STS-129 through a clean countdown on November 16. Recognized for their outstanding performance are from left: Nick Waterwall, Preston Landry, Sheila "Sam" Cicchetto, Dion Lee, Hank Knighton, Tim Richmond, Ronnie Richard, Darwin Hector, Michael Wiater, John McKinsey, Dave Willick and John Eaton (Huntsville Technical Operations).

Lockheed Martin also flew approximately 50 other employees – most of whom had not seen a launch before – down to KSC to watch *Atlantis* go.

Space Shuttle schedule

Mission	Launch Date	Tank	Tank Delivery Date
STS-130	February 7, 2010	ET-134	October 14, 2009
STS-131	March 18, 2010	ET-135	December 23, 2009
STS-132	May 14, 2010	ET-136	February 24, 2010
STS-134	July 29, 2010	ET-137	May 5, 2010
STS-133	September 16, 2010	ET-138	June 29, 2010
		ET-122	*September 30, 2010

** Launch-on-need tank for STS-133/ET-138*

ET Incentive Plan milestones

1.	4/25/08	Base Incentive
2.	5/31/08	STS-124 launch/land 6/14/08
3.	7/10/08	ET-127 delivery
4.	8/6/08	ET-129 delivery
5.	11/14/08	STS-126 launch/land 11/30/08
6.	11/19/08	ET-130 delivery
7.	2/14/09	ET-131 delivery
8.	3/15/09	STS-119 launch/land 3/28/09
9.	4/28/09	ET-132 delivery
10.	5/11/09	STS-125 launch/land 5/24/09
11.	7/15/09	STS-127 launch/land 7/31/09
12.	7/29/09	ET-133 delivery
13.	8/28/09	STS-128 launch/land 9/11/09
14.	10/14/09	ET-134 delivery
15.	**11/16/09**	**STS-129 launch/land 11/27/09**

Mission Success Bulletin going to on-line only version

This December 2009 edition of the ***Mission Success Bulletin*** will be the final printed edition as the Communications Department transitions the newsletter to on-line only in January 2010. The on-line version will be sent to employees monthly via Info SPACE and be posted each month on Gumbo at http://gumbo1.maf.nasa.gov/303x/msb/msbhome.htm as it has been the past 11 years. The *Mission Success Bulletin* has enjoyed 28 years of communicating with employees and will continue in 2010 in an electronic format.

Milestones

Employees celebrating anniversaries with Lockheed Martin in January 2010

30 Years
Cheryl Alexander
Judy Bilich
Holly Brodsky
David Cardon
Joel Copeland
Glenn Cotty
Richard Fagot
Roy Higginbotham
Lynda Johnston
Roy Kridler
Steven Lecesne
Spencer Luebe
Steven McCutcheon
Wesley McMellon
Gordon Meadors
Bennie Mills
Mike Neff
Ronald Pena
Virgil Phillips
Doug Powell
John Tonglet

25 Years
Cheryl Cannon
Curtiss Dossett
Richard Smith

20 Years
Craig Coleman
Robbie Delpidio
Eric Enright
Wesley Geiman
Rick Spring
Nelly Williams

15 Years
Henry Abbott
Chris Bourgeois
Carolyn Brookter
Jerry Fabre
Steve Garner
Joe Hillmer
Hannah Ladner
Judy Russell

10 Years
David Page

5 Years
Mark Breen
Dean Frechette
Toan Truong Nguyen
Nhan-Quyen Nguyen
Terri Ryan
Tom Weissbohn
Michael White

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