

Mission Success Bulletin

December 19, 2006

on-line

<http://www.lockheedmartin.com/michoud/>

STS-116 roars off into the night

**Scant debris spotted,
lighting less than optimal**

After a scrub due to low clouds, STS-116 with ET-123 blasted off two days later in a spectacular display of light at 7:47 p.m. December 9 from Kennedy Space Center.

The first night-time launch in four years gives NASA more options to complete the International Space Station by 2010. However, night launches give those who evaluate tank performance eye strain when scrutinizing evening photos.

“The challenge this time is validating the performance of the ET Thermal Protection Systems (TPS) since we launched and separated at night,” says **Jim Feeley**, ET launch integration senior manager. “We lack useful Orbiter umbilical well images because ET/Orbiter separation occurred in darkness.

“Based on what imagery we have and what we can see in the imagery, we probably lost foam but it doesn't appear to be significant. Actually we got more imagery than I thought we would. When we see something, we zoom in and go frame by frame by frame, but we just can't validate the origin.”

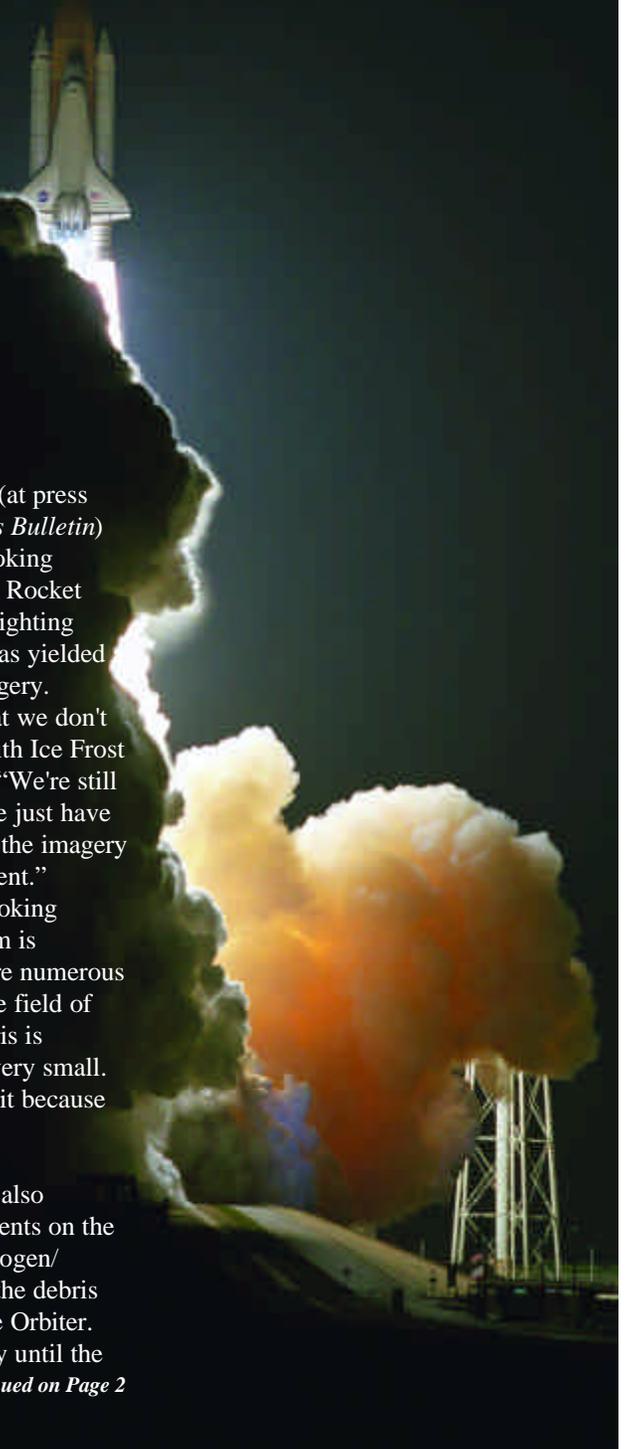
So far the best pictures (at press time for the *Mission Success Bulletin*) have come from cameras looking forward and aft on the Solid Rocket Boosters (SRB). The back lighting from the SRB motor glow has yielded small amount of quality imagery.

“What we've seen is that we don't have any major problems with Ice Frost Ramps,” Feeley continues. “We're still following the same rigor; we just have less to look at. We have all the imagery back, and it's under assessment.”

On the SRB cameras looking forward, the assessment team is analyzing what they think are numerous small events. “Streaks in the field of view indicate to us that debris is traveling very fast, and it's very small. But again, we can't validate it because we don't have the umbilical perspective.”

The SRB cameras have also spotted several foam loss events on the backside of the Liquid Hydrogen/ Intertank flange, outside of the debris zone that couldn't impact the Orbiter. SRB cameras are useful only until the

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STS-116

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SRBs separate from the tank, which happened at 2:06 into flight.

The ET camera located in the Liquid Oxygen feedline fairing provided some impressive views.

“The images had a look of twilight until the shuttle thrusters fired at ET separation at 8:44 into flight. The thruster lighting resulted in several frames that were extremely well lit giving us an opportunity to assess the forward three ice frost ramps.”

Feeley says the proof will be when the Orbiter comes back, and everyone gets to see what it looks like. “If we generated small debris, it either did not hit the Orbiter or it came off at a time when it wasn't capable of damaging the



View from SRB camera, just separated.



The ET camera mounted in the Liquid Oxygen feedline fairing shows Orbiter separation.

Orbiter. On-orbit inspections show the Orbiter looks pretty clean.”

Feeley feels good about Michoud's work on the shuttle launches this year. Again this launch, TPS and the other ET systems – structural, propulsion and electrical – all performed nominally.

“Our demonstrated performance over the past three missions gives us confidence that what we're doing is the correct thing.”

Discovery is scheduled to land at 2:56 p.m. CST Friday, December 22 at KSC.



Ares I team opens office in Huntsville

Team *Ares* cut the ribbon and opened its joint program office December 12 in Huntsville where 80 people from three companies will develop a proposal to build the *Ares I* rocket upper stage.

The three companies – Alliant Techsystems (ATK), Lockheed Martin, and Pratt & Whitney Rocketdyne – will submit a phased proposal next March and April to NASA to build the upper stage. NASA then will decide the winner of the

Crew Launch Vehicle upper stage competition at the end of August 2007.

Veteran astronaut **Jim Halsell** of West Monroe, La., who has made five trips into space now works for ATK and will lead Team *Ares*.

“The Joint Program Office will help ensure that we leverage the strengths of all three companies during the proposal effort,” says Halsell, ATK vice president & program manager, *Ares I* Upper Stage.

“We located the team's office in Huntsville to ensure close collaboration with our NASA customer on this vital program for NASA's new *Ares* launch system.”

Ares I will be capable of boosting the Crew Exploration Vehicle (*Orion*) to the International Space Station or to Low Earth Orbit where it would hook up with the *Ares V* Earth Departure Stage to get to the moon.



Attending the Team *Ares* joint program office ribbon cutting from left are: **Jim Maser**, incoming president, Pratt & Whitney Rocketdyne (PWR); **Byron Wood**, outgoing president, PWR; **Loretta Spencer**, Huntsville mayor; **Jim Halsell**, vice president & program manager for Ares 1 Upper Stage, ATK; **Brad Jones**, Huntsville Chamber of Commerce chairman; **Mike Kahn**, Space Launch Systems vice president, ATK; **Ron Wetmore**, Shuttle Derived Launch Vehicles vice president & deputy general manager, Lockheed Martin; and State Rep. **Sue Schmitz**. Back Row: **Jim McCamy** representing Cong. **Bud Cramer**, LaFreedra **Jordan** (partially obscured) representing U.S. Sen. **Richard Shelby**, and State Sen. **Parker Griffith** (partially obscured).

ET-124 out the door!

Transportation & Handling moved ET-124 to the barge today after Lockheed Martin delivered the tank to NASA. A combined effort from Michoud employees wrapped up the loose ends, and the tank is now on its way to Kennedy Space Center and should arrive around Christmas Eve. NASA will process ET-124 for the next Space Shuttle flight, STS-117, slated to launch March 16.



Dennis O'Brien (left) and Robert Conzonire stabilize ET-124 on the barge.

Top volunteers receive House Busters jackets



Sporting their engraved leather jackets for volunteering more than 125 hours on House Busters are from left: Gordon Dyer who organized the program, Erin Bowman, John Fisher, Marshall Byrd who arranged for financing from the Katrina fund, Ron Bailiff, Hank Knighton, retiree Ed Peneguy, and Glen Gilmore. Not pictured is Ken James, House Busters coordinator. Altogether, 142 Michoud Operations employees, 60 Lockheed Martin employees from places like Sunnyvale and Meridian, 51 college students mostly from Tulane University, 15 NASA employees, and 15 family members volunteered in the program that gutted 51 homes from November to July.

Ride-Out Crew visits Kennedy Space Center



Members of the third and final group of the Hurricane Katrina Ride-Out Crew squint into the sun as they stand before STS-116/ET-123 at Kennedy Space Center during launch week activities. From left are Don Leon, Joe Barrett, Vickie Schmersahl, Byran Walker, Alan Rovira, Ed Watts, Joan Savoy, Jim Ford, Will Henderson, Ernie Graham (NASA), Steve Thompson (SAIC), John Fisher, Terry Winchester, and Michael Parquet.

Goodbye to Marshall Byrd



Although he left several months ago to become vice president & general manager at Commercial Space Systems in Newtown, Pennsylvania, Marshall Byrd finally had a chance to return and say goodbye to Michoud employees at a special reception December 14. Employees Tim Livengood (1st photo); Janice Allen (2nd photo); Patrick O'Rourke (3rd photo); and Tonya Williams (4th photo, from left), Kirk Hill and Cheryl Troullier wished him well.

ISS node headed to Stennis



NASA Michoud Project Engineer Ernie Graham looks on as David Ladner, a heavy equipment operator from Stennis Space Center, makes sure a node wrapped in a protective cover and once designed for the International Space Station is secure upon its arrival at Michoud.

The International Space Station Structural Test Article (STA) node arrived at Michoud on Sunday via covered barge *Pegasus* from Kennedy Space Center – the same barge that departed today for KSC with ET-124.

A barge will carry the artifact to Stennis where eventually it will be displayed in the Visitor's Center.

Built in the mid 1990s at Marshall Space Flight Center, the node was almost an exact duplicate of the *Unity* module on the space station. However, program decisions relegated the article to non-flight status.

The node, approximately 14 feet in diameter, 10 feet in length and 15 tons in weight, is being shipped to Stennis

because KSC needs the space for *Orion* work.

Boeing encountered welding problems with the STA during the build, and Michoud ET personnel provided technical assistance that was invaluable in solving the problems and moving forward with the program. The STA was the first module successfully welded on the ISS program.

The space station was also a beneficiary of techniques developed for repair of aluminum-lithium welding that were applied to Node 1's welding, allowing an entire aft assembly to be salvaged, saving millions of dollars and months of schedule.



Employees help Children's Hospital

Russell Arthur, Space Flight Awareness, presents a \$4,000 check to Roger Gorman, vice president of development for Children's Hospital. The funds came from money raised in game booths at Family Day festivities on November 4 and from Michoud Operations.

Milestones

Employees celebrating
anniversaries with
Lockheed Martin
in January 2007

25 Years

David Kirk

10 Years

Claiborne Hammons

George Huber

5 Years

Larry Brandly

Scott Lee

James Sellers

Getting ready for the holidays with your family

Kathy Eaton, manager, Health Services

The holidays, traditionally a joyous time of year, may still be bittersweet for some of us as we continue our hurricane recovery.

Changes that affect our family lives – and reminders of how things have changed and of the people, places, and events we miss – are often keenly felt during the holiday season.

If you or family members are feeling solemn during the holidays, remember this is understandable based on the experiences of loss and recovery we've been through the past 16 months.

Yet, a new year brings opportunity for new dreams and adventures, new connections with others, and a renewed sense of hope.

Life in and around New Orleans is slowly getting better. New homes, neighbors and happier times are coming our way. You and your families are in our thoughts.

For more perspective, see the [article](#), "Coping with Holidays through Tough Times."

During the holidays if you need some support, please call our Employee Assistance Program after-hours toll-free hotline at 888-807-7997 or you may reach us at 877-653-0717.

Best wishes and happy holidays for all faiths. Let's make 2007 a good year!

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