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Space Systems Company – Michoud Operations

Mission Success Bulletin

March 26, 2010

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Astronauts and crawfish - what a combo!

STS-133 crew visits employees

Mission specialist Tim Kopra peels mudbugs while talking with Lockheed Martin's Mark Javery during the employee motivation crawfish boil. At right are Jacobs' Stephanie Gerardi and Trieu Trinh.

The day dawned cold and blustery, but the mood turned warm and friendly as the STS-133 astronauts sat down to peel mudbugs with employees March 22.

"Just being here and talking with all the workers at Michoud, I feel like we're really in good hands," said Commander **Steve Lindsey** at the crawfish boil, an employee motivation event.

Accompanying Lindsey were the remainder of his six-person crew – pilot **Eric Boe** and mission specialists **Dr. Mike Barratt**, **Alvin Drew**, **Tim Kopra** and **Nicole Stott**. They scattered to different tables to talk with employees and eat crawfish, corn and potatoes, and maybe the occasional hot dog.

After the festive luncheon, the crew returned to Final Assembly to speak to workers and answer questions. Commander Lindsey thanked employees for their "great attitude," and said he was confident of the final tanks' performance.

Just prior to the crawfish boil, the crew climbed the stairs to the platform on ET-138, the tank that will propel them to orbit. There, Final Assembly & Test Senior Manager **Mike McGehee** explained the progress of ET-138's build, how Ice Frost Ramps are poured, and the aft crossbeam work in progress.

Astronaut Nicole Stott and Jacobs' Maryalice Daly measure their crawfish to see which will be tastier.

Later, the astronauts went up on the platform for ET-137, and McGehee pointed out the difference in the progress from ET-138 to ET-137. Here, technicians carved out foam on Ice Frost Ramps and worked to install cable trays, pressurization lines and the 17-inch Liquid Oxygen Tank feedline. Interested, astronauts took their time and asked employees about their work.

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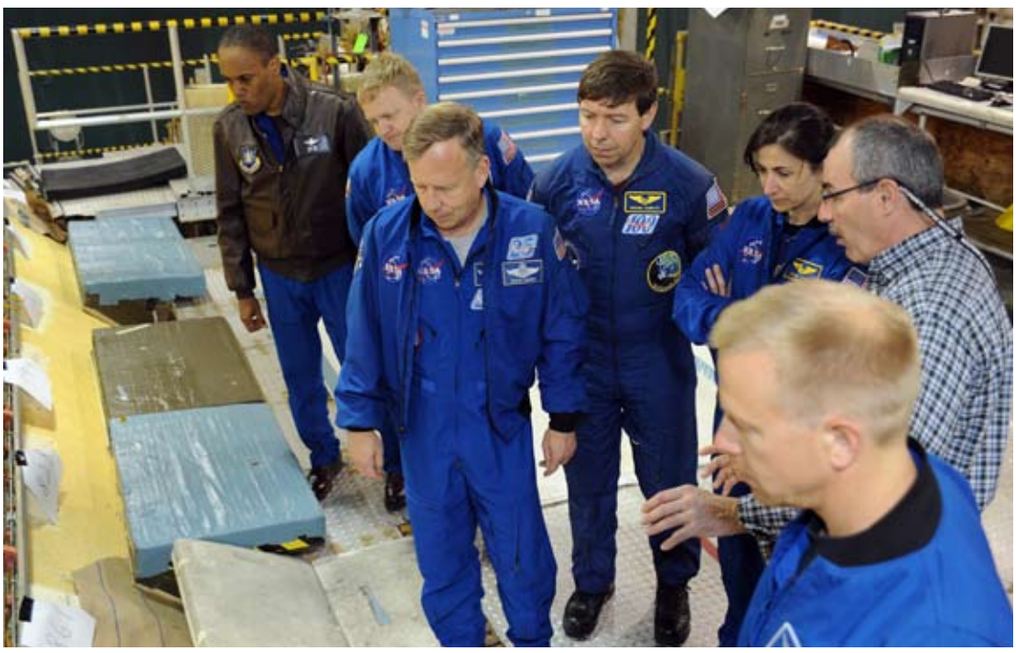
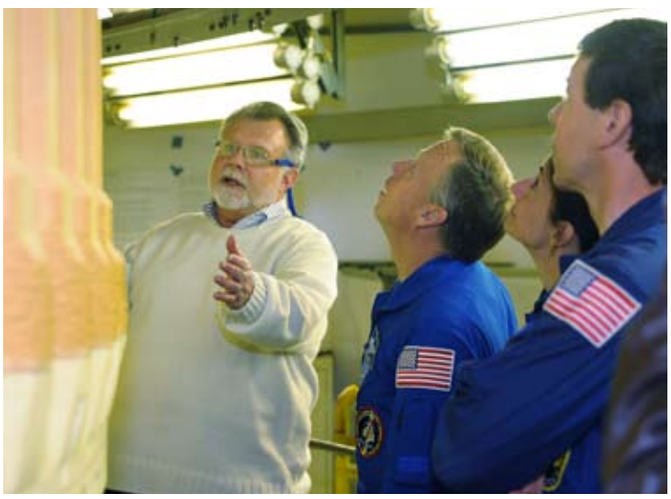


After showing the crew their tank (ET-138), Final Assembly & Test Senior Manager Mike McGehee led the astronauts up on top of ET-137 to point out how much farther along ET-137 is in the production process. Lockheed Martin is scheduled to deliver ET-137 almost two months earlier than ET-138. With McGehee (from left) are mission specialist Alvin Drew, pilot Eric Boe, Commander Steve Lindsey, and mission specialists Mike Barratt, Nicole Stott and Tim Kopra.

Back on the ground, the crew autographed pictures and various memorabilia for employees and then posed for a media photo in front of ET-138 before heading off to see ET-122 and talk to employees in the Vertical Assembly Building.

Missile Mother **John DesForges** explained ET-122's odyssey, the work and re-sprays that employees have performed on the launch-on-need tank since Hurricane Katrina damaged the tank, ironically in Cell A where the tank once again resides three and one-half years later.

This was the final stop of the day for the STS-133 crew who, if nothing changes, will fly the final Space Shuttle mission – the 134th flight – on September 16.



ET-122 Missile Mother John DesForges shows off the reinvigorated tank in Cell A to crew members. If needed, ET-122 can sub for ET-138 in the shuttle manifest.

Lindsey's crew boasts a wealth of flight experience. Everyone has flown previously, and three of the four mission specialists served long-duration periods on the International Space Station last year: Barratt lived nearly seven months on station, Stott three months, and Kopra two months. Pilot Boe and mission specialist Drew will make their second trip into space. And Commander Lindsey returns to space for his fifth mission.

"This kind of astronaut visit is tremendously important to our employees," commented **Mike McBain**, the ET program deputy. "The crew was inquisitive. They took their time and asked a lot of questions about the tanks. This kind of reaffirmation means a lot to our employees. They appreciate the feedback. It also drives home the point that this is an end product with actual people aboard. This is "manned spaceflight," not "hardware spaceflight."

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Discovery and ET-135 ready for second launch of year

An STS-131 launch on April 5 is looking more likely. The agency has been troubleshooting a valve problem that caused helium to leak during propellant loading March 13. After testing, shuttle managers now confirm that helium regulators linked to steering jets in the right Orbiter Maneuvering System (OMS) pod are working properly.

With the decision, NASA will load *Leonardo*, the Multi-Purpose Logistics Module packed with equipment, science gear and provisions into *Discovery's* payload bay for the trip to the International Space Station. The final decision to "go for launch" will come March 26 at NASA's Flight Readiness Review.

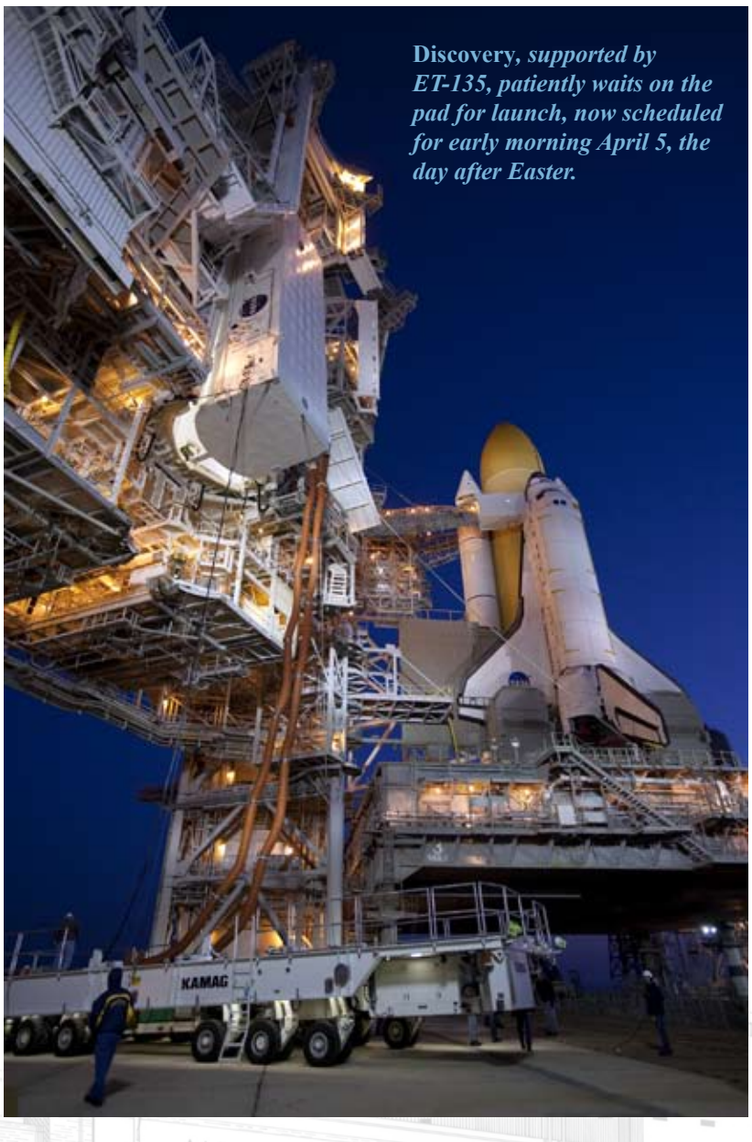
If the decision is "go," *Discovery* and ET-135 will launch at 5:21 a.m. Central Time on April 5. **Alan Poindexter** (2nd flight) will command the STS-131 crew along with pilot **Jim Dutton** (1st) and mission specialists **Clay Anderson** (2nd with 5 months on station), **Dorothy Metcalf-Lindenburger** (1st and final astronaut-educator to fly), **Rick Mastracchio** (3rd), **Stephanie Wilson** (3rd) and **Naoko Yamazaki** (1st).

The mission will run 13 days, encompassing three spacewalks. Two of the crew, Anderson and Yamazaki are tweeting about the mission at: http://www.twitter.com/Astro_Clay and http://www.twitter.com/Astro_Naoko

Meanwhile, the other tank at KSC remains on schedule for a May 14th launch with *Atlantis*. ET-136 is slated to mate with its Solid Rocket Boosters on March 29, then mate with *Atlantis* on April 13, and together they roll to the pad April 20.

Last week, a Lockheed Martin team traveled to KSC and performed 79 bond adhesion tests on the +Z side of ET-136's Intertank near the thrust panels and where access platforms were located during production activities. The team completed the tests with no issues.

To see the dates of the final shuttle missions and tank deliveries this year, check the flight manifest in this *Mission Success Bulletin*.



Discovery, *supported by ET-135, patiently waits on the pad for launch, now scheduled for early morning April 5, the day after Easter.*

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Production improvements propelled ET-138 through Cell A

ET-138, the last in-line tank through the Vertical Assembly Building (VAB), left Cell A last month after 40 calendar days of work, improving on the performance of eight previous tanks that averaged 60 days each.

The improvement is a result of many lessons learned and steps perfected since Return to Flight, combined with Lean manufacturing, Six Sigma, Kaizen, Integrated Value Stream Mapping and 6S techniques.

"We were more cognizant of things from the past and the history of things that went wrong," said **Mike Howard**, manager, VAB/High Bay. "First we did a realignment of management to make sure we had people most familiar with Cell A processing on all three shifts."

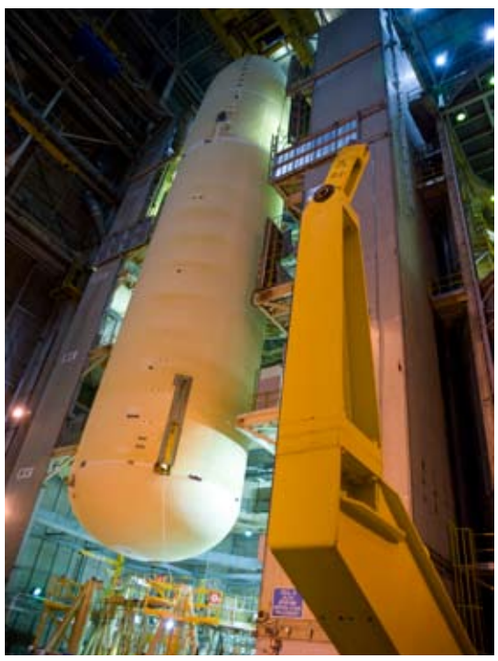
With no other tanks in the high bay or VAB, there was no competition for critical resources.

"This allowed for a more dedicated crew, which also led to a more dedicated support group; we had a real functional three-shift operation going on in Cell A," Howard explained.

Engineering pre-inspection of foam preps saved significant time. "In the past technicians would apply a conathane adhesive to the foam bonding surface, and we would almost certainly get some kind of indication, maybe false," Howard said. "A lot of rework was being conducted as a result of not knowing what the surface looked like prior to adhesive application."

The biggest improvement came in flange processing. "With the result of the spray teams' success in Cell A, everyone became more confident with our processing," Howard reported.

The size of the spray windows increased, reducing the number of test panels and high-fidelity mock-ups necessary. "May not sound like a lot, but over the course of a tank, we are eliminating 20-plus mock-up panels, reducing preparation time, masking, spraying, testing and trim operations, and it all adds up to days saved in production."



A crane slowly moves ET-138 out of Cell A on February 23 after the tank stayed in the cell a record 40 calendar work days. Now in Final Assembly, the final flight tank is scheduled for delivery June 29.

Improvements in Cell A were not limited to production activities. A 6S event added supply racks to each of the levels to reduce time technicians spent getting materials needed to support their tasks.

Additionally, the Missile Mother team helped close Non-Conformance Document (NCD) issues, working engineering dispositions, getting signature buyoffs, and tracking lab results that allowed supervisors in the cell to focus on their tasks at hand. A recent Greenbelt event focused on labor charging that reduced time supervisors worked making labor corrections.

Also, as part of the Value Stream Mapping process, Lockheed Martin formed a Collaborative Work Cell to include employees from the support and build departments who focused their efforts on critical path items. The team worked with Cell A supervision to communicate daily work status and to ensure that parts, documents and other resources were available when needed to get the work completed.

"Integrated Value Stream Mapping and Collaborative Work Cells were a vital part in completing ET-138 in Cell A and successfully meeting our commitments to the Space Shuttle program," said **Hal Simoneaux**, director, Production. "Isn't it wonderful that as we near the end of the shuttle fly-out, we still continue to have these gains in performance?"

ET-138 is now in the midst of its production cycle in Final Assembly.

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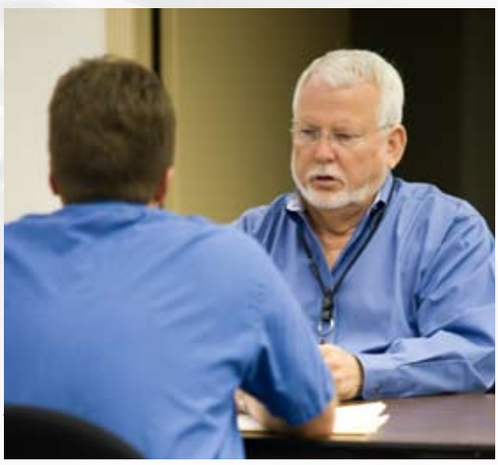
Employees talk job possibilities with Aeronautics recruiters

This year will be one of career transition for the majority of Lockheed Martin employees at Michoud. Since the Space Shuttle Program is scheduled to fly its final flight in September, many employees are looking elsewhere to continue their careers with the corporation. With 140,000 employees world-wide, LM offers ample opportunities to transfer to other business units.

To assist employees during this transition period, Michoud's Human Resources department and LM Aeronautics hiring managers and recruiters hosted a two-day career event March 23-24. On the first day Aeronautics recruiters conducted nearly 90 interviews with Michoud employees who had applied on-line for positions at Aero.

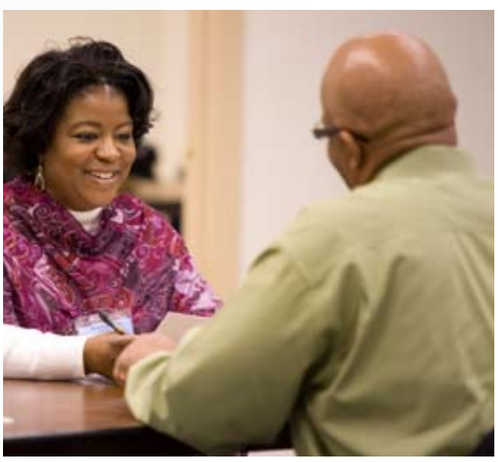


Pat Chambless (right), senior manager of Manufacturing at Fort Worth, interviews a Lockheed Martin employee during the Aeronautics Open House on March 24.

The event's second day included an Aero Open House for Michoud employees who did not have current applications at Aero, but who were interested in networking and discussing possible future opportunities in various disciplines and departments with Aero recruiters.

TPS mechanic **Cedric Garrett** secured an interview with an Aero recruiter and said, "The meeting was brief, but I was able to future opportunities in Fort Worth. It was a good experience, and I look forward to other events like this."

Since January, 156 employees have applied for positions at Aeronautics, and many have been interviewed. Approximately 225 Michoud employees participated in the two-day event. Even if there are no current jobs open in your field, Michoud Human Resources Manager **LaWanda Moorer-Spencer** says interested employees "should keep their resume updated and make sure to always have it on hand as a networking tool. This Open House was a good opportunity to get a feel for the Aeronautics culture and to see what positions are coming down the pipeline."



A Lockheed Martin employee discusses possible job opportunities with Sheri Strong, employment manager at Aero.

Aeronautics is responsible for leading edge technology and products including the build of the C-130 and F-22 aircraft in Marietta, Georgia, and the F-35 Joint Strike Fighter and F-16 in Fort Worth. Aero is also the home of the famous Skunk Works aircraft design team in Palmdale, California, which has developed new technologies for aircraft systems for over 60 years.

Although aircraft is its specialty, Aeronautics has just as many support roles and positions for its programs as Michoud has for the External Tank. Aero often has numerous positions open, and factory facilities are located throughout the country including the three major locations in Fort Worth, Marietta and Palmdale. Some programs will soon ramp up production to meet delivery schedules so positions may be available in the future. If you're interested in Aeronautics, go on-line to LMpeople, see what is available and apply for your next career!

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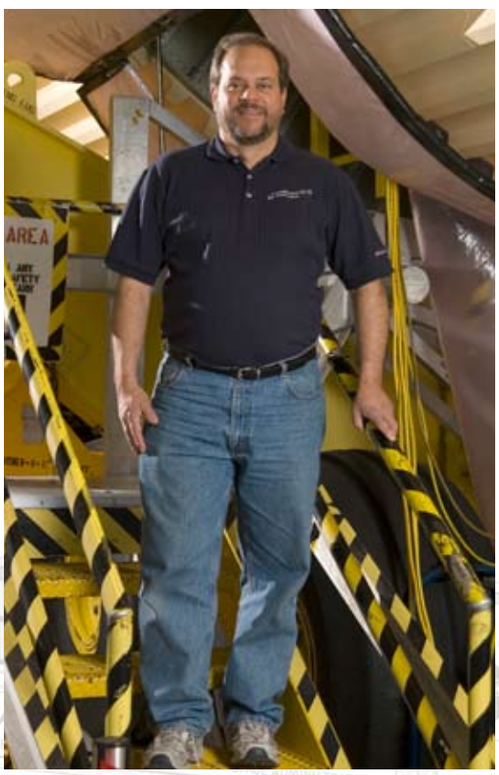
STS-130 crew praises workers

Commander George Zamka and three of his STS-130 crew mates, pilot Terry Virts and mission specialists Kay Hire and Bob Behnken, visited with Lockheed Martin employees and showed the mission video on March 25. "You guys make a great piece of hardware," Zamka told employees at a General Assembly, referring several times to the excellent performance of ET-134 during the February 8th launch. The STS-130 mission was the first of five scheduled this year to conclude the shuttle program.

"Doing It Safely" award winner

Safety selects **Steve Frederick** of Production Operations as the "Doing It Safely" winner for February. Frederick is recognized for exercising proper safety guidelines while performing tank monitoring position duties. He also maintains the Tank Entry log, verifies stamp warranty, and ensures that everything is in place in the event of an emergency. Because of his attention to detail and his commitment to doing it safely, Frederick ensures that his fellow employees are safe during tank entry operations.



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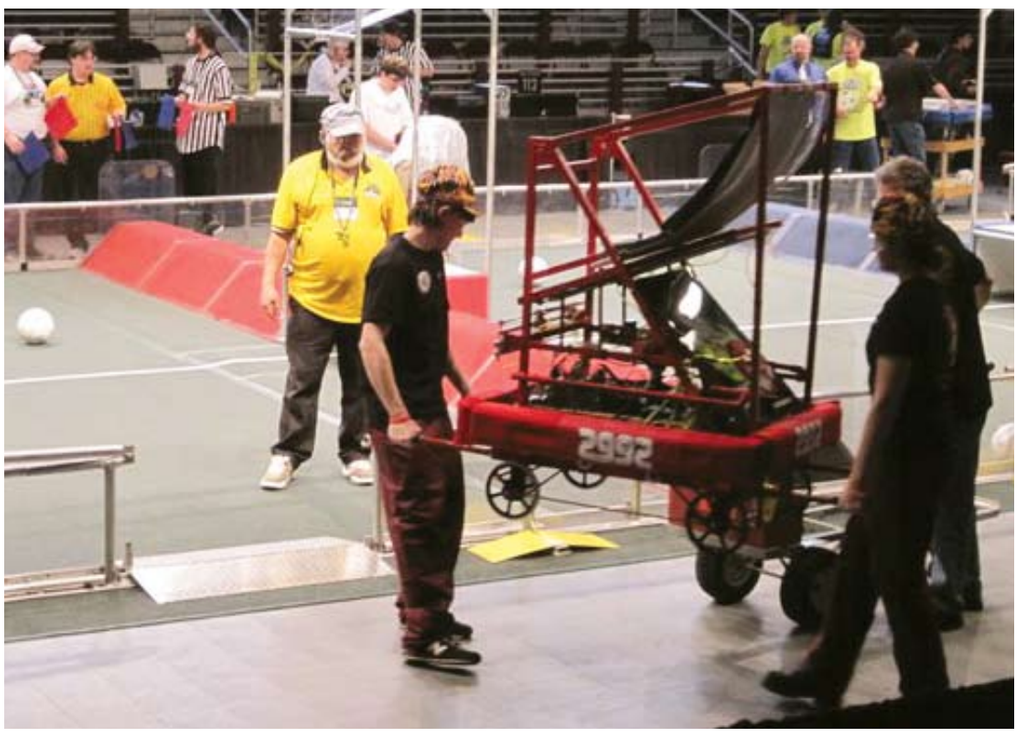
Lockheed Martin-mentored FIRST Robotics team advances to Nationals

Thirty-six teams competed in the FIRST Robotics Bayou Regional tournament at the Alario Center March 4-6. The Mandeville High team, under the mentoring of Lockheed Martin's **Darren Kearney** and **Keith Joiner**, was a member of the winning 3-robot alliance and advanced to the Nationals in Atlanta in April.



Parke Drapcho and Elizabeth Marcks of Mandeville High carry their robot to the competition floor during the FIRST Robotics tournament. Observing is Lockheed Martin's Curtis Craig (yellow shirt) who mentored several teams and acted as field supervisor at the Bayou Regional.

Mandeville's 15-20 students built its robot over a period of six weeks. This year's competition involved robots playing soccer on a 27 X 54-foot field. A team gained points if its robot scored in either of two goals or if its robot could hang from a tower or lift an alliance robot off the playing surface.

Lockheed Martin co-sponsored teams from Fontainebleau High mentored by **Curtis Craig** and **Scot Marshall** and Northshore High mentored by **Glynn Adams**.

Other teams with Lockheed Martin mentors included:

- Sarah T. Reed High – *Travis Smith*
- Haynes Academy – *Corey Kanitz*
- Bogalusa High – *Curtis Craig, Scot Marshall*
- Woodlawn High – *Curtis Craig*

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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
16	12/20/09	ET-135 delivery
17	2/8/10	STS-130 launch/land 2/21/10
18	2/24/10	ET-136 delivery

Space Shuttle schedule *(final four missions)*

Mission	Launch Date	Tank	Tank Delivery Date
STS-131	April 5, 2010	ET-135	December 20, 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***

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Milestones

Employees celebrating anniversaries with Lockheed Martin in April 2010

30 Years
Gregory Broussard
Edmond Ceasar
David Jenkins
Gregory Jones
Al Labat
John Pericone
Steve Ruple
Dale Stiller

25 Years
Larry Bourdreaux
Mark Bryant
Steve Franklin
Frank Williams

20 Years
Lynn Servay

10 Years
Kim Price

5 Years
Jennifer Puglisi
Benjamin Talton
Jennifer Trevino
Tyrone White

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