LOCKHEED MARTIN MICHOUD SPACE SYSTEMS

MISSION SUCCESS® BULLETIN

April 28, 1999

Michoud awarded third Governor's Environmental Leadership Award

The state of Louisiana has again recognized Michoud Space Systems' pollution prevention achievements, awarding the company its third Governor's Environmental Leadership Award in as many years.

Michoud Space Systems received the award for its progress in reducing use of the solvent CFC 113. The material has been in use at Michoud since the beginning of the Shuttle program.

CFC 113 was capable of both removing contaminants and verifying cleanliness. However, it was also responsible for 50% of the total releases reported annually on the Toxic Release Inventory for MAF. Plus, it is a Class I Ozone Depleting Chemical that was phased out of production at the end of 1995.

Pollution prevention efforts began in 1990 when the CFC Waste Minimization Team organized. Isopropyl alcohol and trichloroethylene were considered as candidates for replacement until the Environmental Protection Agency approved HCFC 225 in 1994. After much testing, the team concluded that this was the best available alternative. During validation, unforeseen issues such as compatibility with tooling seals and gaskets had to be addressed, demonstrating once again that there are no easy drop-in replacements when it comes to replacing chemicals.

In September 1998, CFC 113 was

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Riki Takeshita (Technical Operations) describes the Friction Plug Weld process for MSFC Director Art Stephenson and MSFC Customer & Employee Relations Director Tereasa Washington.

New MSFC Director visits Michoud

With ET-103 serving as the backdrop in Final Assembly, **Art Stephenson**, new Director of NASA's Marshall Space Flight Center, praised Michoud Space Systems employees for producing top-quality hardware at a General Assembly earlier this month.

Stephenson cited Michoud's new aluminum-lithium technology and said producing a new Super Lightweight Tank from start to delivery in 46 months is impressive.

In his first visit to Michoud, Stephenson also ticked off several other employee accomplishments:

- Twenty-two zero weld defect barrels since ET-100;
- Seven of last eight hydrogen tanks single proof tested; and
- Four of last five oxygen tanks single proof tested.

Stephenson emphasized that NASA's number one priority is safety. "Clearly, we are concerned about the safety of our astronauts and the integrity of our hardware, which is directly connected to that. And you've done a very good job of providing extremely reliable hardware and we see that every time the shuttle launches."

The new director also challenged employees to raise their level of thinking about safety in all aspects of their lives, not just at work but at home as well.

Finally, Stephenson reminded the crowd that NASA recognized Michoud's quality performance in 1987 with the Excellence Award for Quality and Productivity, the precursor of the George M. Low Award. Stephenson challenged everyone to "go after it again."

College video classes begin

Mike McGrath knows what degree he wants. **Antoinette Sandifer** is just glad to be back in school after putting it off.

McGrath, a Reusable Launch Systems program planner, is aiming for a master's degree in business. Sandifer, a Thermal Protection Systems technician, is still deciding what specific degree to pursue.

Both are taking college courses at Michoud that started this month. The professors and students communicate through a video-conferencing format. Classes meet once a week from 4:30 to 7:30 p.m.

"The students are motivated by this kind of two-way, interactive videoconferencing offered by Educational Video Conferencing, Inc.," said **Maurine Lee**, manager of training and development, Human Resources. "The quality of the instruction appears high."

McGrath is taking Legal and Ethical Environment. Sandifer has enrolled in Conceptual Foundations of Business and Management.

"I was leery about it at first," Sandifer says. "But it hasn't been boring. The instructor encourages class participation and has a sense of humor."

McGrath, who spends an hour a night studying, says his course is tough with legal terms and history to memorize. He reads all the assignments because the professor likes to call on students.

Professors from Adelphi University in New York are teaching the two courses this spring.

Employees don't have to pay up front. For those students accepted, the company is billed for full tuition, textbooks and fees if the student makes at least a "B" in a graduate course and a "C" in an undergraduate course.

As with other college programs, employees must submit an application to their manager for approval. For more information call Training at 7-2164.

The company will offer courses this summer and may include some engineering courses this fall.

Employees attend one of the new videoconferencing college courses.

"We're sort of a pilot for Lockheed Martin," Lee says. "We've done long-distance learning before and our employees like it."

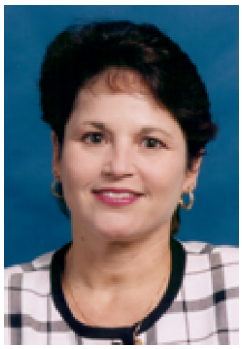
External Tank Progress Report

Selected Highlights as of April 26, 1999

HARDWARE	STATUS
ET-103	
Tank	In Final Assembly. LH2 Cable Tray electrical installations and Intertank electrical installation are in work. TPS closeouts are on-going. Pressline installations, leak checks are under way.
ET-104	
Tank	In Final Assembly. TPS closeouts are on-going. Completed removal/replacement of the SRB cable and the 1500-volt re-test. Shakedowns continue. Move to Building 420 is next.
ET-105	
LO2/Intertank	In Cell H. Completed planned tank work. In Flight Anomaly (IFA) TPS trims continue.
LH2 Tank	In Cell D. Completed the partial strip and respray of the Aft Dome SOFI. Manhole Cover and Diffuser installations are in work.
ET-106	
LO2 Tank	In Cell K. Completed the acreage primer, and Dome SOFI sprays. SOFI thickness checks and trims are in work.
LH2 Tank	In Cell E for Internal clean and Harness installation activities.
ET-107	
LO2 Tank	In Cell F. Completed internal wash activity in Cell E and moved to Cell F for staging on 4/26.
LH2 Tank	In Building 451. Experienced difficulty in hooking up tank to cell hardware. Plan to have Stand Up Review/TRR prior to proof test.
ET-108	
LO2 Tank	On 7023 tool. Pre-proof test NDE and repairs are in work on the O-2 through O-4 welds.
LH2 Tank	On 5019 tool. Completed Barrel 4 and T-Ring weld (H-6/H-7). Move to 5069 tool is next for pre-proof NDE and repairs.
ET-109	
LO2 Tank	On 5018 tool. Completed the O-2 weld. Loading Barrel and T-Ring for start of O-3/O-4 weld preps
LH2 Tank	In work in subassembly.

Report "near misses" to improve safety for all

Editor's Note: *Continuing the* Mission Success Bulletin's *series on safety in this issue is Michoud Space Systems' Director of Product Assurance,* ***Pat Powell****.*



Pat Powell

Michoud Space Systems is committed to providing a safe workplace for its employees. Over the last 10 years, Michoud employees have successfully reduced the personal injury rate by 40 percent and the incident (property damage) rate by 66 percent. The company has been recognized by the Metropolitan Safety Council and National Safety Council.

Although our work related injury rate is better than industry standards, any one person who gets hurt on the job is one too many.

Each employee can contribute to the goal of zero injuries on the job. To do this, we must identify and control hazards that lead to injury or property damage. We can do this by being more proactive in reporting the near misses we experience ourselves or observe in our day-to-day activities.

We often hear news reports of two planes involved in a *near miss*. This doesn't mean the two planes almost missed each other; rather they almost collided. Think of a near miss as something *too close for comfort, dangerously close,* or *hazardous.* We define *near miss* as *an undesired event caused by unsafe acts or unsafe conditions, which could have, but did not result in injury, property loss, contamination of the environment or hardware damage.*

A near miss occurs either consciously or through inattention and carelessness. Bicycle riders who choose to ignore stop signs place themselves and innocent bystanders at risk for injury. Other examples of near miss conditions include cords or hoses extended across aisles, spilled liquids, or any defect in tooling or equipment.

We cannot wait for a serious injury to occur before correcting conditions that are *hazardous* or *too close for comfort*. Near misses warn that an unsafe situation exists. Most injuries and incidents occur, not because they can't be prevented, but because we failed to recognize the *potential* for them to happen.

> ***"...when an employee takes the time to report a near miss, I see that as an act of actively caring enough to improve safety for everyone else."***

Recent analysis suggests that for every 600 near misses, there will be 30 property damage incidents, 10 minor injuries, and one major injury. The value of recognizing, reporting and investigating near misses cannot be underestimated. Finding root causes of near miss events and following up with corrective action can lead to lower injury rates. This is why Michoud is placing greater emphasis on the reporting of near misses. After all, a few seconds or a few inches can be the only difference between a near miss and an injury.

During recent safety investigations, employees related how "that almost happened to me" or "I saw other people trip at that exact same place" or "a bracket like that fell last week, but it didn't hit anything." Perhaps these injuries and incidents could have been prevented had people not been reluctant to come forward with these near misses. In surveys, employees gave the following reasons for not reporting near misses:

- Nothing happened; no one got hurt. If I report my personal experience, people will think I'm irresponsible.
- I'm too embarrassed to admit this happened to me.
- I don't know what the reporting requirements are.
- I have a perfect safety record. Reporting a near miss will "count against me."
- My department hasn't had an injury all year. I don't want my peers to be mad at me.

Reporting a near miss may be embarrassing in certain situations. But when an employee takes the time to report a near miss, I see that as an act of actively caring enough to improve safety for everyone else. For example, a subcontractor performing construction work donned an air line respirator and plugged the air hose into a fitting that he assumed was supplying breathing air. Instead, he had hooked up to a nitrogen supply line. The subcontractor almost lost consciousness after just a few breaths.

Because someone took the time to report this near miss, corrective actions were taken to prevent a possible future fatality. Nitrogen taps were clearly labeled and respirator fittings that could be attached to nitrogen taps were replaced with fittings that were physically impossible to attach to anything other than breathing air taps.

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Mark Your Calendar Now

Fall Fest

October 16

Michoud Work Status

To find out the status of work at MAF, call 257-1MAF or 1-800-611-3116; check the EWS; listen to WWL-870 radio or WWL-TV; or access the MAF Site Status web site at www.mafstatus.com

First wave of LM21 Best Practice transfers begins

The LM21 Best Practices program has passed some significant milestones and is now moving into a new phase of activity since the program began a year ago. During the second week of April eight teams kicked off a new round of efforts to implement Best Practices.

"LM21 — standing for "Lockheed Martin in the 21st Century" — is an "umbrella" term referring to cost saving programs throughout the Corporation, especially those involved in productivity or process improvement," said **Bob Bruce**, LM21 Best Practices program manager for Michoud Space Systems.

Cost savings the driver

The Best Practices program has an ambitious cost savings goal — $2.6 billion by 2002. These savings could well make the difference between Lockheed Martin Corporation staying competitive and growing, or losing out on vital opportunities.

As a result of a series of mergers and acquisitions, the Corporation is now comprised of 17 heritage companies. Each heritage company has a unique history and its own approach to addressing many of the same basic needs. The Best Practices program has been looking at these diverse methods and determining which ones are "best in class" and which are not as effective and could use improvement.

Surveys developed data

Several months ago benchmarking teams visited participating business units, including Michoud Space Systems, and carried out a series of detailed surveys of processes and activities in a number of functional areas. The examination teams were composed of personnel from the respective units, Corporate Headquarters, and business consultant Booz-Allen & Hamilton.

"We benchmarked over 30 companies with over 90 candidate Best Practices," said Bruce.

The consultant company utilized the data gathered to produce a comparative study of practices within the Corporation. The study drew some comparisons between processes within the Corporation and those used by other corporations identified as having outstanding practices. Chiefly, however, the survey results identified business units within the Corporation that have "Best Practices" and units that could benefit from adopting one or more of these practices.

Business units with "best in class" practices were identified as "sources" for Best Practices and units identified as candidates for improvement in the same area were termed "receivers." The process of transferring practices from one unit to another is a process of mutual learning and dialogue, and the source companies will be alert to benefits that can be derived from the practices of receiver units.

Transfer teams launched

Eight cross-corporate teams were launched in April, each composed of one or more source units and several receiver units. Corporate-wide, there are four teams in Operations (including Product and Process Flow; Quality Approach and People Engagement). Two additional teams are Engineering-related (Integrated Process Development; Requirements & Verification Management), and two concern Employee Development (Individual Performance Management and Program Manager Development).

As part of the first wave of Best Practice transfers for Michoud Space Systems, **Maurine Lee**, Human Resources, has been assigned as Michoud Space Systems' representative on the Performance Management team, and **Glen Wheeler**, Product Assurance, is on the Quality Approach team.

"These Best Practices were selected by prioritizing areas where we felt we could take the best advantage for improvement," said Bruce.

The source units in each team are now actively preparing and presenting the details of their Best Practices, and the receivers are engaged in understanding the Practices and will be starting to prepare a business case for adopting them. The bottom line is that the transfer must realize a cost savings or significant improvement in competitiveness.

Glen Wheeler is studying Quality Approach Best Practices that include: Continuous Improvement Programs; Mistake Proofing; Defect Detection; Inspection Frequency; Supplier Quality Assurance; Metrology, Measurement and Calibration; Customer Escape Management; Software Quality Control; Process Stability; and Quality Approach.

Aggressive program

"Building a business case and an implementation plan for these Best Practices is the receiving site's objective," said Wheeler. "The source companies will be providing a great deal of information for the team members to consider. We participate in weekly teleconferences and will attend several offsite meetings. The team's schedule is aggressive, and a business case and implementation plan are due by August 1."

Business case the key

Maurine Lee's Performance Management team has started assessing a cluster of Human Resources Best Practices that revolve around setting expectations and goals and linking these goals to the company's overall business strategies.

As with all team members at receiver units, Lee is developing a Michoud-specific business case for transferring these practices here.

"What this is all about," said Lee, "is taking a look at what is out there, benefiting from what is out there and not reinventing the wheel."

Editor's Note: Further coverage of Michoud Space Systems' LM21 activities will appear in upcoming issues.

Attending the award ceremony at the Louisiana State Capital are (from left) Ralph LeBoeuf, Technical Operations; Rey Abadie, Director, Facilities and Environmental Operations; Becky Jordan, Facilities and Environmental Operations; Craig Dooley, Production Operations; Francis Celino, NASA/MAF; Augie Panks, Production Operations.

Governor's Award

Continued from Page 1

phased out in the Clean Room, resulting in a 95% decrease in its use. The remaining 5%, primarily handwipe usage on the factory floor, is being replaced and is scheduled for elimination by year's end.

With any process change, many personnel and a great deal of inter-directorate coordination is required to achieve results. The team created during the first validation effort included **Augie Panks** and **Mark Raia** from Production Operation's Detail Fabrication Area, **Ralph LeBoeuf** and **Mike Campbell**, Technical Operations; **Craig Dooley**, Manufacturing Engineering; **Dick Poticher** and **Mark Gambino**, Tool Design; **Rod Fonseca**, **Rick Hawkins** and **Ken Maddox**, Product Assurance; **Gontran Celerier**, Project Planning; and **Becky Jordan** and **Rob Carey**, Facilities & Environmental Operations.

Report near misses

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Near misses do not *count against* a person's or department's safety record. The Safety Department depends on each employee to report injuries, incidents and near misses. The investigations that follow are for fact finding, not fault finding. Once causes are properly identified, effective recurrence controls will be implemented and the potential for future events eliminated.

When an employee doesn't take the time to report a near miss, we learn nothing from the event. Hazards, causes and contributing circumstances are lost. Near misses provide information as important as major accidents involving serious injuries and property damage.

I urge you to report unsafe conditions to your supervisor who should then notify the Safety Department. Employees may also contact their safety monitors or coordinators directly. Sometimes, normal reporting channels are not enough. We have a safety hotline, 257-0SAF, monitored 24 hours a day, seven days a week. The fact that many near misses come within inches of being a disabling injury or major property loss makes failing to report all the more serious. You can prevent today's near miss from becoming tomorrow's debilitating injury.

1999 MAF Safety and Health Fair

The Safety and Health Fair is scheduled for Tuesday, June 8 through Friday, June 11. The yearly event will once again bring many Safety and Health exhibits and activities to Michoud.

All employees are encouraged to take full advantage of the many free health evaluations and participate in the safety presentations. Safety and health information will be available to take home to your families. Employes can talk to representatives about safety products and services, get health evaluations and information, discuss issues concerning an employee or family members, and even get information or assistance from HMO representatives.

Not all employees take advantage of getting a physical every year. Health professionals at the Safety and Health Fair will offer examinations and screenings for conditions such as glaucoma, high blood Pressure, diabetes and skin cancer.

Employees have received positive diagnoses when they had evaluations at the Fair in past years, and were completely unaware of these conditions. The early diagnosis and subsequent treatment of the conditions protected the quality of life for these employees and their families.

Mark your calendar now, and be sure to come out and participate.

The Road to ISO 9001

ISO 9001 represents an international consensus on good management practices. Certification provides evidence to our customers that Michoud Space Systems can time and time again deliver a product that meets our customers' quality requirements.

MILESTONES

Employees celebrating milestone anniversaries with Lockheed Martin in **March** include:

25 years
Donald Bergez
Larry Cooper
Rodrigo Fonseca
Sharon Hansen
Jesse Hardeman
Wilda Miller
Thomas Price

20 years
Andrew Buell
Charles Campbell
David Chabaud
Herbert Guynes
Judy Hill
Jack Jackson
Dianne Javery
Ernesto Maldonado
Agnes Motton
Richard Nix
Michael Noone
Charles Owens
Albert Pfeiffer
Juan Ramirez
Gerald Rouleau
Mike Seibert
Webb Simmons
Kenneth Vallie
Bruce Williams

15 years
Belur Balaram
John Barnett
Joseph Barrett
Kenneth Braxton
Mark Cleveland
Charles George
Mark Hargrave
Terry Herrin
Keith Hyde
David Kinchen
Ray Lacour
Stephen Oxner
Jeffrey Pfrimmer
Stephen Turner
Reginald Williams

10 years
Elizabeth Bergquist
Eugene Hartley
Robert Schill
Glenn Schmitt

5 years
James Dutton

MSFC Operations United Way coordinators and canvassers for the past nine years are pictured, along with the Highest Per Capita award plaques for '90, '91, '93, '95, '96, '97 and '98.

MSFC Operations awarded for UW participation

Michoud Space Systems at Marshall Space Flight Center was recognized by United Way of Huntsville/Madison County for Highest Per Capita donation in the 50-100 employee category for the 1998 campaign. MSFC Operations employees have demonstrated an enduring commitment to supporting their community through United Way, receiving this recognition for the seventh time between 1990 and 1998, and for the last four years in a row.

Questions on ethics?

To obtain clarification on ethical matters or to report possible wrongdoing, contact the Michoud Space Systems ethics officer, **Stuart Stine**, at 7-3842, or call the Corporate Office of Ethics and Business Conduct, 1-800-563-8442.

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Scholarship fund established in memory of slain students

A scholarship fund has been set up in memory of several Lockheed Martin employees' children who were killed or wounded in the Columbine High School shooting spree last week in Littleton, Colorado.

Employees who wish to contribute may make checks payable to the Lockheed Martin Columbine Memorial Scholarship Fund.

Scholarships will be awarded to college-bound Columbine High seniors. The company will match these tax-deductible donations dollar for dollar.

Send checks through internal mail to:
Lockheed Martin Astronautics
Communications Department,
M/S DC 1020.