



Spaceport News

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John F. Kennedy Space Center

NASA'S MESSENGER embarks on Mercury mission

By George Diller
NASA Public Affairs Officer

NASA's MESSENGER, set to become the first spacecraft to orbit the planet Mercury, launched Aug. 3 at 2:15 a.m. aboard a Boeing Delta II rocket from Cape Canaveral Air Force Station. The approximately 1.2-ton spacecraft was placed into a solar orbit 57 minutes after launch.

The spacecraft was designed and built by the Johns Hopkins University Applied Physics Laboratory in Laurel, Md.

During a 4.9-billion-mile journey that includes 15 trips around the Sun, MESSENGER will fly past Earth once, Venus twice and Mercury three times before easing into orbit around its target planet. The Earth flyby, in August 2005, and the Venus flybys, in October 2006 and June 2007, will use the pull of the planets' gravity to guide MESSENGER toward Mercury's orbit. The Mercury flybys in January and October

2008 and September 2009 will help MESSENGER match the planet's location for an orbit insertion in March 2011.

Since MESSENGER is only the second spacecraft sent to Mercury – Mariner 10 flew past it three times from 1974 to 1975, gathering detailed data on less than half the surface – the mission has an ambitious science plan.

With a package of seven science instruments, MESSENGER has several goals, including determining Mercury's composition; imaging its surface globally and in color; and mapping its magnetic field and measuring the properties of its core, among others.

This is the seventh mission in NASA's Discovery Program of scientifically-focused exploration projects. The countdown and launch was managed by the NASA Launch Services Program at Kennedy Space Center. Visit <http://www.ksc.nasa.gov> for information.



THE MESSENGER spacecraft atop a Boeing Delta II rocket lifts off at 2:15 a.m. Aug. 3 from Launch Pad 17-B at Cape Canaveral Air Force Station. MESSENGER (Mercury Surface, Space Environment, Geochemistry and Ranging) is on a seven-year, 4.9-billion-mile journey to the planet Mercury.

Logistics Building upgrades provide vital storage space

By Linda Herridge
Staff Writer

When you run out of storage space at home, you can hold a garage sale or throw away the unneeded items. But inside the Logistics Facility at Kennedy Space Center, discarding essential parts and equipment is not an option.

What do you do when a facility that stores and processes more than half of a million pieces of equipment and hardware becomes almost filled to capacity and the support equipment starts to show its age?

A project to help expand the



storage capacity of Space Shuttle ground and flight equipment inside the Logistics Building is nearing completion. Planning for

KRAIG WYCKOFF, United Space Alliance logistics, checks the operation of one of three Automated Guided Vehicles maneuvering through the Logistics Building.

Contractor Siemens Dematic in Grand Rapids, Mich., designed and built an automatic system to meet the growing needs of KSC.

Automated, guided vehicles replaced a large and unreliable conveyor system that transported parts through limited locations. The new guided-vehicle system services additional areas, transporting tote and pallet loads weighing up to 2,000 pounds.

An automated storage and retrieval system now comprises five aisles. Four aisles store ground system equipment and parts and the fifth aisle stores flight equipment. Within each

the project began in 2000 as part of KSC's Industrial Engineering for Safety initiative, with construction starting in 2002.

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Jim Kennedy
Center Director

The Kennedy Update

Greetings, everyone! It was another spectacular couple of weeks around the Space Center. Leading the way was the mesmerizing launch of MESSENGER aboard a Boeing Delta II rocket Aug. 3.

The spacecraft's launch was picture perfect and all its systems checked out once on orbit. Congratulations to the entire MESSENGER team, both the government and contractor workforce, on another successful ELV launch from the Cape.

In March 2011, the world will benefit from the fruits of your labor when MESSENGER orbits Mercury and sends back critical information about this mysterious planet. Hopefully, what we learn about Mercury will help us unlock secrets of our wonderful planet.

What exciting times we live in to be a part of the space

exploration and discovery business!

Steady and firm progress continues for our Space Shuttle Return to Flight efforts. Discovery just completed its last major power-down modifications, a significant milestone achievement.

Technicians finished installing wiring to support the addition of a new External Tank separation camera, wing leading edge sensors and the orbiter boom sensor system among numerous other accomplishments.

While it's easy to write about in a 200-word article, certainly these were not "simple" modifications to design and install. Major effort was invested for each modification and the dedication of our KSC workforce came ringing through with the completion of Discovery's

power-down.

I want to thank everyone for their diligence and I'm confident that when Discovery launches for the International Space Station in March, it'll be the safest launch in program history.

I hope everyone saw my CD-COM Monday concerning the hiring limitations and potential buyouts taking place during the next few years. NASA Headquarters states there are more than 1,000 civil service positions across the Agency that will be unfunded during the next couple of years, requiring NASA to take aggressive measures to deal with the situation.

I'll refer you to the CD-COM for the details, but just a couple

pledge to you that as soon as I know something in concrete, I will pass it along. With situations like this, the rumors fly fast and furious.

If you hear information from me or read it here, it will be based in fact. It will not be my subjective view of the situation. We have too much work to accomplish for Return to Flight to have people wasting time following up senseless rumors. Stay tuned, as we'll have more information in the near future.

During the next few weeks, there are a series of NASA Transformation Updates sponsored by NASA Administrator Sean O'Keefe. They will originate from different Centers and

"Major effort was invested for each modification and the dedication of our KSC workforce came ringing through with the completion of Discovery's power-down."

of items worth noting. The buyout is not a "sure thing." The Agency has asked each Center to consider whether a limited buyout makes sense. We'll make this judgment at KSC bearing in mind we need to maintain our "critical competencies" and skills required to execute the programs entrusted to us.

I'm personally involved in every step of this process and will be until its conclusion. I

discuss various aspects of the Headquarters transformation.

The specific schedule will be announced through e-mail from HQ shortly. I encourage you to tune in, when you can, so you understand the changes taking place to make NASA a more effective organization.

Finally, remember, the kids started back to school Tuesday, so look out for the little ones on the street. Have a great week!

SHARP minds complete diverse research projects



Kenneth Ceballos (above left) from Timber Creek High School and Daniel Luh, a student at Lake Mary High School, talk about their experience in the Summer High School Apprentice Research Program (SHARP) at Kennedy Space Center. Pictured left is Eubee Koo, a student at Cypress Creek High School in Orlando, who talks about her summer research project at the Visitor Complex.

KSC invention inspires pollution-reducing system

By Linda Herridge
Staff Writer

Technology recognized as NASA's 2000 Commercial Invention of the Year has resulted in an exclusive patent license agreement with Phoenix Systems International in Pine Brook, N.J., to develop a Nitrogen Oxide Emission Control System to improve the quality of the air we breathe.

Kennedy Space Center Senior Research Chemist Dr. Clyde Parrish developed the "Process and Equipment for Conversion of Nitrogen Oxide Waste Conversion to Fertilizer." Parrish works in the Technology Implementation Branch of KSC's Spaceport Engineering and Technology directorate.

"Phoenix will develop the Emission Control System into one of the best clean air technologies in the world," said Landy Chung, president of Phoenix Systems. "With the NASA technologies, we will dramatically improve the quality of our air and significantly reduce the cost of clean energy."

Phoenix Systems is developing a Scrubber Emission Control System based on NASA's Oxidizer (N₂O₄) Scrubber Technologies. A prototype of the technology, constructed by Phoenix Systems, is currently being tested at the South Carolina Electric and Gas Company Canadys Station.



DR. CLYDE PARRISH, a research chemist in the Technology Implementation Branch of KSC's Spaceport Engineering and Technology directorate, developed the "Process and Equipment for Conversion of Nitrogen Oxide Waste Conversion to Fertilizer." The invention has resulted in an exclusive patent to improve the quality of the air we breathe.

"This technology is necessary to control emission from the hypergolic system at NASA and for power plant applications worldwide," said Parrish. "I'm happy to see that this work has found a commercial application."

Under a reimbursable Space Act Agreement, Phoenix Systems and NASA successfully demonstrated the first two steps of the three-step process that removes residual solids, mercury and sulfur. The final step that removes nitrous oxide is set

for next month. The current results meet the Environmental Protection Agency's requirements for emissions.

The technology has other potential commercial applications, including controlling emissions from many stationary combustion systems, metal finishing operations, dye manufacturers and explosive manufacturers.

Beginning in 1994, the original technology, also developed by Parrish, was used to control emissions on the

Space Shuttle from hypergolic scrubbers.

It eliminated a hazardous waste stream at KSC with the additional benefit of producing a useful fertilizer from the byproducts of the emissions streams, including nitric and sulfuric acids, as they passed through the scrubbers.

Phoenix Systems is mainly involved in pollution control. Once the final goals are achieved in testing, the company plans to share the technology with the industry.

Fesmire patents insulation methods

By Linda Herridge
Staff Writer

James Fesmire, NASA lead engineer of the Cryogenics Testbed at Kennedy Space Center, has acquired three patents for testing thermal insulation materials for cryogenic systems. All of the patented methods were developed at KSC.

The Multi-purpose Thermal Insulation Test Apparatus checks insulation materials in cylindrical and multi-layer forms. It is designed to provide a calibrated thermal performance value for

the total insulation system under cryogenic-vacuum conditions.

The Apparatus and Method for Thermal Performance Testing of Pipelines and Piping Systems evaluates the exact thermal performance aspects of cryogenic piping systems. It uses two cold boxes that eliminate any heat transfer from the ends of the piping, so that accurate measurements of heat leak rates from the sides of the piping segment may be determined.

The Methods of Testing Thermal Insulation and Association Test Apparatus, also called

Cryostat-1, provides absolute thermal performance values of cryogenic insulation systems under real-world conditions. Cryogenic liquid is supplied to a test chamber and two guard chambers and temperatures are sensed within the vacuum chamber to test aerogels, foams or other materials.

The Cryostat-1 machine can detect the

(See FESMIRE, Pg. 8)



NASA engineer James Fesmire and Dr. Stan Augustynowicz in the Cryogenics Testbed.

2004 Kennedy Space C

NASA Public Service Medal

This award is granted for exceptional contributions to the mission of NASA. The award may be given to any individual who was not a government employee during the period for which the service was performed.

Dr. Volker Kern/Lockheed Martin Engineering Sciences; **Dr. Fred Sack**/Ohio State University; **James Comer**/United Space Alliance; **Joel Dodds**/The Boeing Company; **Chris Hasselbring**/United Space Alliance; **Scott McIntyre**/The Boeing Company; **Kristin Moore**/Kennedy Integrated Communications Services; **Rikki Ojeda**/United Space Alliance; **Larry Ostarly**/United Space Alliance; **Joseph Prevo**/Prevo Technologies; **Ronnie Sanders**/Space Gateway Support



DEPUTY DIRECTOR Dr. Woodrow Whitlow (left) and Center Director Jim Kennedy present United Space Alliance's James Comer (center) with the NASA Public Service Medal.

NASA Outstanding Leadership Medal

This award is granted to NASA employees for notably outstanding leadership, which has had a pronounced effect upon the technical or administrative programs of NASA.

Kirk Lougheed/IT; **Brent Seale**/VA; **Dave Shelton**/YA

NASA Exceptional Administrative Achievement Medal

This award is given to any person in the federal service for a significant, specific accomplishment or contribution characterized by unusual initiative or creativity that clearly demonstrates a substantial improvement in administrative support contributing to the mission of NASA. - **Beth Smith (below)**/AA



NASA Exceptional Service Medal

This award is granted for significant performance characterized by unusual initiative or creative ability that clearly demonstrates substantial improvements or contributions to the mission of NASA. **Deborah Awtonomow**/PH; **Patricia Beall**/OP; **Denise Catone**/BA; **Charles Dovale**/VA; **Stephen Francois**/VA; **Shawn Greenwell**/PH; **Ruth Harrison**/PH; **Kelvin Manning**/UB; **Jeanne O'Bryan**/IT; **Gerald Schumann**/PH; **Charles Stevenson**/PH; **David Tipton**/TA

NASA Exceptional Achievement Medal

The NASA Exceptional Achievement Medal is awarded for a significant contribution or specific accomplishment clearly characterized by a substantial or significant improvement to the mission of NASA. **Charles Abner**/PH; **Jeffery Angermeier**/PH; **Michael Bolger**/JP; **John Branard**/EA; **Richard Cota**/GG; **Dennis Gagen**/PH; **Deborah Hahn**/UB; **Roselle Hanson**/UB; **Benjamin Jimenea**/UB; **Greg Katnik**/MK; **Jack Keifenheim**/UB; **Ronald Kent**/BA; **Ronnie Lawson**/UB; **Sam Lenck**/GG; **Steven McDanels**/YA; **Richard Mizell**/PH; **Jacklyn Norman**/OP; **Jose Perez-Morales**/YA; **Yvonne Petty**/AJ; **Mark Ruether**/VA; **Lamar Russell**/PH; **Dean Schaaf**/PH; **Scott Thurston**/PH; **Daniel Tweed**/TA; **Lisa Valencia**/YA



DEPUTY DIRECTOR Dr. Woodrow Whitlow and Center Director Jim Kennedy present Jose Perez-Morales the Exceptional Achievement Medal.

NASA Group Achievement Award

The award given to a group of both government employees and non-government personnel for outstanding accomplishment through the coordination of efforts.

1. Acquisition Pollution Prevention Team;
2. Advanced Checkout, Control, and Maintenance System;
3. Cape Canaveral Spaceport Management Office/Joint Base Operations Support Contract Information Technology Integrated Product Team;
4. Columbia Preservation Team;
5. Columbia Reconstruction Team;
6. Delta II Second Stage Manufacturing Transition Team;
7. Ground Safety Review Board;
8. Japanese Experiment Module and Node 2 Delivery Team;
9. KSC Integrated Communication Services Contract Work Package Source Evaluation Team;
10. KSC Materials Science Laboratory Columbia Accident Investigation Team;
11. KSC Processing Review Team;
12. KSC Columbia Recovery Team;
13. Mars Rover B Launch Team;
14. Non-Destructive Evaluation for the Space Shuttle Program;
15. SCISAT Mission Integration Team;
16. Significant Recovered Items Management Team;
17. Office of Space Flight Outsourcing Desktop Initiative for NASA Team;
18. The TechDoc Team;
19. Workforce Optimization Team

Center Honor Awards

Public Service Group Achievement Award

This award is given to a group of non-government personnel for an outstanding accomplishment while participating in a significant program or project that has contributed substantially to NASA.

1. **Delta 792X Heavy Engineering Development Team**; 2. **Information Technology and Communications Systems Management Team**; 3. **Joint Base Operations Support Contract Voluntary Protection Program Survey Automation Team**; 4. **Shuttle Logistics Depot Machine Shop**; 5. **Space Gateway Support Business Operations Team**; 6. **Space Gateway Support Integrated Information Management System Implementation Team**

KSC Certificate Of Commendation

This award recognizes exceptional individual accomplishment or outstanding direction or management of a program or program segment, which affects the entire Center or contributes significantly to the Center's mission.

Dawn Ackerman/GG; Linda Adams/IT; Berta Alfonso/XA; Daniel Baker/PH; Maria Bland/JP; Thomas Bookhart/IT; Hector Borrero/UB; Andrew Bradley/YA; Hortense Burt/VA; Ernesto Camacho/TA; Jose Camacho/UB; Barbara Cox/JP; Gary Craig/UB; Russ DeLoach/PH; Michael Dininny/YA; George Dutt/IT; Thomas Dwyer/TA; Dennis Eaton/OP; Kathleen Ellis/BA; Michael Freeman/XA; Polly Gardiner/UB; David Guibeau/UB; Thad Johnson/YA; Betty Kegley/IT; Roystan King Jr./YA; Shelton Lauderdale/GG; Alan Littlefield/YA; Kenneth Madyda/TA; Launa Maier/PH; Kelvin Manning/UB; Carlos Marin/UB; Harold McAmis/YA; Roslyn McKinney/AJ; Jim Medina/YA; Lisa Morales/TA; Richard Nelson/YA; Timothy O'Brien/PH; Dean Orr/UB; Michael Payne/PH; June Perez/BA; Ann Robertson/GG; William Roy/TA; Larry Third/OP; Randall Wade/PH; David Wilson/BA; Cheri Wynn/EA; Nancy Zeitlin/YA



DEPUTY DIRECTOR Dr. Woodrow Whitlow and Center Director Jim Kennedy present Hortense Burt with the KSC Certificate of Commendation.

KSC Strategic Leadership Award

The Strategic Leadership Award embodies the future direction of KSC through demonstrated leadership and commitment in supporting and implementing the Agency and KSC Implementation Plan.

Jennifer Lyons/BA

Center Director's Gold Dollar ACE Award

This award is presented to an individual who has received five Gold

Dollar awards. Gold Dollar Awards are given to employees for their commitment to safety, teamwork, innovation and willingness to go above and beyond normal job requirements to ensure mission success and customer satisfaction.

Jennifer Kunz (below)/UB; Robert Youngquist/YA



KSC Service Awards

In grateful recognition and appreciation of faithful service in the National Aeronautics and Space Administration and the Government of the United States of America.

40 Years of Service

Tommy Barron/BA (retired); Lyman Blanchard/UB; Thomas Corbett/PH (retired); Robert Frostrom/PH; Ray Garrett/PH; Coleman McCaskey/PH; JoAnn Morgan/XA (retired); Joseph Simpson/TA; Richard Thornburg/UB; 45 Years of Service Stanley Young/YA

KSC Equal Opportunity Award

Two Equal Opportunity Awards are granted each year, one to a supervisor and one to a non-supervisor. These awards are granted for outstanding contributions to equal opportunity.

In the category of Supervisory - **Henry Bursian/PH**

In the category of Non-Supervisory - **Erik Denson (below)/YA**



KSC Center Director's Award

This award is the highest award that the Center confers on an employee. The award honors an employee who has exemplified through personal effort and innovation the highest standards and commitment to the application of continual improvement practices.

David Alonso/AA

Security gains state-of-the-art training facility

By Jennifer Wolfinger
Staff Writer

Imagine hot metal speeding through physical boundaries and launching a new opportunity. Sound like one of Kennedy Space Center's space flight missions?

It's really a spray of bullets spiraling through ribbon to celebrate the Center's enhanced firing range opening.

Recognizing the improvements to the Schwartz Road complex, Center Director Jim Kennedy and Dave Saleeba, assistant administrator of NASA's Office of Security Management and Safeguards, cut through the ceremonial ribbon with ammunition instead of the standard scissors on Aug. 5.

Special Agent Ron Storey, NASA Federal Law Enforcement Training Program manager, explained that the range provides training for the deadly force situations officers may encounter at the Center.

"They're able to develop and maintain tactical skills that one day may help save lives," said Storey.

The complex upgrades include a "shoot house" for rifle use, a "shoot-back" trailer for drills, automated running targets and an expanded classroom facility. The classroom area



ABOVE, CENTER DIRECTOR Jim Kennedy (fourth from left) and Brig. Gen. Gregory Pavlovich (second from right) learn about the firing range. At left, Kennedy aims at the ribbon to celebrate the range's opening.

houses Range 3000, a simulator that offers endless scenarios to prepare situations requiring force and explain range safety essen-

tials. KSC officers use settings that reflect the Center's office culture.

Aside from exemplifying

teamwork between local, state and federal agencies to support Homeland Security goals, the project serves many purposes.

"I had a similar job at Marshall, but we weren't trying to protect the crown jewel of NASA; it makes a difference. This national asset is protected day in and day out by your people," said Kennedy, applauding protective services staff.

Brig. Gen. J. Gregory Pavlovich, Commander of the 45th Space Wing, recognized the global implications of the range. He said soldiers about to be deployed for war are training at

The complex upgrades include a "shoot house" for rifle use, a "shoot-back" trailer for drills, automated running targets and an expanded classroom facility.

this complex, building confidence needed to protect themselves and the country.

"We couldn't do what we do without you doing what you do," he said. "Remember the troops that are deployed. God bless America."

Law enforcement outside the Spaceport are also eligible to use the range.

"This is the best example of Homeland Security, sharing these resources with neighbors," said Saleeba.

LOGISTICS . . . (Continued from Page 1)

aisle, computer-controlled cranes store and retrieve bins weighing up to 300 pounds. Each retrieval system has a maintenance platform and locking aiseways.

According to Tony Shibly, United Space Alliance project manager, the storage capacity of the 472,000-square-foot facility will have 10 percent more storage capacity, even though there are two less storage bays.

Ken Nowak of NASA's Ground Systems Division said, "We visited airlines, warehouses and other large facilities around the country to see what kinds of logistics and storage equipment they were using."

The extra storage area

resulting from the renovations will be used for additional pallet storage of flight hardware and bulk storage for larger items.

USA storekeepers operate the cranes using compatible software. Each operator's station includes improved task lighting, ergonomic computer equipment and pick-up and delivery stations that tilt the bins for easy access to reduce lower back stress and injuries.

Nowak said: "This project not only benefits the Shuttle Program, but will also be a great selling point for possible future programs when looking at logistics support. The large storage capacity and up-to-date equipment will service any new program for years to come."



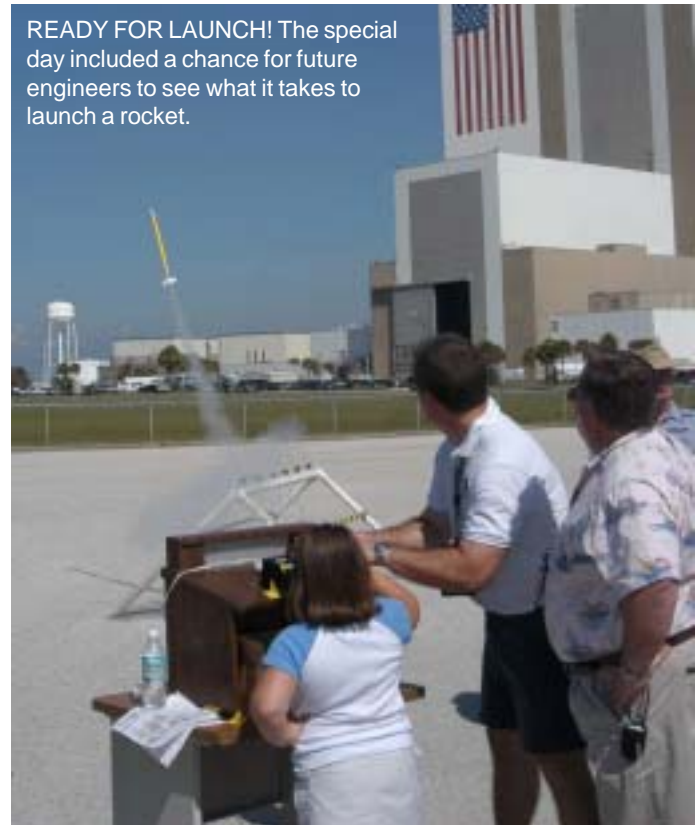
INSIDE THE LOGISTICS BUILDING, Joanne Loehner, United Space Alliance storekeeper, retrieves parts for shipping using the new automated and storage retrieval system.

Take Our Children To Work Day at KSC

Kennedy Space Center employees participated in Take Our Children To Work Day July 27 with a kick-off event at the IMAX 2 Theater in the Visitor Complex. Other activities included emergency response vehicles and a K9 unit demonstration in the Headquarters parking lot; fingerprinting inside the Headquarters building; an International Space Station components tour in the Space Station Processing Facility; and the movie "Boy From Mars" in the Training Auditorium.



CENTER DIRECTOR Jim Kennedy answers questions during Take Our Children To Work Day.



READY FOR LAUNCH! The special day included a chance for future engineers to see what it takes to launch a rocket.

TAKE OUR CHILDREN To Work Day begins at the Training Auditorium (above) July 27. Bottom, in the Headquarters parking lot, the children and their parents look at the weapons used by the Spaceport security forces.



KSC completes first full Shuttle main engine

Boeing-Rocketdyne recently completed the build-up and avionics testing of engine 2058, the first SSME fully assembled at Kennedy Space Center. Last

week, in the Space Shuttle Main Engine (SSME) Processing Facility, technicians hoisted the more than 7,500-pound engine from its vertical work stand into a horizontal position in prepara-

tion for shipment to NASA's Stennis Space Center in Mississippi to undergo a hot fire acceptance test.

Historically, SSMEs were built and assembled at Boeing-Rocketdyne facilities in Canoga Park, Calif., with post-flight inspections performed at KSC. Both functions were consolidated in February 2002.

Engine 2058 is the first of five engines to be fully assembled on site, to reach the desired number of 15 SSMEs ready for launch at any given time in the Space Shuttle Program.

"Our team is certainly proud of the fact that this engine, the first to be fully assembled at KSC, will be part of our near-term Shuttle fleet and a major player in support of NASA's

Return to Flight efforts in 2005," noted Mike Cosgrove, Boeing-Rocketdyne flow manager. "It's a major achievement for us."

Processing and assembly work began in February of this year. The engine reached its first major milestone in April when the powerhead unit was mated to the Main Combustion Chamber.

The engine is scheduled for shipping later this month and will return to KSC following acceptance testing.


Engine 2058 is currently slated for orbiter Atlantis on the STS-115 mission, currently set for no earlier than September 2005.

Each Space Shuttle employs three reusable main engines. Each is 14 feet long, with a 7.5-foot-diameter nozzle, generating almost 400,000 pounds of thrust.



IN THE Space Shuttle Main Engine (SSME) Processing Facility, Boeing-Rocketdyne employees secure SSME 2058, the first SSME fully assembled at KSC, onto an engine stand. Each engine is 14 feet long, with a 7.5-foot-diameter nozzle.

FESMIRE . . . (Continued from Page 3)
absolute heat leakage rates through materials under the full range of vacuum conditions, according to Fesmire and co-inventor Dr. Stan Augustynowicz, chief scientist with Sierra Lobo Inc. in Milan, Ohio. "This approach sets us apart from other labs," said Fesmire.
The new technologies have been proven through nearly 1,000 tests of more than 100 different material systems. The research team of the Cryogenics Testbed is active in testing and support for a number of programs and initiatives for both NASA and commercial customers.
Cryogenics is an energy-intensive field and thermal insulation is basically about the conservation of energy. As technology develops, insulation systems are reaching the highest standards of performance and efficiency. According to Fesmire, the future for industry and space exploration will require more efficient thermal insulation systems for low-temperature applications.



John F. Kennedy Space Center

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