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Spaceport News

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http://www.nasa.gov/centers/kennedy/news/snews/spnews_toc.html

Hail storm forces Atlantis rollback from pad

NASA rolled the Space Shuttle Atlantis off its launch pad and back inside the Vehicle Assembly Building after a hail storm on Feb. 26 damaged the orbiter's external tank.

At press time, a new target launch date has not been determined, but teams will focus on preparing Atlantis for liftoff in late April.

The severe thunderstorm with golf ball-sized hail caused thousands of divots in the giant tank's foam insulation and minor surface damage to about 26 heat shield tiles on the shuttle's left wing.

Once an up-close look at the damage is complete, the type of repair required and the time needed for that work can be determined.

Space Shuttle Program managers gathered at the center for the traditional Flight Readiness Review on Feb. 27-28 for the mission.

During the meeting, NASA managers and engineers assessed any risks associated with the mission and determined whether the shuttle's equipment, support systems and procedures are ready for flight.

Atlantis' mission STS-117 to the International Space Station will be scheduled sometime after a Russian Soyuz spacecraft leaves the station. The Soyuz is delivering new station crew members and returning others to Earth in late April.

Adequate time is needed between the Soyuz undocking and the shuttle's arrival to the station.

AT LAUNCH Pad 39A, the external tank attached to orbiter Atlantis shows damage from hail during a strong thunderstorm that passed through Kennedy Space Center on Feb. 26.

Launch Pad 39A undergoes major renovations

By Jennifer Wolfinger
Staff Writer

After four years and numerous modifications, Launch Pad 39A is prepared to launch space shuttles into orbit once again.

During this hiatus, more than 70 significant improvements were made to the pad.

"Launch Pad 39A is in better shape than ever, and we are on track to provide one of the cleanest, safest launch platforms ever for the next mission and through space shuttle completion," said Mike Orr, director of Launch Operations for United Space Alliance, which coordinated the pad refurbishment effort for NASA.

For example, the spaceport's environment is extremely corrosive because of its position next to the Atlantic Ocean, so one of the launch pad refurbishments included correcting the damage caused from years of exposure. To do so, workers sandblasted the entire structure down to the bare metal and applied two layers of protective coating.

To enhance communications, the analog system was replaced with a digital communication system known as the "integrated network control system." Pad workers use the system to talk to each other, and it allows communication between the firing room and the pad.

The rotating service structure's wheels were upgraded and the structure received additional reinforcement to withstand the

(See PAD A, Page 3)

WORKERS ON Launch Pad 39A begin moving the rotating service structure above them. The RSS has not been rotated for more than a year during the maintenance and upgrades on the pad. Some of the work included sandblasting the structure to remove rust and repainting.

Atlantis flow director looks forward to STS-117 launch

By Linda Herridge
Staff Writer

Recalling her early school years, Angela Brewer said working at Kennedy Space Center was not in her realm of possibilities. But a chance encounter with a NASA recruiter in 1983 while attending the University of Miami set her on the path to her current position of NASA orbiter flow director for Atlantis.

Brewer, whose career spans 23 years at KSC, is responsible for the day-to-day flow of Atlantis, also called OV-104. She moved into her current position in 2006 after working for eight years as a lead in orbiter project engineering.

Prior to that, Brewer worked in navigation aids for shuttle processing engineering for 14 years. "It was a good learning experience. I really liked working with such a great group of engineers." Brewer said.

Brewer said preparing Atlantis for launch on mission STS-117 was not without its challenges.

"There's never a dull moment," she said. But she is also quick to state that the job is very enjoyable, mostly because of the orbiter processing team, which includes NASA, United Space Alliance and Boeing employees.

According to Brewer, processing work included inspecting all of the orbiter's tile and gap fillers and replacing or repairing 151 tiles and blankets. Also, technicians developed an on-vehicle technique to repair the nose cap of Atlantis from damage received during mission STS-115 in September 2006.

Workers also repaired a section of Atlantis' payload bay area which had been damaged by micrometeorite orbital debris during the same mission. Prior to rollover to the Vehicle Assembly Building on Feb. 7, Atlantis had been in the Orbiter Processing Facility for 138 days.

Brewer said everyone worked long hours to prepare Atlantis for mission STS-117. "A lot of people sacrifice to make sure the orbiter is ready to fly," Brewer said. "I feel it's a privilege to get to do the work we do here."

Even with the recent hail damage that postponed launch, Brewer said, "It will be a challenge, but we will work through it." She looks forward to seeing the shuttle roll back out to the pad for the STS-117 launch.

ANGELA BREWER, NASA orbiter flow director for Space Shuttle Atlantis, is pictured with Dan Johnson, a United Space Alliance senior vehicle engineer, as OV-104 rolls over to the Vehicle Assembly Building.

Future Atlantis missions include STS-120, STS-124 and STS-125, which is designated the last Hubble servicing mission.

Brewer earned a Bachelor of Science degree in electrical engineering from Southern Illinois University. She is married to Dan Brewer and has a daughter, Kacie, and son, Rusty. In her spare time she attends her children's basketball and soccer games. She also likes to watch sports, play poker and read.

2007 KSC All-American Picnic is March 10

The KSC All-American Picnic will be held March 10 from 10 a.m. to 4 p.m. at the Kennedy Athletic, Recreation and Social (KARS) Park I. All KSC civil service, contractor and Cape Canaveral Air Force Station personnel associated with a NASA program are invited.

Scheduled events include a robust luncheon menu, live entertainment, a children's carnival, a car and motorcycle show, the popular Chili Cookoff and much more.

Tickets cost $9 for adults and $6 for children ages 3 through 12. Children under 3 may attend free, but still need a ticket. Tickets are available at the following locations: the Headquarters, Operations and Checkout, and Operations Support Buildings and Space Shuttle Processing Facility Sundry Stores; KARS Country Store; Hangar I Annex, Room 210, Gladys Morales, 321-476-4000; and the NASA Shuttle Logistics Depot 2, Cube 649, Debbie Doyle, 321-799-7002.

Bring your families to enjoy a day of laughter, entertainment, food, drinks and festivities.

March NASA employees of the month

THE MARCH NASA employees of the month include, from left, Xaivian Raymond, Human Resources; Edward Thompson, Engineering Directorate; John Blue, Engineering Directorate; Jeannie Ruiz, International Space Station and Spacecraft Processing; Chris Berg, Safety and Mission Assurance; Lisa Valencia, External Relations; Anthony Caruvana, Procurement Office; Kim Myrick, Center Operations; Jon Bauschlicher, Launch Services Program; Alan Zide, Constellation Project Office; and Johnny Nguyen, Launch Vehicle Processing.

Kennedy Executive Team announces changes

Joe Dowdy
Special Operations Manager

By Linda Herridge
Staff Writer

Retired U.S. Marine Col. Joe Dowdy has joined the executive team of Kennedy Space Center Director Bill Parsons in the newly created position of special operations manager. Dowdy previously worked as an executive coach at the center.

In his new role, Dowdy will manage special projects including process improvement and staff coordination throughout KSC, provide organizational advice to the center director and senior management team to improve processes, and assist in strategic planning.

"I'm excited about the future here at KSC," Dowdy said. "There is a special group of people that live and work here on the Space Coast."

Dowdy said NASA reminds him of the Marine Corps in the sense that it has a finely defined sense of purpose, mission and service over one's self-interest.

"This is going to be an exciting time to be here to see the transition from shuttle to constellation and the exciting missions in the Launch Services Program," Dowdy said.

Dowdy's service in the Marine Corps included a variety of staff and command positions. He participated in Operations Iraqi Freedom and Enduring Freedom and contingency operations in Beirut, Lebanon, Panama, Somalia and East Timor.

Dowdy graduated from the University of Mississippi in 1979 and earned Master of Arts degrees from Webster University and the U.S. Army War College in 2001.

Mike Wetmore
Advanced Planning Office Director

By Linda Herridge
Staff Writer

Former Kennedy Space Center Shuttle Processing Director Mike Wetmore recently moved to the position of advanced planning office director on the executive staff of Center Director Bill Parsons.

In his new position, Wetmore will manage the center's strategic planning process and ensure that strategic analysis, planning and communications are integrated and aligned with the mission and goals of NASA and KSC.

"It's important that we think strategically when looking at the agency's strategic plan and how best to implement it here at KSC," Wetmore said.

A key responsibility will be to facilitate communications between the center's programs and institutions. Wetmore will also work on cross-cutting technical issues and assist in an executive capacity as needed.

On the agency level, Wetmore will interface with the Office of Program Assessment and Evaluation.

Wetmore's 20-year career with NASA began in 1987. He started as a Shuttle Environmental Control and Life Support System engineer and later served as a Shuttle Fuel Cells/Power Reactant Storage and Distribution engineer in the Shuttle Management and Operations Directorate (later Shuttle Processing).

He transferred to the Directorate's Launch and Landing Projects Office as the lead for Resources Management, becoming the senior lead for Budgets and Contracts and then manager of the office.

PAD A . . . *(Continued from Page 1)*

increased load. The structure provides protected access to the orbiter for installation and servicing of payloads and some systems at the pad.

The modifications also addressed lightning, a major weather concern at the spaceport. A new lightning protection system, including a lightning mast, was manufactured and installed to protect the work force and equipment during lightning storms.

Furthermore, outdated and unused hardware was removed, the entire structure was rewired, and the sterile orbiter access White Room was cleaned, painted and outfitted with new light fixtures and phones. A special heat-resistant coating was also applied to the flame trench.

The trench protects space shuttle hardware from main engine and solid rocket booster flames.

The octagon-shaped launch pad covers about a quarter-square mile of land, and its hardstand contains 68,000 cubic yards of concrete and is 48 feet above sea level. Launch Pad 39A is scheduled to serve as the launch platform for Atlantis and the STS-117 crew to the International Space Station this year.

The mission will deliver the second and third starboard truss segments and another pair of solar arrays to the space station.

AS PART of the refurbishment to Launch Pad 39A, workers add reinforcement to the rotating service structure main frame to better carry loads.

STS-117 crew members complete countdown test

On the 215-foot level of the fixed service structure on Launch Pad 39A, mission STS-117 crew members (right) gather near the solid rocket boosters and external tank of Space Shuttle Atlantis. They have just completed a simulated launch countdown and emergency egress from the orbiter, part of the terminal countdown demonstration test.

From left are Mission Specialists Danny Olivas and Steven Swanson, Pilot Lee Archambault, Commander Rick Sturckow, and Mission Specialists Patrick Forrester and James Reilly. The test also includes M-113 armored personnel carrier training and payload familiarization.

The STS-117 mission is No. 21 to the International Space Station. Mission payloads aboard Atlantis include the S3/S4 integrated truss structure, a third set of solar arrays and batteries.

STS-117 MISSION Specialists James Reilly (bottom) and Danny Olivas sit in the mid-deck of Space Shuttle Atlantis at Launch Pad 39A to participate in a simulated launch countdown that is part of the prelaunch preparations.

STS-117 COMMANDER Rick Sturckow (right) gives a thumbs up after he and Pilot Lee Archambault practice emergency egress procedures at Launch Pad 39A.

NASA LAUNCH Director Mike Leinbach (right) greets Mission Specialist Steven Swanson at the Shuttle Landing Facility before the simulated launch countdown.

THE MISSION STS-117 crew members practice the walk out from the Operations and Checkout Building to the astronaut van for transport to Launch Pad 39A during terminal dountdown demonstration test activities. At left from the front are Pilot Lee Archambault and Mission Specialists Steven Swanson and Danny Olivas. At right from the front are Commander Rick Sturckow and Mission Specialists Patrick Forrester and James Reilly.

Team offers 'BEST' African-American history celebration

The Black Employee Strategy Team, also known as BEST, celebrated African-American History Month on Feb. 24 at the Radisson Resort at the Port in Cape Canaveral with the theme, "Experience the Arts! Exploring African-American Culture Through Music, Theatre and the Arts." Guest speaker Charlie Bolden, a former NASA astronaut who served on four space shuttle missions, gave a presentation about his experiences. Following Bolden's speech, attendees were treated to a jazz performance by Gerald "Zoc" Adderly, a dance performance by Foster and Rochelle Clark, a history of highway art by Al Black and a performance by James and Rosamond Johnson, who sang, "Lift Every Voice and Sing."

The Evelyn Johnson Scholarship was then presented to Kristin Leek. The scholarship is awarded by BEST in remembrance of the dedication and commitment given by Johnson, a NASA employee for 28 years, to create opportunities for higher education and personal growth for high school and college students.

GUESTS ENJOY dinner during the 2007 African-American History Month celebration held Feb. 24 at the Radisson Resort at the Port.

THE DANCE floor was crowded at the 2007 African-American History Month celebration hosted by the Black Employee Strategy Team.

GUEST SPEAKER Charlie Bolden talks to BEST Chairperson David Banks at the 2007 African-American History Month celebration. Bolden, a former NASA astronaut, flew on four space shuttle missions.

KRISTIN LEEK, the recipient of the 2007 Evelyn Johnson Scholarship, thanks members of the Black Employee Strategy Team while Elaine Johnson and Jay Diggs look on.

ROCHELLE CLARK performs a dance during this year's African-American History Month event. This year's theme was "Experience the Arts! Exploring African-American Culture Through Music, Theatre and the Arts."

Kennedy stays safer in 'Lightning Alley' with new technology

By Anna Heiney
Staff Writer

Florida typically lives up to its "Sunshine State" moniker, with sun-kissed beaches, juicy oranges and abundant wildlife. But the same warm, moist climate that creates this tropical paradise also lends itself to thunderstorms — and potentially deadly lightning.

Central Florida leads the nation in lightning strikes. Kennedy Space Center and the adjoining Cape Canaveral Air Force Station are located well within this danger zone, which meteorologists call "Lightning Alley."

But despite the ever-present threat, a new tool — based on previous Kennedy Space Center technology — is expected to keep the spaceport's personnel, unique hardware and facilities safer than ever.

It's called the 4DLSS, which stands for Four-Dimensional Lightning Surveillance System. The innovative system combines the best of two complementary weather-monitoring technologies to give meteorologists the total picture of lightning activity across the launch center and surrounding counties.

One component of the new system relies on the technology of Lightning Detection and Ranging, or LDAR. Originally developed by Kennedy as a lightning research tool, the system proved so effective the agency decided to use it for daily operations, as well.

However, since the LDAR primarily was designed for research instead of daily use, its outdated design makes it difficult and expensive to maintain.

In the late 1990s, NASA transferred the technology to Global Atmospherics Inc. (now Vaisala Inc.), which improved and refined the system for worldwide, commercial use.

The resulting technology, LDAR II, uses commercial off-the-shelf components and better engineering software to provide a cheaper, more reliable system.

Nine antennae are strategically placed throughout the spaceport and surrounding counties. Stronger and more compact than the original seven-antenna network, the new sensors provide up to 10,000 time-stamped lightning reports per second, in three dimensions.

While the LDAR II system is very effective at picking up on all the "arcs and sparks" in stormy skies and tracking lightning as it traces downward, there is one drawback: It can't see up to 1,000 feet above the ground. This means the system won't detect the actual ground strike. Only about 30 percent of lightning is of the cloud-to-ground variety — the remaining 70 percent remain in the clouds — but that's still nearly a third of the total lightning picture.

Enter the Cloud-to-Ground Lightning Surveillance System,

ONE OF the nine Lightning Detection and Ranging antennas placed around the spaceport to monitor stormy weather.

which zeroes in on ground strikes. Called CGLSS (pronounced "sea-glass"), the system detects what LDAR II can't.

Data from both systems feeds into a new, faster computer processor that can quickly sort through the information streaming in from the antenna network. Unlike the original processor, the new one also accommodates antennae that vary in height.

Another advantage of the upgraded processor is its ability to detect and display not only the first return stroke of a cloud-to-ground lightning flash, but subsequent return strokes, as well. Separated by tenths of a second — right at the limit of what the human eye can see — subsequent return strokes can strike the ground two miles or more from the original strike location.

The Four-Dimensional Lightning Surveillance System is installed, but can't be tested until real-world lightning unleashes its fury over the launch center. Data from the new system will be compared to that supplied by the original LDAR to verify its performance.

Joe Pallay, an employee of ITT's Systems Division out of Colorado Springs, is the project team leader for the 4DLSS. Asked when testing will begin, he answers with a laugh, "Well, can you tell me when Mother Nature is going to give me some lightning?"

Here in Lightning Alley, he probably won't have to wait long.

Software Assurance Research Program solicits proposals

NASA's Office of Safety and Mission Assurance Software Assurance Research Program, also known as SARP, has released a research solicitation for the fiscal year 2008 funding cycle. This program seeks to improve mission assurance by advancing the state of software engineering within NASA through research.

The objectives of SARP include developing and validating measures of software quality in the context of mission assurance, and assessing the contribution of software assurance to the overall success of NASA missions.

Civil servants and contractors are eligible to act as primary investigators on SARP research proposals.

Proposers must already have in place a contract vehicle that can support the proposed work. Awards will be task orders or modifications to existing contract vehicles.

The proposals are due no later than March 15 and the award announcement is scheduled for May 5.

Kennedy Space Center currently has an active SARP initiative led by Janice Hill of Software Assurance. Hill's research will focus on how to effectively recertify safety-critical legacy software systems based on the NASA Software Safety standard.

The assurance of legacy systems from a safety perspective is important when reuse of the system is considered. Problems arise when attempting to carry out the requirements of a software safety standard on real-time legacy systems with safety-critical software.

A proposal template and additional information may be found at **http://www.nasa.gov/centers/ivv/research/osmasarp.html**.

Remembering Our Heritage

45 years ago: First Orbiting Solar Observatory managed by NASA's first female executive

By Kay Grinter
Reference Librarian

The first Orbiting Solar Observatory satellite was launched March 7, 1962, by Delta-8 from Pad 17A on Cape Canaveral.

This first in a series of eight OSO missions was designed to conduct solar physics experiments above Earth's atmosphere during a complete 11-year sun cycle and to map the entire celestial sphere for direction and intensity of ultraviolet light, and X-ray and gamma radiation.

The second OSO launch took place on Feb. 3 three years later; the third on March 8, 1967.

Two of these launch anniversaries fall in March, during Women's History Month, an appropriate time to celebrate the career of Nancy Grace Roman, NASA's first female astronomer. Hired in 1959 shortly after NASA was formed, she had scientific responsibility for these three OSO missions.

Roman served as chief of astronomy in the Office of Space Science at NASA Headquarters and was the first woman to hold an executive position in the agency. Before she retired in 1979, she had oversight for the planning and development of several other astronomical satellite programs, including the Cosmic Background Explorer and the Hubble Space Telescope.

At Kennedy Space Center, Nancy Pearce-Welsh was assigned to Unmanned Launch Operations from March 1964 until August 1976. As secretary to Don Sheppard, chief of Spacecraft Operations, she was a facilitator for the employees of the Ball Brothers Research Corporation, builders of the OSO spacecraft, who arrived at the Cape to put the finishing touches on the satellites in unfamiliar surroundings.

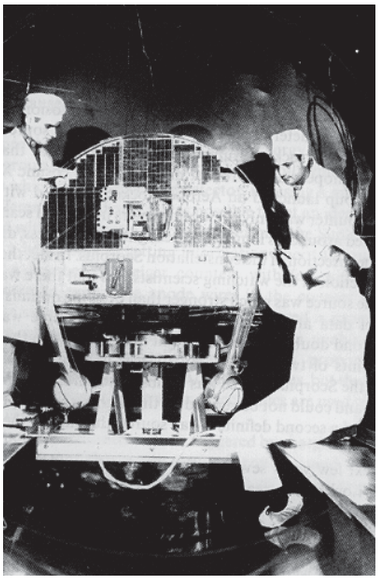
"Shep and everybody in Unmanned Launch Operations made the Cape a memorable place to work. When I moved to Michigan, I missed them and the post-launch parties, often held in a room over Wolfie's Restaurant in Cocoa Beach," she recalled, now retired and living in Brevard County.

The restaurant, popular with local residents, gained national attention after the media learned it was the source for the corned beef sandwich smuggled aboard the Gemini 3 flight.

The OSO-1 spacecraft performed normally until the second onboard tape recorder failed May 15, 1962, but continued to transmit real-time data until May 1964, when the power cells failed. It transmitted 1,000 hours of data on solar phenomena, including measurements of 75 solar flares.

The dependable OSO-2 and OSO-3 satellites also performed as designed. When the pitch gas supply neared exhaustion on OSO-2 in November 1965, the satellite was put in a stowed condition. The transmitter was turned on intermittently until March 1966, and then on a weekly schedule until June when it ceased operation. After the second onboard tape recorder failed on OSO-3 in July 1968, the spacecraft was put on standby in November 1969. It became inoperable shortly thereafter.

The eighth and last OSO satellite in this successful program was launched in June 1975.



THE ORBITING Solar Observatory, or OSO, conducted solar physics experiments during a complete 11-year sun cycle. At left, the Delta-8 launch vehicle sits on Pad 17A in Cape Canaveral. Below, employees process the OSO satellite, which performed as designed until the second onboard tape recorder failed on May 15, 1962.

Join those who paved the way to space with inscribed brick

Spacewalk is a paved walkway located at the Kennedy Space Center Visitor Complex made of inscribed bricks, each with the name of individuals who have contributed to the space program. The walk encircles the ponds between the Center for Space Education and the Space Mirror.

Anyone may purchase a Spacewalk inscription for someone who supports the space program. Each inscribed name and a narrative of up to 50 words about the named person will be entered into a computerized data base. This information, together with the exact location of the person's brick, will be available at an information desk at the Visitor Complex or at the Web site, **http://www.amfcse.org/spacewalk.htm**.

The NASA Alumni League Florida Chapter and the Astronauts Memorial Foundation are sponsoring Spacewalk for two purposes. First, the walkway will honor those who support our space program. Second, it will support programs to educate a new generation of scientists and engineers who will carry on the space program's tradition of accomplishment.

Each inscription costs $75. Purchase bricks by calling 800-792-3494 or by visiting **http://www.amfcse.org/spacewalk.htm**.

NASA's AIM to study clouds at the edge of space

NASA's Aeronomy of Ice in the Mesosphere mission is scheduled to launch no earlier than April 25 at Vandenberg Air Force Base in California.

The experiment, also called AIM for short, is designed to study the highest clouds in the Earth's atmosphere, also called clouds at the edge of space. These clouds are made of frozen water, or ice crystals, just like some of the clouds that appear in the sky every day.

Unlike more common clouds that form up to five miles above the surface of the Earth, these clouds are 50 miles high in a layer of the atmosphere called the mesosphere. Also unlike normal clouds, these clouds can only be seen near twilight.

For this reason, they are often called "noctilucent" clouds, or NLCs, because the word noctilucent means "night-shining." Scientists also call these clouds "polar mesospheric clouds," or PMCs for short, because they usually form only at high latitudes near the north and south poles.

In recent years, however, several people have reported seeing NLCs at lower latitudes, including in Utah and Colorado. Also, NLCs seem to be getting brighter over time.

Scientists do not understand why this is happening and hope to determine if these changes are caused by natural variations in the Earth's atmosphere, or if they are influenced by human activities.

The satellite will have three instruments that provide information about PMCs and their environment. One instrument, called CIPS or Cloud Imaging and Particle Size Experiment, will take pictures of the clouds to determine when and where they form and what they look like.

Another instrument, called SOFIE or Solar Occultation for Ice Experiment, will measure the temperature of the mesosphere and how much water vapor is present to determine what combination of these is necessary to freeze the water into ice crystals that form PMCs. This instrument will also measure the amounts of other gases to tell scientists more about the chemistry and movement of air in the mesosphere that might lead to cloud formation or evaporation.

The third instrument, called CDE or Cosmic Dust Experiment, measures how much dust from meteors enters the Earth's atmosphere.

This is important because scientists wish to find out if a tiny speck of dust is necessary to provide a surface on which water vapor condenses and freezes. Without dust, it is possible that PMCs are much less likely to form.

Camp KSC offers spring break session for students

Camp Kennedy Space Center offers children entering second through ninth grade an out-of-this-world experience to explore space. The spring session is scheduled for March 26-30.

Regular tuition is $295 per child. There is a 10-percent discount for badged employees and contractors of Kennedy Space Center, Cape Canaveral Air Force Station, Patrick Air Force Base and retired KSC personnel.

Camp KSC is based at the U.S. Astronaut Hall of Fame in Titusville. Spring camp hours are from 9 a.m. to 4:30 p.m., with extended early drop-off and late pick-up hours available free for badged employees.

Campers receive a complimentary KSC Visitor Complex annual pass, lunches and afternoon snacks, an official Camp KSC T-shirt, four complimentary admission tickets to the U.S. Astronaut Hall of Fame, a Camp KSC graduation ceremony and a certificate of completion.

For information, call 321-449-4444 or visit **www.KennedySpaceCenter.com**.

STUDENTS WORK together on a simulated space shuttle mission during Camp Kennedy Space Center. This year's spring session is March 26-30.

RehabWorks offers treatment series

The Kennedy Space Center Fitness Centers are offering the RehabWorks Educational Lecture Series to provide employees the opportunity to learn more about musculoskeletal injuries and treatment. Throughout this year, RehabWorks will be conducting monthly speakers with a variety of topics in various locations around the center.

At 10 a.m. March 20 in the Operations Support Building 1, the topic will be "Youth, Sports and Exercise: What You Need To Know." Visit **http://rehabworks.ksc.nasa.gov** for details.

John F. Kennedy Space Center

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