



# Spaceport News

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John F. Kennedy Space Center

## NASA offering chance to study Columbia debris

NASA's Kennedy Space Center has issued a Request for Information (RFI), seeking organizations interested in using debris from the orbiter Columbia in researching the effects of reentry.

Scientific, academic and governmental organizations interested are asked to submit their requests by June 6 detailing their previous experience, plans for use of the orbiter debris and the scientific benefits expected to be gained by their research.

"This is a general request to organizations outside the NASA family," said Mike Leinbach, Columbia reconstruction chairman and Shuttle launch director.

"Through the efforts of outside researchers, we stand to learn a great deal regarding hypersonic and thermodynamic properties and their affects on spacecraft parts. This will greatly assist in the design and flight safety of future spacecraft."

In establishing an enduring  
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## Mars Exploration Rover slated for June launch

Is there life on Mars? Could humans build a new off-Earth settlement on the red planet? NASA's twin robot geologists, the Mars Exploration Rovers (MER), are scheduled to launch toward Mars in June in search of answers to these questions, including the history of water on the planet.

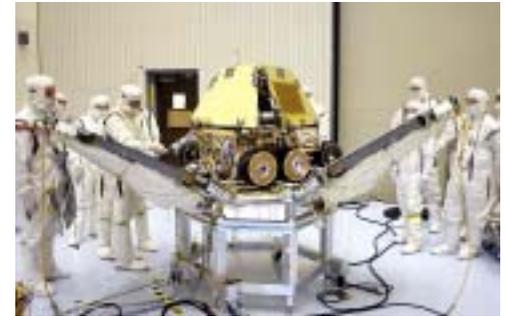
The MER mission is part of NASA's Mars Exploration Program, a long-term effort of robotic exploration of the red planet. The program seeks to take advantage of each launch opportunity to go to Mars, which comes around every 26 months as the planets move around the sun. At the time of publication, two separate launches were scheduled between June 8 and July 15. The two rovers will be delivered in landing craft to separate

sites on Mars in January 2004.

The MER-A mission will have two launch opportunities each day, which is scheduled to close June 19. Primary among the mission's scientific goals is to search for and characterize a wide range of rocks and soils that

hold clues to past water activity on Mars. The spacecraft will be targeted to sites that appear to have been affected by liquid water in the past.

After the airbag-protected landing craft settle onto the surface and open, the rovers will roll out to take panoramic



images. These will give scientists the information they need to select promising geological targets that will tell part of the story of water in Mars' past. Then, the rovers will drive to those locations to perform on-

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## Columbia Board pays visit to debris hangar

Hoping to gain insight that led to its breakup, the Columbia Accident Investigation Board (CAIB) looked over the remains of the Space Shuttle May 17, paying close attention to the left wing.

"We saw the things today which we believe are compelling pieces of evidence that tell us how the heat got into the vehicle and where the flaw started," said the chief investigator, retired Navy Adm. Harold Gehman Jr. Board members said it was their duty to see the wreckage one last time as a group before winding up their investigation and writing their final report.

"There are a number of pieces of debris out here, which are extraordinarily significant, that contribute directly to our investigation, and we wanted to see if, as a jury, we came to the same conclusion that our experts have," said Gehman.

Shuttle Launch Director Mike Leinbach, who is heading the reconstruction team at the Colum-

bia Debris Hangar, supports the interaction between his staff and the CAIB Board.

"We get to hear their current thinking on the accident investigation and they hear from us on

our study of the debris, which sometimes in the past hasn't always lined up," he said.

"They rely on the expertise we have assembled here in the hangar

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In the Columbia Debris Hangar, Adm. Harold Gehman (third from right), chairman of the Columbia Investigation Accident Board, looks at Columbia debris. Gehman and the board visited KSC May 17 as part of the ongoing investigation. Flanking Gehman are U.S. Representatives Dave Weldon (left) and Tom Feeney (right), who accompanied the board.

# Parsons named Shuttle Program Manager

NASA recently announced the selection of William (Bill) W. Parsons as the new manager for the Space Shuttle Program. Parsons, the former director of the John C. Stennis Space Center (SSC), succeeds Ronald D. Dittmore, who announced his resignation April 23.

Parsons has served as the SSC director since August 2002. He was first assigned to SSC in 1997 as the chief of operations of the Propulsion Test Directorate.

Parsons relocated to Johnson Space Center (JSC) in Houston to become the director of the Center Operations Directorate, and he later served as the deputy director of JSC. He returned to SSC in 2001, and he served as director of

the Center Operations and Support Directorate.

"This is a critical position for the agency as we begin to focus our Return to Flight efforts in the wake of the Columbia tragedy," said NASA Administrator Sean O'Keefe.

"The Space Shuttle Program, the entire spaceflight community and the nation will be served by Bill's great leadership. He will be missed by our colleagues at Stennis, but the benefits to all the NASA family will be tremendous."

Parsons began his career in the United States Marine Corps as an



Bill Parsons

Infantry Officer, then worked as a manufacturing engineer and later as an aerospace engineer at Cape Canaveral Air Force Station.

In 1990, Parsons joined the NASA team at Kennedy Space Center as a Launch Site Support manager in the Shuttle Operations Directorate, worked as an Executive Management intern, and later as the Shuttle Flow director of the Shuttle Operations Directorate at KSC. In 1996, he became manager of the KSC Space Station Hardware Integration Office.

"From the first time I saw a

Space Shuttle launch, I knew I wanted to be a part of NASA and America's space exploration efforts," said Parsons.

"This is a challenging time for the program, but the people of NASA have a long, successful history of overcoming adversity. I'm proud to be a part of the Return to Flight effort and look forward to getting the Space Shuttle safely flying again."

Parsons has received numerous honors, including NASA's Exceptional Service Medal; the National Intelligence Medal of Achievement; the Silver Snoopy; the Center Directors' Commendation; and the Commandants Certificate of Commendation from the United States Marine Corps.

## Budget module working toward One NASA

The Integrated Financial Management Program (IFMP) is a NASA-wide effort to modernize the Agency's financial and administrative systems and processes. The Kennedy Space Center and other NASA Centers are now using the NASA Staffing and Recruitment System (NASA StARS), Position Description Management (PDM), Core Financial (CF) and Travel Manager (TM). Preparations are progressing to implement the latest module, Budget Formulation (BF).

The mission of the Budget Formulation module is to design and implement a single integrated Agency-wide budget formulation process/system. Identified as a One NASA tool, it has the capacity for bottoms up formulation of institutional, program, enterprise and Agency-level budget formulation requirements. It will also support top down decision making, link supporting data to the resources estimates, and redistribute top down decisions back through the bottoms up formulation as a basis for operating plans and future budget formulation cycles.

The Budget Formulation system will support six stages of

the budget cycle including Pre-Program Operating Plan (POP), Center POP, Enterprise Review, Agency POP, OMB Release and Congressional Budget.

The benefits of the Budget Formulation system to NASA include: standard and efficient processes to provide budget data for management analysis and reporting; provide timely, consistent and reliable information for management decisions; integration of budget data with the Core IFM Module to support budget execution; a consistent source of information to facilitate sharing of data across the various levels of NASA; and improve NASA accountability and enable full cost management.

"The Budget Formulation system facilitates full cost activities, particularly the allocation of pools done today by offline spreadsheets," said Richard Cota, IFM Project Manager. "Budget Formulation is another step toward the achievement of our One NASA goal. It will provide the capability to plan from the bottom-up, through the entire budget cycle to the Congressional budget, with

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## Marshall Space Flight Center implements management change

NASA Associate Administrator for Space Flight William F. Readdy recently announced David A. King as the new center director for the Marshall Space Flight Center, Huntsville, Ala.

King is currently Marshall's deputy director and will succeed Arthur G. Stephenson when he steps down June 15.

King, whose NASA career began in 1983, has held the number two position at Marshall since November 2002. In that capacity, he assisted the center director in managing a broad range of propulsion, space science and materials research and development work.

King has also played a key role in NASA's Shuttle recovery operations in Lufkin, Texas, beginning earlier this year. He was dispatched to Lufkin within hours of the accident and immediately began serving as the senior on-site NASA official.

Prior to serving as deputy director at Marshall, King was director of Shuttle processing at KSC, where he managed and coordinated all processing and



launch operations.

He coordinated all pre-launch preparations, as well as Shuttle landing operations.

In addition to those duties, King reassumed the responsibilities as Shuttle launch director from July 1999 until the position was filled in August 2000.

Stephenson decided to step down from his current position and move to an important role in promoting NASA's Education efforts until his retirement in January 2004.

Serving as special assistant to Dr. Adena Loston, the associate administrator for Education at NASA Headquarters, Washington, D.C., Stephenson will be based at the National Space Science and Technology Center (NSSTC) in Huntsville.

"With NASA preparing to implement a comprehensive 'Return to Flight' effort, I felt the timing for this move is in the best interest of the agency, Marshall, and me, personally," said Stephenson.

# Recognizing Our People

## Inaugural aerospace technology program students graduate

On May 17, Brevard Community College's Aerospace Program at the KSC Spaceport Center had its first graduating class in Aerospace Technology. The 12 students completed a 21-month program in specialized courses with a curriculum promoted by the aerospace industry.

With the support from Kennedy Space Center, the U.S. Air Force 45<sup>th</sup> Space Wing and many aerospace contractors, the program provides the community with entry-level employees having skills specifically designed to support the processing of reusable and expendable launch vehicles.

The program achieved national

status by hosting a National Science Foundation Center of Excellence, including nine other colleges in eight states.

"In our small way, we are working to contribute to the NASA Administrator's educational goal," said Dr. Albert Koller, Brevard Community College executive director of aerospace programs.

"I hope our national program can provide better visibility of NASA and DOD opportunities and linkages with K-12 for our youth."

Registration for the next Aerospace Program is in progress. BCC is accepting applications for the Fall 2003 semester, which begins on August 18. Candidates



Twelve students in the first class of the Aerospace Technology Program at KSC's Spaceport Center recently graduated. The program provides students with the knowledge to support the processing of reusable and expendable launch vehicles.

willing to attend full time classes with emphasis on hands-on technical skills will need to prepare a special application, in addition to the usual college admissions form, and submit all

required qualifications before July 3. For more information, contact the BCC Spaceport Center at (321) 449-5060 or visit the website at <http://www.brevardcc.edu/spaceport>.



**May Employees of the Month:** From left, Richard Boyles, Spaceport Services; Martha Grace Bell, Launch Services Program; Bennie Bell, External Relations and Business Development; Sherry Gasaway, Procurement Office; Melanie Mulligan, Shuttle Processing; Gregory Melton, Spaceport Engineering and Technology; and Patty Hepburn, Shuttle Integration. Not shown is Pablo Aguayo, ISS/Payloads Processing.

## Shuttle astronauts to be inducted into Visitor Complex Hall of Fame

Space Shuttle astronauts Daniel Brandenstein, Robert "Hoot" Gibson and Sally Ride will be honored during Astronaut Hall of Fame Induction Weekend June 20-21 at the KSC Visitor Complex.

Tickets for the weekend event include a ribbon-cutting ceremony with 20 current Astronaut Hall of Fame inductees to officially open the festivities June 20 at 4 p.m.; choice of one of two "Dine With An Astronaut" programs Saturday, June 21 – an Apollo Brunch with Apollo astronauts Eugene Cernan, Walter Cunningham and Ed Mitchell at 10 a.m., or a Right Stuff Luncheon with Mercury astronauts Scott Carpenter and Gordon Cooper at 12:30 p.m.; reserved seating at the induction ceremony at the Visitor Complex's Shuttle Plaza June 21 at 3 p.m., hosted by Apollo 13 Commander James Lovell; three-day Maximum

Access admission to the Visitor Complex and the Astronaut Hall of Fame valid June 20-22; and a commemorative poster featuring all of the members of the Astronaut Hall of Fame.

In addition to the three inductees, astronauts currently scheduled to attend the induction festivities are Buzz Aldrin, Scott Carpenter, Gene Cernan, Gordon Cooper, Bob Crippen, Walter Cunningham, Fred Haise, Edward Gibson, Owen Garriott, John Glenn, Dick Gordon, Rick Hauck, James Lovell, James McDivitt, Ed Mitchell, Richard Truly, Al Worden and John Young.

Astronaut Hall of Fame Induction Weekend tickets are \$59.45 plus tax for adults and \$39.45 plus tax for children 3-11, and are available online at [www.kennedyspacecenter.com](http://www.kennedyspacecenter.com) or by calling (321) 449-4444.

# KSC volcanic research may enhance

**A** research and development team from Kennedy Space Center (KSC) recently used a new hazardous gas detection system to study volcanic emissions in Costa Rica. The new prototype system, named the Aircraft-based Volcanic Emission Mass Spectrometer (AVEMS), will also have a direct application to the Space Shuttle Program.

The AVEMS is a step toward an advanced system that will be able to detect toxic gas leaks and emissions in the Space Shuttle aft engine compartment and the crew compartment, providing an added level of protection for the astronauts and the vehicle.

“For Shuttle applications, it was especially helpful that we had the opportunity to fly the system at altitudes of up to about 40,000 feet,” said Dr. Richard Arkin, ASRC Aerospace Corp.’s lead designer.

Arkin, along with NASA project lead, Dr. Tim Griffin, and members of the KSC team used AVEMS to analyze gases vented from the Turrialba volcano in Costa Rica. The tests were

conducted from the air and in the volcano’s crater.

The study was the first to sample and quantitatively analyze fresh volcanic gases in their natural state. Active vents in volcanoes, called fumaroles, produce toxic gases such as sulfur dioxide, hydrogen sulfide and carbon dioxide, which, if too concentrated, can be fatal.

“Hikers on the volcanoes sometimes get cold then are attracted to the warm vents.

When a large vent is producing massive amounts of carbon dioxide, the carbon dioxide displaces oxygen, which could be fatal to the hikers nearby,” said Griffin.

The new system shows promise for commercial applications in a variety of environments and industries such as semiconductor, petrochemical, automotive, refrigeration and cathode ray tube. The technology could be used for breath and



Left: Top, the Aircraft-based Volcanic Emission Mass Spectrometer (AVEMS) analyzed volcanic gases vented from the Turrialba volcano in Costa Rica. The tests were conducted from the air and in the volcano’s crater. Bottom, researchers carry the AVEMS to the volcano.

Above: Top, the system was used in altitudes of up to about 40,000 feet in Costa Rica; bottom, researchers carry the AVEMS to the volcano.

Right: Top, the study is the first to sample and quantitatively analyze fresh volcanic gases in their natural state; bottom, NASA’s Johnson Space Center prepared for nine research flights.

# Space shuttle gas detection systems



blood analysis as well as for monitoring air quality in the workplace.

“Mass spectrometer technology could be used to ensure public safety and equipment protection in so many areas,” said Griffin.

“Previous mass spectrometer systems have been so expensive and bulky that their use was limited to laborato-

ries.” The new system is small and mobile and has the ability to easily and accurately produce in-depth data.

The project was part of the Costa Rican Airborne Research and Technology (CARTA) mission and was funded through the National Science Foundation. Costa Rica USA (CRUSA), a consortium of Costa Rican universities and government agencies, partnered

on the project.

The inspiration for international cooperation that gave rise to the study came from a discussion between NASA astronaut Franklin Chang-Diaz and University of Costa Rica professor Dr. Jorge Andres Diaz, who previously served as a visiting scientist at KSC.

NASA’s Johnson Space Center provided the WB-57F aircraft and support for the nine research flights in the hazardous

gas study.

Ames Research Center (ARC) provided infrared and visible photography as well as multispectral imaging on the mission.

Ric Adams and Duke Follistein are the NASA technical contacts for the overall Advanced Hazardous Gas Detection System project and were critical in obtaining the funding for this project as well as instrumental in the design aspects of AVEMS.



Mass Spectrometer (AVEMS) is used to analyze volcanic gases in Costa Rica and researchers were required to wear respirators to avoid toxic gas emitted from the volcano; bottom, tests conducted in the volcano’s crater.

Flights up to 40,000 feet over the Turrialba volcano in Costa Rica. NASA provided the WB-57F aircraft and support for the

to analyze fresh volcanic gases in their natural environment. NASA provided the WB-57F aircraft and support for the

## MER spacecraft biologically clean

What do NASA's soon-to-be-launched Mars Exploration Rover (MER-1 and MER-2) spacecraft have in common with the Viking and Voyager spacecraft launched decades ago? Besides being interplanetary explorers, they will be among the biologically cleanest spacecraft ever launched from Cape Canaveral Air Force Station.

Making sure the spacecraft are as biologically clean and contamination-free as possible before they leave Earth is NASA's planetary protection (PP) policy that protects other solar system bodies from Earth life and protects Earth from extraterrestrial life that may be brought back by returning space missions.

NASA's policy is based on the most recent understanding of planetary conditions and biology, and regular recommendations from the U.S. National Academy of Science.

According to Laura Newlin, Jet Propulsion Laboratory (JPL), Pasadena, Calif., engineer and Planetary Protection (PP) Lead for the MER missions, JPL's Biotechnology and Planetary Protection Group seeks to advance spacecraft cleanliness, sterilization and validation technologies for NASA's solar system exploration missions. And Newlin said, "Keeping the spacecraft as clean as possible before, during and after launch is very important for any science instruments searching for organic compounds on the surface of other planets."

How clean does NASA's PP

requirements say the spacecraft must be? "Up to 300,000 spores are allowed on the exposed surfaces of the landed spacecraft. That many spores would fit on the head of a large pin," said Newlin.

A companion requirement to this is the average spore density on the surfaces must be less than 300 spores per square meter (28 spores per square foot). There are approximately 4500 square meters (approximately 48,000 square feet) of surface on each MER spacecraft, including the cruise stage.

So while the world watches and waits eagerly for NASA's launch of two Mars Exploration Rovers (MER) to occur in June, engineers and technicians from JPL have been preparing the robotic explorers at Kennedy Space Center for their journey to the red planet.

When the spacecraft arrived at KSC from JPL in February and March, they were transported to a highbay in the Payload Hazardous Servicing Facility in the Industrial Area. Prior to that, the highbay and ground support equipment were cleaned, sampled and re-cleaned to reduce further biological contamination when the spacecraft arrived.

Both spacecraft have undergone extensive alcohol-wipe cleaning and bio-testing processes. They were disassembled and cleaned to remove any contamination that may have occurred during transport to KSC. During reassembly, JPL PP team members sampled surfaces of both spacecraft to check for microbial spores.

Culturing of the samples was performed in several Hangar L labs

using equipment from JPL or provided by KSC including media claves, sonicators, water baths, incubators, microscopes, bio-safety hoods, and a large magnified colony counter.

"Currently our total spore count on the surface of both MER vehicles is comfortably under 200,000, so we're below the allowable level," said Newlin.

Other PP strategies exist for MER surfaces that are inappropriate for the traditional cleaning method. These include Dry Heat Microbial Reduction of the hardware in a dry environment at 125 degrees Celsius (257 F) for five hours. The process is performed piece by piece on large surface areas that can tolerate the temperature, such as thermal blankets, airbags, honeycomb structures and parachutes in their cans.

A High Efficiency Particulate Arrestor (HEPA) Filter is also used to filter out 99.97% of particles that are 0.3 microns or larger on MER's electronic boxes and the rover body. These permanent fixtures will also help filter out the Martian dust when the MER spacecraft land on Mars. Spacecraft propellant lines were also precision cleaned.

According to Newlin, the PP team worked with the spacecraft design engineers to determine PP strategies, what hardware should be cleaned and what hardware would require other PP approaches, all of which were integrated into the design, fabrication, and assembly of the spacecraft.

## MARS...

(Continued from Page 1)

site scientific investigations over the course of their 90-day mission.

Primary science instruments to be carried by the rovers include:

- Panoramic Camera (Pancam) for determining the mineralogy, texture and structure of the local terrain.

- Miniature Thermal Emission Spectrometer (Mini-TES) for identifying promising rocks and soils for closer examination, and to determine the processes that formed Martian rocks. The instrument will also look skyward to provide temperature profiles of the Martian atmosphere.

- Mössbauer Spectrometer (MB) for close-up investigations of the mineralogy of iron-bearing rocks and soils.

- Alpha Particle X-Ray Spectrometer (APXS) for close-up analysis of the abundances of elements that make up rocks and soils.

- Magnets for collecting magnetic dust particles. The Mössbauer Spectrometer and the Alpha Particle X-ray Spectrometer will analyze the particles collected, and help determine the ratio of magnetic particles to non-magnetic particles and composition of magnetic minerals in airborne dust and rocks that have been ground by the Rock Abrasion Tool.

- Microscopic Imager (MI) cameras mounted 5-feet high will provide a 360-degree view of the terrain.

For more information about the mission, visit

## STUDY... (Continued from Page 1)

legacy for Space Shuttle Columbia and her crew, NASA seeks to enhance spacecraft design and flight safety by analysis of Shuttle debris through qualified and approved research.

An RFI is intended to solicit information to help NASA decide how to proceed. It does not represent a commitment to making Columbia debris available to any person or organization.

Among the engineering or

scientific disciplines that may wish to conduct research are metallurgy, hypersonics, thermodynamics, carbon fiber materials, chemistry and atmospheric science.

NASA has requested input on how to best preserve and manage the debris from Columbia. The complete RFI can be found at <http://prod.nais.nasa.gov/cgi-bin/eps/bizops.cgi?gr=D&pin=76#105670>.

NASA is also interested in ideas

on how to best curate the debris. This includes both historical preservation as well as overseeing the use of Space Shuttle Columbia debris for research and analytical purposes.

"This RFI has caught the attention of private industry and academia. I have been getting several inquiries each day from prospective researchers," said Steve Parker, lead contract specialist in the KSC Office of Procurement.

"This is a unique opportunity

to engage the best and brightest minds in an open, 'what if' exercise.

"I expect that many of them will submit creative ideas to study the debris and enhance our understanding of materials sciences, aeronautics, hypersonics, thermal dynamics and flight safety," he said.

Interested organizations should contact Steve Parker by e-mail at [Steve.Parker@nasa.gov](mailto:Steve.Parker@nasa.gov) or by calling (321) 867-2928.

# Fitness presentation and challenge offered



Earlier this month, Dr. Bertice Berry gave an informative speech on iFamily Involvement in Health and Fitness.†

As part of the Spaceport Health Fitness Initiative, the presentation "Fitness and Obesity Rates" will be offered at the Training Auditorium June 5 from noon to 1 p.m. Listen to and get motivated by Dr. Kenneth Cooper, who began the physical fitness movement in the early 1970s and became known internationally as the "Father of Aerobics."

Also register for a chance to win door prizes. The presentation will be broadcast on NASA TV, channel 60.

On May 16, Page Love of the Gatorade Sport Science Institute spoke about "Nutrition and Weight Control" at the Training Auditorium.

In addition, National Employee Health and Fitness Day was held May 13 in the OSB lobby and May

14 in the O&C lobby. Fitness tips, running techniques, nutrition plans, health screenings and much more were provided by various vendors.

It's not too late to participate and earn prizes in the Presidential Adult Activity Lifestyle (PAAL) challenge. Begin any Monday through Monday, Nov. 10. All types of physical activity count and can be done anywhere, anytime, for 30 minutes, five days a week in six consecutive weeks.

Call the KSC Fitness Centers at 867-7829 to schedule to have your body measurements taken, if you want to be eligible to earn prizes. Then register on-line at [www.fitness.ksc.nasa.gov/challenge](http://www.fitness.ksc.nasa.gov/challenge).

## KSC employees selected for fellowships

Two Kennedy Space Center employees will have the opportunity to develop professionally and improve NASA's relationship with minority institutions through the NASA Administrator's Fellowship Program (NAFP).

Gholam Ali Shaykhian and Dr. Jan F. Corbin, along with four additional employees from other NASA centers, were chosen as 2003 NAFP recipients. To be eligible, applicants must be full-time NASA employees at a GS-13 level or above, be recommended by the Branch Chief or Directorate Head and the Center Director, and agree to continue working at NASA for two years following the fellowship tenure.

NAFP provides opportunities to conduct research at NASA centers or other large institutions and enables recipients to better compete in NASA's mainstream, peer-reviewed research programs. Fellows also interface with high-level government officials,

participate in NASA's Research & Development programs and learn about innovative scientific and engineering research methods. These experiences are planned to enhance their professional careers and better position the home academic institutions to participate in NASA programs.

Shaykhian and Corbin will teach, conduct research and participate in developmental assignments for 18-22 months, spending nine months teaching and nine to 13 months focusing on professional growth. Both will spend the first portion of the fellowship at Bethune-Cookman College, Daytona Beach, Fla.

"I was thrilled to be selected," said Corbin. "I spent the past year researching the program, the opportunities that Bethune-Cookman College had to offer, and developing a program and plan that fit with my interests and expectations. I am looking forward to the opportunities this program

offers, particularly with respect to the future of NASA.

"NASA has a lot to offer with respect to research and development opportunities and B-CC has a lot to offer from their faculty. I hope to forge new avenues and build new relationships with B-CC that will strengthen our research programs, bring new and innovative ideas to KSC as we become the spaceport technology center of the future."

Shaykhian, a software engineer, said, "I am the most fortunate to have the opportunity to serve in this prestigious program and look forward to the challenges and responsibilities that would come with this new assignment."

The United Negro College Fund Special Programs Corporation administers the NASA Administrator's Fellowship. Visit <http://www.uncfsp.org/nasa/nafp/> for 2004 application information. For more NASA education opportunities, visit <http://education.nasa.gov>.



## Earth Science conference scheduled

NASA's Earth Science Enterprise will hold its 3rd Annual Earth Science Technology Conference (ESTC), which will be held at the University of Maryland June 24-26.

The ESTC is an opportunity for NASA planners, managers, technologists and scientists to review the research sponsored by the Earth Science Technology Office.

It is also an opportunity for researchers from NASA, academia and industry to meet with their colleagues and to better understand NASA Earth science technology requirements.

Registration must be done by June 13. For more information, visit <http://esto.gsfc.nasa.gov/conferences/esto2003/index.html>.

## CAIB. . . (Continued from Page 1)

much more now than in the beginning because of the exceptional investigative work we have done.

"We have folks from KSC, JSC and MSFC, NASA and contractor,

all working together in a truly badgeless environment to learn as much as we can from the debris alone," said Leinbach.

"And when you factor in the

daily interaction we have with the two CAIB resident members, the progress of the investigation has been steady and impressive. It's an outstanding collaboration."

# Remembering Our Heritage

## Skylab 1 was first manned space station

Skylab 1 was launched on a modified Saturn V rocket from KSC into Earth orbit on May 14, 1973.

The project was an orbiting space station comprising a cluster of four units. The units included the Orbital Workshop (OWS) containing the primary crew quarters and work areas; the Airlock Module (AM) containing an extravehicular activity port and the station's control and monitoring instrumentation; the Apollo Telescope Mount (ATM) used as a solar observatory; and the Multiple Docking Adapter containing docking ports and controls for the ATM and earth resources instruments.

The OWS was a converted Saturn IV-B rocket stage, 21.6 feet in diameter and 48.1 feet long. Its large liquid hydrogen tank was divided laterally by aluminum grillwork to create a two-story laboratory.

The upper compartment and dome was furnished with equipment and food lockers, refrigerators and freezers, water tanks, some control and display units, two Scientific Airlocks, space suits, and more. The lower compartment included a wardroom, waste management compartment, crew quarters and experiment compartment.

During launch, a meteoroid/thermal shield tore loose from the

OWS, ripping away one primary solar wing and jamming the other with debris. The ATM and its paddle-wheel solar array deployed as programmed in orbit but the solar wing did not, which caused temperatures inside the station to rise considerably.

The entire Skylab team was mobilized in an all-out attempt to overcome the loss of the solar arrays. It was ultimately determined that solar sunshades would be deployed by the Skylab 2 crew, launched from KSC May 25.

An initial standup Extravehicular Activity (EVA) by astronaut Paul Weitz failed to free the jammed solar wing, but did provide clues for later attempts. Astronauts entered Skylab on May 26 and deployed a parasol-like thermal blanket through the solar-side scientific airlock.

The sunshade protected Skylab's hull, and temperatures within the station fell to normal ranges. On June 7, astronauts Charles Conrad and Joseph Kerwin exited the AM, cut through debris and deployed the remaining solar wing, which immediately began producing electricity.

With adequate power available, the crew completed 89 percent of their planned activities. Skylab was the last major U.S. manned space program until a Space Shuttle became operational.



Skylab was an orbiting space station comprising the Orbital Workshop, Airlock Module, Apollo Telescope Mount and Multiple Docking Adapter.

### BUDGET... (Continued from Page 2)

drill-down capability to the lowest level of detail."

There will be two Budget Formulation releases. The first release is scheduled for October 2003 and will support the Agency budget process. The second release is scheduled for February 2004 and will include the ability to do guideline distribution and top down changes (Headquarters functionality).

Training for end users will start in September 2003. Budget Formulation end users consist of

CFO resources analysts, CFO budget/integration staff, program/project managers and the Directorate business office staff.

KSC's Budget Formulation Project Manager is Thomas Clarke; the Co-Project Manager is Michael Rigney and the Deputy Project Manager is John Zuber.

For more information on Budget Formulation, access the KSC IFMP web site at [www.ksc.nasa.gov/nasa-only/finance/ifmp/#](http://www.ksc.nasa.gov/nasa-only/finance/ifmp/#) (or type IFMP in the address bar).

John F. Kennedy Space Center



## Spaceport News

Vol. 42, No. 11

Spaceport News is an official publication of the Kennedy Space Center and is published on alternate Fridays by External Relations and Business Development in the interest of KSC civil service and contractor employees.

Contributions are welcome and should be submitted two weeks before publication to the Media Services Branch, XA-E1. E-mail submissions can be sent to [Jeffery.Stuckey@jbosc.ksc.nasa.gov](mailto:Jeffery.Stuckey@jbosc.ksc.nasa.gov)

Managing editor..... Bruce Buckingham  
Editor..... Jeff Stuckey

Editorial support provided by InDyne Inc. Writers Group.  
NASA at KSC is located on the Internet at <http://www.ksc.nasa.gov>

USGPO: 733-133/600032

### FEW scholarships awarded

The Federally Employed Women (FEW) Scholarship Committee consisting of Chairperson Jane Eitel and Committee Members Karin Biega and Maxine Johnson have reached their final decision on the awards for 2003. The following individuals have received an award: Kathleen M. Lytle, \$1,000; Deaira M. Irons, \$1,000; Laura C. Culver, \$750; Vinh Q. Neuyen, \$750; Kelley A. O'Neal, \$750; Amy Lynn Stieler, \$625; Jenna A. Broughton, \$625; and Brooke N. Edenfield, \$500.

The awards for high school students were presented by Barbara Powell, president of the Space Coast Chapter of FEW, at each individual's high school awards ceremony.