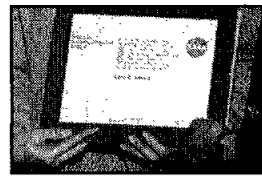


Top scientists gather at JSC for the 25th Lunar and Planetary Science Conference. Story on Page 3.



JSC employees are honored for their contributions to space station redesign activities. Photo on Page 4.

Space News Roundup

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Remote link puts JSC in driver's seat

By Kelly Humphries

Scientists and engineers extended a hand of cooperation—a robot hand—this past week, helping operate a Russian-built automated rover at the Amboy Crater in California from a control room at JSC.

The Marsokhod rover, with its six conical shaped, independently driven wheels, was tested in both Mars and lunar exploration modes from the Space Station Operations Control Room in Bldg. 30S, demonstrating the capability to provide remote command and control over vast distances.

Carol Evans, Lynn Vernon and Tim Flannery of the Mission Operations Directorate, Mike Duke, Kent Joosten and John Conally of Space and Life Sciences' Solar System Exploration Division, and Scott Askew of Engineering's Automation and Robotics Division participated in the telerobotic testing.

A team of Russians worked with the rover in the field and at field control centers in Huntington Beach and Anaheim, Calif.

"We thought it was a great experience," said Duke, who served as overall coordinator for the JSC activities. "We were able to operate both the Russian rover and the McDonnell Douglas rover for extended periods. We had very good experience with the three-way communications link between the field, the operations control centers in California and our control center. It really didn't matter who was controlling the vehicle, we were all working together."

The test was organized by a consortium that included Ames Research Center, which has been developing teleoperation technology; McDonnell Douglas Corp., which is working with the Russians to add robotic manipulation to their rover chassis; and the Planetary Society, which has helped bring the international group together.

In the Mars operation mode, a scene from the rover cameras was transmitted to the Space Station Operations Control Center every few minutes, followed by transmission of a new set of driving instructions to the vehicle. As the rover complete each function, it transmitted a new scene, simulating the delay time in transmitting radio signals back and forth between the two planets.

For the lunar simulation, near real-time television images were transmitted, allowing operators here to see a three-dimensional representation of the view from the rover cameras and drive the vehicle from the

Please see JSC, Page 4



JSC Photos by Mark Sowa

Top: Kent Joosten and John Conally drive the Russian rover Marsokhod from the Space Station Operations Control Center at JSC as observers from Mission Operations, Space and Life Sciences and Engineering monitor their progress. Bottom: Joosten and Conally don goggles that provide a stereoscopic, simulated 3-D image from the rover's television cameras.

Main engines OK, Endeavour aims for launch today

By James Hartsfield

After a 24-hour hold to allow precautionary inspections of pump housings in the main engines, preparations of *Endeavour* at KSC picked up full steam Wednesday aiming toward a liftoff early today on STS-59.

The launch has been targeted for 7:06 a.m. CDT, however, managers were scheduled to decide Thursday if it would be advantageous to move the launch time earlier by one hour to gain better weather in Florida. As of mid-week, the weather forecast called for only a 40 percent chance of acceptable conditions for liftoff, with the possibility of rain, low clouds and strong winds at KSC today.

Commander Sid Gutierrez, Pilot Kevin Chilton and Mission Specialists Jay Apt, Rich Clifford, Linda Godwin and Tom Jones arrived in Florida early Monday, and the countdown for *Endeavour* began a few hours later. Tuesday, shuttle managers held the count for one day to inspect metallic vanes, or ridges, in the oxidizer preburner housings of the high pressure oxidizer turbo-pumps in the main engines. The

vanes on similar pump housings being prepared for a future flight at Rocketdyne, the main engine manufacturer, had been found to be slightly below specified measurements.

Endeavour's inspections were completed late Tuesday without any problems noted, and managers decided to proceed toward a launch today. *Endeavour* is planned to reach a 120 nautical mile, 57-degree inclination orbit which will allow its groundtrack to cover a majority of the Earth's surface. Space Radar Laboratory-1 will study the environment, oceans, atmosphere, topography and geology of a multitude of sites around the globe.

The crew will be split into two shifts. The red team, on duty during much of the daylight hours in Houston, includes Gutierrez, Chilton and Godwin. The blue team, which will have a night shift by Houston clocks, is Apt, Clifford and Jones.

STS-59 is planned to orbit for nine days, however, an extra day may be added if supplies allow once the mission is under way and scientists could benefit from the extension.



Shuttle veteran Grabe to depart JSC

By Kyle Herring

Four-time shuttle veteran Ron Grabe will leave NASA and the Air Force Monday to become vice president of business development for Orbital Sciences Corp.'s Launch Systems Group effective April 11.

At OSC, Grabe will assist in the development of launch vehicles and marketing strategy. He will also serve as the link with customers on future projects.

"We will certainly miss Ron. Not only is he a superb shuttle commander, but he is a great technical manager as well," said Dave Leestma, director of Flight Crew Operations. "It's a credit to the space industry that Ron's wealth of experience and knowledge will not be lost."

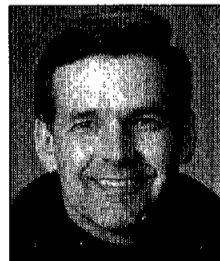
Selected as an astronaut in 1980, Grabe's first shuttle flight was STS-51J, a dedicated Department of

Defense mission in October 1985. STS-51J marked the maiden voyage of *Atlantis*. His second flight in May 1989, also on board *Atlantis*, was STS-30. During that mission, the crew deployed the Magellan probe, which has mapped more than 95 percent of the surface of Venus since arriving at the planet in 1990.

In January 1992 Grabe commanded STS-42, the first International Microgravity Laboratory mission on board *Discovery*. The crew worked in two shifts around the clock in the pressurized Spacelab module investigating the effects of microgravity on materials processing and life sciences in the course of more than 80 experiments.

In June 1993, Grabe served as

commander of the STS-57 mission on board *Endeavour*. The multifaceted mission included the first flight of the pressurized Spacehab module carrying 22 flight experiments in materials processing and life sciences.



Grabe

In addition, Grabe's crew retrieved the free-flying European Retrievable Carrier previously deployed during the STS-46 mission in August 1992. A spacewalk was conducted during the flight to evaluate various techniques for use on future missions.

Most recently, Grabe has served as a member of the Vehicle Review Board for the International Space Station.

"Ron has been a talented and insightful team member from the

early days of space shuttle through four highly successful space flights as a crew member," said Robert "Hoot" Gibson, chief of the Astronaut Office. "He has contributed greatly to our nation's space efforts and we wish him every possible success in his future endeavors."

Grabe will retire from the Air Force with the rank of colonel. Prior to joining NASA, Grabe was an instructor at the U.S. Air Force Test Pilot School at Edwards Air Force Base, Calif. Grabe has logged more than 5,500 hours flying time in aircraft that includes the F-100, F-111 and A-7.

Grabe flew 200 combat missions while assigned to the third Tactical Fighter Wing at Bien Hoa Air Base in Vietnam. He also served as a Royal Air Force Exchange Test Pilot while in Boscombe Down, England.

Six honored for achievements

Six JSC managers are among the NASA employees who will receive the agency's highest honors at a ceremony May 3 in Washington.

The Presidential Rank Awards recognize exceptional performance by members of the Senior Executive Service throughout the government. Center Director Dr. Carolyn Huntoon and Director of Safety, Reliability and Quality Assurance Charles Harlan will receive the Distinguished Executive Award.

This honor is bestowed on employees for "sustained extraordinary accomplishment" and is limited to one percent of career SES members government wide.

The Meritorious Executive Award will be presented to four JSC em-

ployees in recognition of their "sustained accomplishment." Receiving this award will be: Procurement Director Gene Easley; Comptroller Wayne Draper; Center Operations Director Grady McCright; and Deputy Engineering Director Chet Vaughan.

Huntoon was cited for "leadership, personal dedication and initiative" during her 27-year career within the manned space flight program. According to the award nomination, Huntoon "demonstrates outstanding capabilities as a leader and manager, and as a scientific contributor and innovator in her own right."

The award nomination also recognizes her work in establishing cooperative research agreements between JSC and a variety of hos-

pital and health organizations.

Harlan's efforts to return the shuttle program to flight, and his dedicated service to the human space flight program over three decades are among the accomplishments cited in his award nomination.

Harlan's involvement with human space flight activities spans the Mercury, Gemini, Apollo, Skylab and shuttle eras. The nomination praises his "sincere and deep personal commitment to excellence, efficiency, and timely performance" in support of NASA programs.

Easley was nominated for the Meritorious Executive Award based on a "career marked by commitment to quality and efficiency in all areas

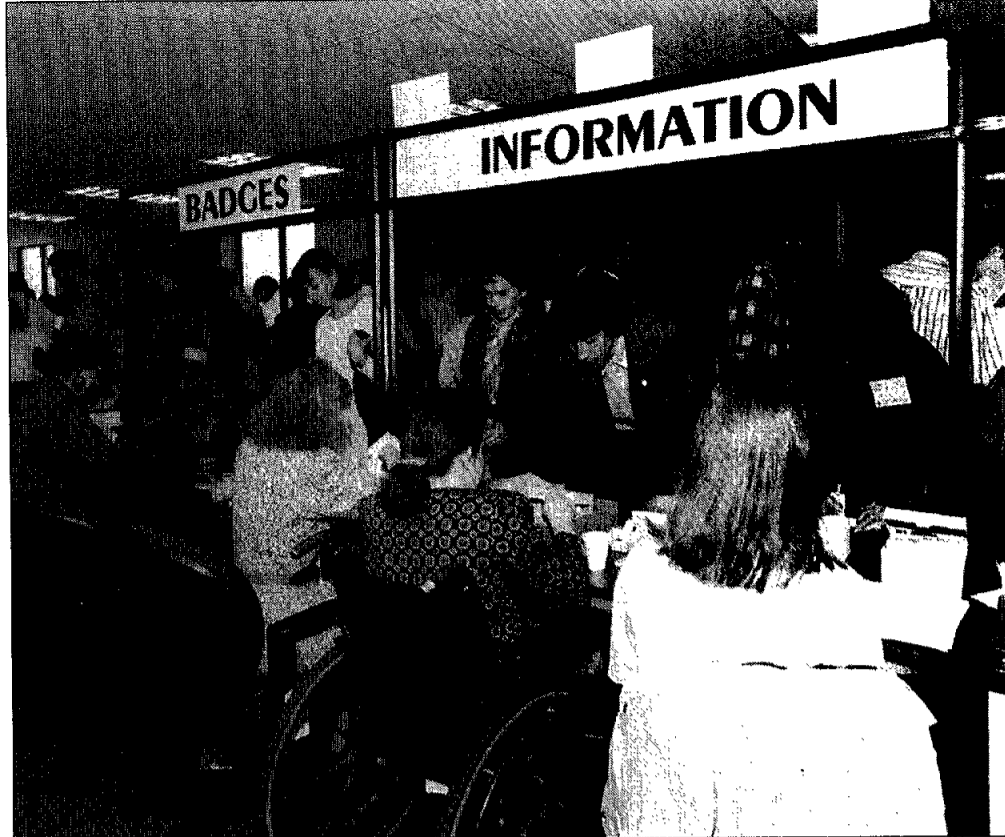
Please see EXECUTIVES, Page 4



Carolyn L. Huntoon



Charles S. Harlan



Discoveries, fun both part of conference



JSC was the site of serious scientific discussion and not-so-serious chili cookoff competition during the 25th annual Lunar and Planetary Science Conference, held March 14-18 at the Gilruth Center.

"The Clementine data was particularly exciting," said Doug Blanchard, chief of the Solar Systems Exploration Division. "That was brand new stuff."

The Clementine probe is completing a two-month survey mapping the surface of the moon. In addition to its lunar mapping mission, discussion on the Clementine probe centered around its study of lunar horizon glow. The study, being conducted by Herbert Zook and Drew Potter of JSC, measures how much lunar dust is levitated off the surface of the moon.

The horizon glow was first observed by astronauts on board Apollo 17 in 1972 as the sun began to rise from behind the moon. The glow phenomenon puzzled researchers who believed the lack of any real atmosphere on the moon lacked material sufficient to create a glow. Zook said one model to explain the glow involves sunlight striking the moon and stripping atoms of their electrons. These ionized atoms and electrons then impart a charge to lunar dust particles that then rise several kilometers above the moon, creating the horizon glow by scattering light.

According to Clementine project scientist Eugene Shoemaker, the probe has succeeded in photographing the glow in an image taken by one of its star-tracker cameras.

In addition to the excitement generated by the discoveries of the Clementine lunar mapping mission, conference attendees learned about the discovery of a Martian satellite that previously had been misclassified.

Known as the Allen Hills meteorite, the rock has been maintained in a nitrogen-filled cabinet at JSC since its discovery in 1984. Recently, however, David Mittlefehldt, of Lockheed Engineering and Sciences Co., reexamined the meteorite and reported its point of origin was Mars.

The Lunar and Planetary Science Conference is co-hosted by JSC and the Lunar Planetary Institute every year and attracts some of the world's top scientists.

Clockwise from left

1) Associate Center Director Paul Weitz, David Black, director of the Lunar and Planetary Institute, and Doug Blanchard, chief of the Solar System Exploration Division watch as an anniversary cake is cut to celebrate the start of the 25th Lunar and Planetary Science Conference held March 14-18 at the Gilruth Center. Cutting the cake are Bob Clayton, from the University of Chicago; Eugene Shoemaker, from the U.S. Geological Survey; and George Wetherill of Carnegie Institute.

2) Crowds line up to register for the conference during opening day activities at the Gilruth.

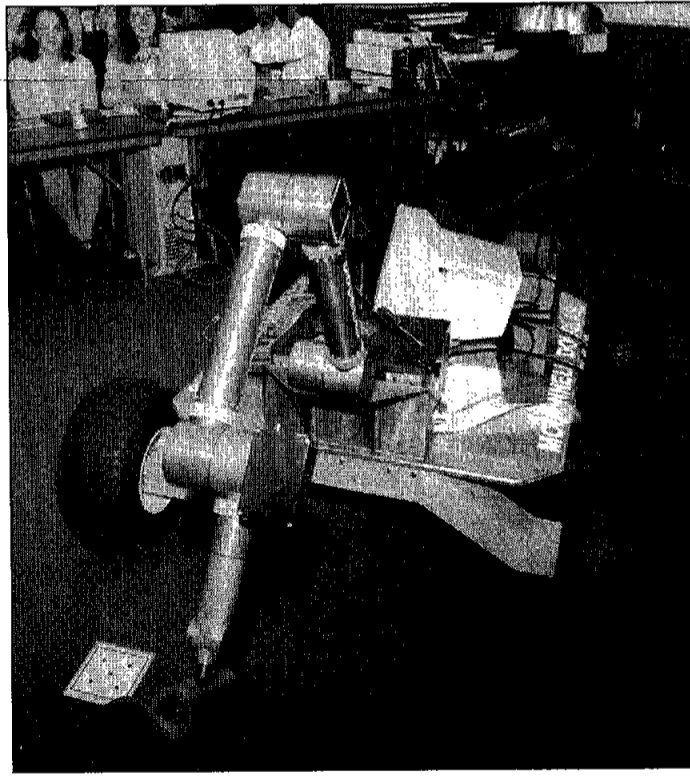
3) The main ballroom of the Gilruth Center is filled with people attending scientific briefings during the conference.

4) DAVE, a Mars rover developed by McDonnell Douglas was on display as part of activities surrounding the lunar and planetary conference. A JSC-developed Mossbauer Spectrometer is on the end of DAVE's robot arm.

5) Some conference attendees take a break from the scientific discussions of the conference to compete in the chili cook-off fun.

6) A panel of "experts" on stage carefully study the various contributions from the chili cook-off teams. In the foreground, other conference attendees try to sell memorabilia to a young visitor at the festivities.

7) Back to work, three scientists prepare slides for use during presentation at the conference. □



Executives earn highest honors

(Continued from Page 1) of procurement." Easley's efforts have resulted in a streamlined and efficient procurement organization and a number of significant cost saving accomplishments.

Draper joined NASA more than 30 years ago and "has had an outstanding record of contribution to the nation's space program," according to his award nomination.

In addition to his responsibilities as Comptroller, Draper serves on a number of agency panels, including

the Executive Development Education Panel and the NASA Professional Development Panel. He also is treasurer of the Manned Space Flight Education Foundation.

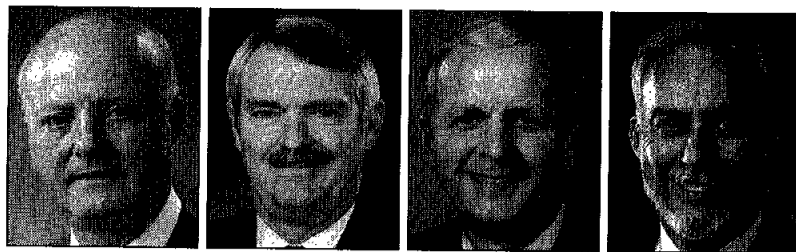
McCright's "demonstrated outstanding initiative and innovation" were cited in his award nomination.

McCright has been "instrumental in reducing costs by implementing total quality management and continuous improvement measures throughout his organization and the center." McCright's Center Opera-

tions group supports JSC programs by providing critical services in facility design, construction, maintenance and operations.

Vaughan will be recognized for his achievements in the fields of spacecraft propulsion, thermochemical testing and senior management.

According to the award nomination, Vaughan "has made outstanding technological innovations in the development of propulsion, power and control systems" since the earliest days of the U.S. space pro-



Vaughan

McCright

Easley

Draper

gram. Vaughan was also cited for his excellent management style and empowerment of his employees.

The Presidential Rank Awards are presented annually to employees whose contributions greatly

exceed "doing the job well." To be eligible for the award, an employee must hold a career SES appointment and have completed three years of career civil service at the SES level.

Chili chefs prepare fun, hot stuff

It is once again time for JSC employees to hone those chili-cooking skills as the 16th annual Flight Operations Directorate Chili Cookoff takes place April 30.

The competition takes place between 9 a.m.-5 p.m. April 30 at the Gilruth Center, with official chili judging set to begin at 3 p.m.

According to Bob Legler, chairman of the FOD Chili Cookoff Committee, all JSC personnel, support contractors, and families are invited to attend the event and sample the chili offerings.

"The chili cookoff is always a lot of fun and we expect that this year will be another history-making event," said Legler. "We hope to see a large number of competitors and spectators at the Gilruth Center that day, and we're sure a good time will be had by all."

Prizes will be awarded with teams competing in a number of categories including cooking, team showmanship, and games. Employees interested in entering a team in the cookoff activities should contact Legler at x35406.

Although the directorate was reorganized several years ago, the cookoff retains the FOD name, dating back to the time when all flight operations were assigned to the "Flight Operations Directorate."

Tickets are on sale for \$3 per person until April 22, when prices increase by \$1.

Tickets will be sold throughout the center. For information on ticket sales locations, contact Sandy Griffin, x31056. Ticket prices include admission to the cookoff, a chili sampling kit, and beer and soft drinks.



JSC Photo by Jack Jacob

REDESIGN RECOGNITION—Lois Lenox, a management analyst for space station, receives her Superior Accomplishment Award from Associate Administrator for the Office of Space Flight Jeremiah Pearson and Deputy Center Director George Abbey. Lenox was among the 40 employees honored at an awards ceremony March 31 at Teague Auditorium. The awards acknowledged exceptional efforts in support of space station redesign and transition activities.

'Texas Proud' theme for annual JSC Picnic coming up May 7

JSC employees can expect to be "Texas Proud" for the May 7 JSC Picnic at the Gilruth Center.

This year's picnic, which will run from 11 a.m. to 5 p.m., will include music by 4th Wave Rhythm, carnival rides and games, a petting zoo, a magician, face painters, a dunk tank, video games, bingo, astronaut autographs, popcorn, snow cones, cotton candy, ice cream and a barbecue dinner.

Tickets are on sale now in the

Bldg. 11 Exchange Store. Until April 29, the prices are \$5 for adults and \$3 for children. After April 29, prices rise by \$1.

Monica Hughes of the Astronaut Office submitted the winning theme for the annual "name-the-picnic" contest and will receive two season passes to Space Center Houston and two complimentary picnic tickets.

Anyone interested in helping with the picnic should call Dorothy Rasco at x33150.



Reinventing government

NASA in position to meet strategic challenges today

Editor's Note: The following article is a message to all NASA employees from Acting Deputy Administrator General John Dailey. It is the first in a planned series of articles.

"Reinventing Government" has been a major theme of President Clinton and his Administration.

The National Performance Review laid the cornerstone for the President's Government reform program. The goal of the Administration is to make government simultaneously work better and cost less. The objectives presented in the NPR Report are to "Cut Red Tape, Put Customers First, Empower Employees to Get Results, and Cut Back to Basics."

In addition, Congress has recently passed "The Government Performance and Results Act of 1993," that establishes new requirements for federal agencies to undertake strategic planning, to plan and measure program performance, and to report the outcomes of their activities to the White House and Congress.

Upon first review, these requirements might appear to be quite imposing. However, NASA is actually well positioned to take on these new challenges. Over the past 18 months, the agency has undertaken internal management improvement initiatives synergistic with the new requirements developed by

the Administration and Congress.

The new NASA Strategic Plan represents a significant step toward the reinvention of NASA. It underlines our commitment to strategic management and establishes a framework for making key management decisions.

As the Administration, Congress, and NASA all move forward with the reinvention of government, it is essential that the men and women of NASA participate in our own internal management improvement activities.

To keep you informed, we will begin including a "Strategic Management" section in the headquarters and center news publications on a periodic basis. In future issues of these publications, this new section will include further details on NPR, GPRA, the NASA Strategic Plan, the strategic management process, and other key NASA management improvement initiatives. In addition, we will use the existing strategic planning and total quality management networks to further facilitate agencywide communication of federal and NASA management improvement initiatives.

We all recognize that the reinvention process is a challenge; however, the federal government and our agency will benefit from our current investment in change. With our ongoing initiatives, we are ideally postured to take a leadership role in this process.

Employees honored for commitment

Sixteen JSC employees and 15 contractor employees witnessed the March 3 launch of *Columbia* from Kennedy Space Center as recipients of the Manned Flight Awareness Award.

These 31 people received the award for their ongoing commitment to mission success and flight safety. In addition to watching the launch of STS-62, the honorees were given a tour of KSC and were guests of honor at a top-level reception. At the reception, shuttle astronaut Bob Cabana presented each honoree with a certificate and pin acknowledging their accomplishment.

Civil service honorees were: Tim Baum and Oma Cross, Mission Operations; Pat Burke, EEO Programs; Kevin Dunn, Lisa Leonard and Joey Marmolejo, Engineering; Roy Glanville, Safety, Reliability, and Quality Assurance; Gerry Griffith, Flight Crew

Operations; Dot Hailey, Space Station Project; Nancy Kennamer, Administration Directorate; Vivian Long, Comptroller; Mike Odaka, Orbiter and GFE Projects; Lorraine Otten, Space Shuttle Program; Mike Stewart, Human Resources; Bill Waldrip, White Sands Test Facility; and Henry Wyndon, Center Operations.

Contractor honorees were: Billy Crocker, Boeing Aerospace Operations; Jeanni Eckel and Ray Kohring, IBM; Kent Gaylor, LinCom; Bruce Hawes, McDonnell Douglas; Bill Jackson, Mike Penney, and Don Warden, Loral; Gene Jost, Boeing Information Services; Kitty Marquardt, Lockheed; Erin Orgeron, Metrica; Martha Pitts, DMS; Lee Scruggs, Rothe; Reta Warren, Kelsey-Seybold; and Sharyn Willis, GB Tech.

The next Manned Flight Awareness event is set for the launch of STS-65 in July.



NASA Photo

Honorees of the Manned Flight Awareness program gather for a photo during their visit to Kennedy Space Center in March. The group witnessed the STS-62 launch of the Space Shuttle *Columbia*.

JSC operators drive Russian rover

(Continued from Page 1)

remote work station.

JSC operators were able to drive the rover for a total of about 10 hours, taking it over fairly steep terrain.

"We learned a lot more about how easy or difficult it is to operate in those circumstances," Duke said. "We learned some things and probably made some opportunities for ourselves in the future."

The tests confirmed that an improved understanding of the range of teleoperation capabilities is needed, he added, and that the operability of the rover could also be improved.

The scientists also were interested in how the rover could manipulate a mock-up of an instrument built by JSC to analyze the composition of surface materials on the Moon or Mars, sending the information back to the control center. The scientists used the remote control system to put the mock-up on the ground or on a particular rock, allowing the sample and some of its visual properties to be assessed in conjunction with the Mossbauer Spectrometer's data about the sample's chemical composition.

JSC's long-term interest is in how telerobotic systems can be used to

assist human exploration of the Moon and Mars. The tests being conducted now may serve as precursors for later human explorations, when explorers are assisted by robotic systems from Earth. For Mars exploration, the teleoperation capability would allow crew members on Mars to operate the rovers from within a Mars outpost, substantially increasing their exploration range.

The international cooperation involved could someday lead to an expedition that would involve the launch of the Russian rover aboard an American spacecraft.

Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Dates and Data submissions are due Wednesdays, eight working days before the desired date of publication.

Editor Kelly Humphries
Associate Editor Kari Fluegel
Associate Editor Eileen Hawley

STIC closes for upgrade

The Scientific and Technical Information Center in Bldg. 45 will be closed Tuesday to facilitate changes to improve customer service.

The library, run by JSC's Center Operations Directorate, will reopen Wednesday.

In the meantime, the satellite libraries—the Medical Sciences Library in Bldg. 37, the New Initiatives Office Library in Bldg. 1, and the Space Station Library in Bldg. 4S—will remain open.

For additional information, contact the STIC at x34049 or x34609.