Space News ROUNDUP!

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In this issue

U.S., Russia name first station crews

The first four crews to live and work on board the International Space Station were named this week by both the U.S. and Russian space agencies.

"This is a historic step in the evolution of the International Space Station," said Randy Brinkley, manager of the International Space Station. "These assignments are a clear indication of the maturity of the space station and the exciting reality that the ISS will soon be operational."

The first-increment crew consists of American Astronaut William Shepherd, a U.S. Navy captain, the expedition commander; Yuri Gidzenko, a Russian Air Force colonel and the Soyuz vehicle commander; and cosmonaut Sergei Krikalev, flight engineer. All three have previous space flight experience and are training for an early 1999 Soyuz launch and a five-month mission.

Shepherd, Gidzenko and Krikalev will be relieved in the summer of 1999, when the second incremental crew is scheduled to arrive aboard Space Shuttle *Atlantis*. That crew will be commanded by Russian Cosmonaut Yuri Usachev. He will be joined by American Astronauts James Voss, an Army colonel, and Susan Helms, an Air Force lieutenant colonel. All three also have flown in space before.

The third crew to inhabit the International Space Station will begin a two-month mission launching aboard a Soyuz spacecraft in late 1999. That crew will be commanded by American Astronaut Kenneth Bowersox, a Navy commander. Russian cosmonauts Vladimir Dezhurov, a lieutenant colonel in the Russian Air Force and the Soyuz vehicle commander, and Mikhail Turin, the flight engineer, will join Bowersox to complete the crew. Bowersox and Dezhurov have prior space flight experience while Turin will be making his first flight into space. To provide maximum flexibility in schedule and training, this crew also will train as backup for the first resident space station crew of Shepherd, Gidzenko and Krikalev.

The fourth resident crew will be commanded by Russian cosmonaut Yuri Onufrienko, a Russian Air Force colonel. Onufrienko will be joined on this four-month mission by astronauts Carl Walz, a U.S. Air Force lieutenant colonel, and Daniel Bursch, a U.S. Navy commander. All three have previously flown in space. They currently are scheduled to arrive at the station onboard shuttle *Discovery* early in the year 2000 and will return to Earth on a Soyuz vehicle. They will train as the backup crew for Usachev, Voss and Helms.

The crews will continue the on-orbit construction of the space station through a series of scheduled space walks, test station hardware, conduct maintenance and develop ISS science capabilities.

National Aeronautics and Space Administration

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BUSY SUMMER, FALL SHOWCASE OUTSTANDING WORK

Dear Fellow Employees:

We've had a very busy summer and fall here at JSC, and with the holidays coming up this is a good opportunity to for me to tell everyone what an outstanding job they've been doing.

There have been a lot of activities competing for our attention. We've helped our Russian friends recover from a highly publicized space collision and maintained our continuing presence aboard Mir. We've just completed a much applauded JSC Open House and Inspection 97. We've made great progress in building the first hardware for the International Space Station. We've posted one of the safest quarters on record. And we're waiting on the results of an independent audit that will tell us whether we've achieved ISO 9000 certification.

We still have a lot projects to keep our eyes on during the holiday period. We're supporting the eighth shuttle mission of the year—a long one—and we're getting ready to send our final astronaut to Mir. We're in the middle of a 90-day chamber test of life support systems in Bldg. 7. And we're only eight months away from the launch of the first International Space Station element.

The upcoming holiday season should provide all our employees a time to enjoy their families and friends as well as a time to reflect on a year of activities well done. And a time to look ahead to the opportunities and challenges we face.

This is a great team, we're doing great things and judging by the remarks I heard during Open House and Inspection 97, there are a lot of people out there who appreciate your dedication and hard work.

Sincerely,

George W. S. Abbey

George W. S. Abbey
Director

Microgravity research calls for STS-87

By Ed Campion

Assuming final countdown and launch activities went as planned earlier this week, the Space Shuttle *Columbia* and its six-person crew should now be busy with preparations for capturing a satellite and conducting a space walk.

STS-87 Commander Kevin Kregel and his crew—Pilot Steve Lindsey, Mission Specialists Kalpana Chawla, Winston Scott and Takao Doi along with Payload Specialist Leonid Kadenyuk—were scheduled to blast off from Launch Pad 39B on Wednesday afternoon on a 16-day mission to study how the weightless environment of space affects various physical processes, make observations of the Sun's outer atmospheric layers and conduct a space walk to rehearse future space station operations.

Columbia's eight and a half minute climb to orbit this week was to include its own "first" with a second roll maneuver to a "heads up" position about six minutes into the flight. The "heads up" position allowed *Columbia* to acquire communications with the Tracking Data Relay Satellite System and removed the need for Bermuda tracking station support which in turn provided a cost savings to the space agency.

After reaching orbit Wednesday afternoon, the mission timeline called for the crew to immediately begin activating the various United States Microgravity Payload-4 experiments and equipment that are the primary focus of the STS-87 flight and are designed to help researchers gain additional understanding of the

Please see **STS-87**, Page 2

Young JSC physician earns president's early career award

Todd Schlegel, a research physician at JSC, was among 60 young researchers to receive the second annual Presidential Early Career Award for Scientists and Engineers this month at the White House.

This is the highest honor bestowed by the U.S. on outstanding scientists and engineers at the beginning of their careers. The awards were established by President Clinton in February 1996 to recognize young scholars, their research contributions, their promise, and their commitment to broader societal goals.

Ten government agencies join together annually to nominate promising scientists and engineers for the awards. Those selected receive up to $500,000 over five years to further their research.

"What my team and I are doing is looking at relationships between changes in the function of the inner ear and changes in the function of the cardiovascular system during and after exposure to altered gravitational environments," said Schlegel, who works in JSC's Life Science Research Laboratories Branch.

"We're looking at these relationships because when astronauts return from space, they can sometimes experience, simultaneously, problems such as motion sickness, postural imbalance and orthostatic intolerance, or fainting after standing up," Schlegel said.

Historically, post-flight motion sickness and imbalance have been attributed to inner ear changes, but orthostatic intolerance has been attributed to headward fluid shifting and cardiovascular deconditioning. The work by Schlegel and his team looks at whether the inner ear changes lead to or exacerbate changes in blood pressure and heart rate upon return to Earth. The team is studying test subjects during and after parabolic flight and centrifugation.

Schlegel

"I am extremely honored to receive this unexpected reward, and also humbled, knowing how much teamwork goes into performing this type of interdisciplinary research," he said.

JSC observes National Native American Month

November is National Native American Month, and JSC will celebrate with Eagle Wind Dancers and exhibits of American Indian culture on Tuesday, Nov. 25.

The observance recognizes and honors the vital role that American Indians have played and continue to play in the life of our country.

The Equal Opportunity Programs Office invites all JSC employees to participate from 9 a.m.-1 p.m. Nov. 25 in the Bldg. 3 Cafeteria.

Native American dancers representing several tribes, in full regalia, will perform a variety of American Indian dances from 11 a.m.-noon. The observance also will include an exhibit full of various American Indian artifacts, photographs, and artwork.

Power loss interrupts otherwise normal operation on Mir

By John Lawrence

The recent period of relative tranquillity in Russian Space Station Mir operations was temporarily halted last week by a power loss in the Core Module.

About noon Friday, Nov. 14, during a test of the newly installed solar array on Kvant-1, a power loss resulted in the shutdown of the Motion Control System computer. Using Soyuz thrusters, the Mir crew kept the arrays pointed in a favorable direction for exposure to the Sun, and power was gradually restored it to the Core Module. Othe modules remained powered.

The Mir crew also encountered a minor problem repressurizing the exterior airlock of the Kvant-2 module following space walks on Nov. 3 and 6. Mir 24 Commander Anatoly Solovyev and Flight Engineer Pavel Vinogradov tightened clamps and latches around the circumference of the hatch during the second space walk, but the slow leak continued despite their efforts. The situation poses no danger to the station since the hatch door on the science and instrumentation compartment behind the airlock is providing an air tight seal. Flight controllers on the ground will continue to assess the situation, and Russian Mission Control reports there will be no impact on the future space walks planned for early December and January.

The two events occurred during an otherwise routine environment on board Mir over recent weeks. NASA Astronaut David Wolf, in the third of a series of his e-mail "letters home", wrote ironically, "There's no place on Earth I would rather be." Wolf told of the regimen aboard the station and gave insight into the character of the ship. He described "…cockpit keys that look like worn ivory…metal machining of the highest quality… [and] leather shrouds where plastic would now be chosen."

Space walk maintenance tasks by the cosmonauts have restored Mir's power to near the levels which existed prior to the Progress collision in June. An aging and inefficient solar array on the Kvant-1 module was removed and replaced with a new array, resulting in an immediate increase of 103 amperes. The Spektr solar array that initially was not accepting solar tracking commands can now be pointed toward the Sun by controllers on the ground. Although the solar array still does not track the Sun automatically, it does accept commands. For Solovyev, the excursions outside the Mir were the thirteenth and fourteenth space walks of his five tours of duty on the Russian outpost. He has conducted five space walks during this current mission. Vinogradov, in his first flight, has now conducted four space walks.

Solovyev and Vinogradov also performed routine maintenance on the urine recycling system. They replaced a pump on a technical cooling loop in the Kristall module, which provides cooling for the Optizon materials science experiment furnace.

Wolf continued his science activity involving several difference facilities and experiments. Last week he completed the Canadian Protein Crystallization Experiment, which analyzed the crystalline structure of 32 proteins in an effort to improve drug development and design. Half the samples were subjected to the micro-accelerations due to crew movement and hardware activities. The second half of the samples were placed on the Canadian Space Agency's Microgravity Isolation Mount. The MIM dampens or isolates the crystals from micro-accelerations. By comparing the growth of the two sets of crystals, scientists hope to learn more about the effects of micro-accelerations and the effectiveness of isolation on the growth of crystals.

Wolf is midway through his four-month mission which will end in January when he is replaced by U.S. astronaut Andy Thomas. Wolf will return to Earth in late January as part of that STS-89 crew. Solovyev and Vinogradov have been aboard Mir since Aug. 7 and are to return to Earth in February.

NASA Photo KSC-97PC-1672

The crew of STS-87 arrives at Kennedy Space Center's Shuttle Landing Facility on Sunday. From left are Mission Specialists Winston Scott and Takao Doi, Commander Kevin Kregel, Payload Specialist Leonid Kadenyuk, Mission Specialist Kalpana Chawla and Pilot Steve Lindsey.

Mission Control open for viewing during STS-87

The Mission Control Center viewing room will be open for JSC and contractor badged employees and their families during portions of the STS-87 mission.

Employees will be allowed to visit the MCC from 3-5 p.m. Nov. 21; 1-3 p.m. Nov. 22; 2-4 p.m. Nov. 23; 1-3 p.m. Nov. 24; 5-7 p.m. Nov. 25; 2-4 p.m. Nov. 26; 3-5 p.m. Nov. 27; 5-7 p.m. Nov. 28 and 29; 6-8 p.m. Nov. 30; 1-3 p.m. Dec. 1 and 2; 3-5 p.m. Dec. 3; and 10 am.-noon Dec. 4.

Employees must wear their badges and escort family members through the lobby of Bldg. 30 South. Children under five will not be permitted. No cameras or recording devices will be permitted at any time. Because of the dynamic nature of shuttle missions, viewing hours may be changed or canceled without notice.

For the latest information on the schedule, call the Employee Information Service at x36765.

Precourt to lead final shuttle-Mir docking flight

Astronaut Charlie Precourt, who has visited the Russian Space Station twice before, will command the final scheduled shuttle/Mir docking mission in May, concluding the joint U.S./Russian Phase 1 Program.

Precourt, JSC's acting assistant director, technical, and a U.S. Air Force colonel, will be joined on the flight deck by Pilot Dom Gorie, a Navy commander, and Mission Specialists Wendy Lawrence, a Navy commander; Franklin Chang-Díaz, Ph.D.; and Janet Kavandi, Ph.D.

Precourt

Mission Specialist Andy Thomas, Ph.D., will join the STS-91 crew as he returns from a four-month research mission on Mir. Thomas' departure from Mir will bring to an end more than two years of a continuous U.S. presence on Mir, beginning with Shannon Lucid in March 1996. Thomas will arrive as a member of the STS-89 crew.

STS-91 will mark Precourt's third mission to Mir and fourth shuttle flight. He was the commander for STS-84 in May 1997, the sixth docking mission that returned Jerry Linenger to Earth and delivered Mike Foale to Mir. In June 1995, he was pilot on STS-71, the first docking mission. Precourt's first flight was as a mission specialist on STS-55, the Spacelab 2 mission in April/May 1993.

STS-91 will be the first space flight for Gorie and Kavandi, members of the 1994 astronaut class. Lawrence, who visited Mir in September as a member of the STS-86 crew, will be making her second visit to the space station. She previously flew on STS-67 in March 1995. Lawrence will bear primary responsibility for material transfer between the two spacecraft.

Chang-Diaz will be making his sixth journey into space, having flown on STS-61C in 1986, STS-34 in 1989, STS-46 in 1992, STS-60 in 1994 and STS-75 in 1996. With a doctorate in applied plasma physics, he will support a major scientific objective as he works with the Alpha Magnetic Spectrometer Investigation. The objectives are to search for anti-matter and dark matter in space and to study astrophysics.

STS-87 features space walk to test International Space Station maintenance

(Continued from Page 1)

basic properties and behavior of various materials and liquids being flown in space. Knowledge gained from these experiments may help produce better semiconductors for complex computers and other high-tech electronics and could help produce stronger metal alloys sought by the aircraft and automobile industries.

Thursday afternoon, the crew was to have used the shuttle's mechanical arm to deploy the Spartan 201 free-flyer, allowing it to begin independent observations of the hot outer layers of the Sun's atmosphere, or solar corona, and to gather measurements of the solar wind. Information collected during the flight will lead to a much better understanding of the solar winds that directly influence orbiting satellites and weather conditions on Earth which in turn impact television and phone communications.

Kregel and Lindsey will use maneuvering jets to maintain the proper distance between the orbiter and Spartan. *Columbia* will begin to close in on the free-flying observer just after noon Saturday. The final burn to put the orbiter on an intercept course will take place mid-afternoon with capture planned for about 6:30 p.m. Saturday.

Sunday's activities will center around preparing for the space walk to be performed by Scott and Doi. The pair will spend Sunday preparing *Columbia*'s airlock for the walk, checking out suits and configuring the tools they will use over six and a half hours in the payload bay. Lindsey will spend part of Sunday checking out the AERcam/Sprint robot camera that will be evaluated during the space walk.

Monday's EVA should begin at about 5:30 p.m. CST and will make history as Doi becomes the first Japanese astronaut to perform a space walk, which will involve tasks originally planned for STS-80 in November 1996 that were not achieved due to a stuck airlock hatch. Activities will include an end-to-end simulation of an Orbital Replacement Unit changeout on the International Space Station. A crane designed for use in moving large ORUs on the space station also will be tested.

STS-87 is to land at KSC about 6:20 a.m. CST Dec. 5.

Life support test crew sets record

Team passes 60-day mark with all systems working well

The four-person team testing space-age recycling methods in Bldg. 7 set a chamber duration record this week as it passed the 60-day mark.

"The life support systems continue to function very smoothly," reported Nigel Packham, commander of the Lunar-Mars Life Support Test Project Phase III crew, "and the four of us continue to be amazed at the level of effort the team is producing."

The highlight of the last couple of weeks was reaching the halfway point of the 90-day test. JSC Director George Abbey and other members of the senior staff were on hand to witness the "crossing of the line"—"an imaginary point in time where you have less time to go than the time that has already passed," he added .

"Having spent 60 days on the outside and 30 on the inside in previous tests, I can say that it goes a great deal quicker on the inside," said crew member John Lewis. "I know that reaching the half-way point is a significant milestone in that control room." The test team was able to share the moment with the crew inside using a video camera and microphone set-up in the high bay of Bldg. 7. "The crew really appreciated the tremendous support shown by all the people who attended the halfway celebration," noted crew member Vickie Kloeris.

"From the systems point of view, we also reached a technical milestone at day 45," said Laura Supra, one of the two systems specialists in the chamber. "We switched over to a different system for removing carbon dioxide from the chamber air for a 10-day period, and we also brought on-line a catalytic oxidation unit as the water post-processor polishing unit, instead of an ion exchange-based system." These changes were planned in order to investigate alternate technologies for advanced life support systems.

The crew reports that the scientific experiments being conducted in the chamber continue to go well, including a five day period where all food and fluids consumed by each crew member had to be weighed. "Imagine having to weigh each component of your salad, including the dressing, and then having to weigh anything you had remaining on your plate at the end of the meal," Packham said. "The incentive to clean your plate is pretty strong."

The test team celebrated 60 days in the chamber at 9 a.m. Tuesday, Nov. 18, breaking the chamber duration record set by the last test team during the Phase IIA test in March of this year. At that time, Terry Tri, the commander of the Phase IIA crew, together with the remaining three crew members, officially handed over the keys to the chamber to the Phase III team.

As always, the test can be visited on-line at http://pet.jsc.nasa.gov.

JSC Photo by Steve Candler

Marybeth Edeen, Lunar Mars Life Support Test Project Phase III project engineer, cuts a cake marking the halfway point in the crew's 90-day chamber stay as JSC Director George Abbey applauds the team's effort in Bldg. 7.

Community News

Fall carnival heralds changes at JSC's Child Care Center

A fall carnival at the JSC Child Care Center, featuring pony rides and a petting zoo for the youngsters, also heralded some changes of interest to parents.

At the Oct. 31 carnival, parents were welcomed by a new director, Kristy Hirning, who is instituting an A-Beka curriculum into the classes for 2, 3 and 4-year olds. The curriculum, used in many private schools in the area, emphasizes phonics, math and positive morals.

Hirning also will be implementing a new policy adopted by the Space Family Education Inc. board of directors that will allow enrollments of children belonging to off-site contractors, which reflects the acceptance of off-site contractors as part of the JSC family and should help fill vacancies in older classes. Currently, there are a few remaining openings in some rooms. Parents interested in enrolling their children should contact Bobbie Swan or Kristy Hirning.

Hirning, who was director of the Park Center Academy for five years, has displayed experience and enthusiasm that has been welcomed by both the parents and teachers of the center, according to board President Tim Boyes.

JSC Safety and Total Health Day provided a chance to prepare for the fall carnival. Under the leadership of Glenn Miller, the members, including William Bays, Gail Boyes, Cinda Chullen, Rudy Balciunas, Robin Clayton, Keith Hutto, Michelle Isermann, Caroline Root, Krystine Bui, Charlene Gemar, Wendy Boudreaux, Eric Lewis, Timothy Murphy, Rebekkah McClure and Matrenia Anumele took up wheelbarrows, rakes, shovels, hoes, sanders, hammers and other "home improvement" tools to take on an array of safety related chores identified by Hirning.

The group raked weeds and distributed a truckload of sand in play areas, fixed an unsafe dryer vent and computer wiring, floored a log cabin, repaired rotted wood on the ACRV playground equipment and performed general sanding and clean up. The group's work allowed the cancellation of another fall work day and led to a successful fall carnival.

Through parent donations, Hirning was able to bring in a moon walk, petting zoo, pony rides, the Houston Fire Department and a popcorn machine.

In addition, there were games, face painting and car races for the children and plenty of treats sponsored by the parents. Local merchants, including Double-Daves Pizza, Wendy's Hamburgers, Ashley's Donuts, TCBY, Target, Kroger's, Randall's, McDonalds, The Dollar Tree, and Discount Nursery donated pizza coupons, ice cream coupons, toys, pumpkins, hay and a scarecrow.

Hirning and the board are planning for a Thanksgiving feast at the Gilruth, a field trip at the Oil Ranch and possibly an Internet-based system for parents to view their children during their daily activities on their office computer workstations.

The JSC Child Care Center is managed by the Space Family Education Inc., a non-profit corporation established over five years ago for this purpose. The center's goal is to provide quality child care for on-site employees of JSC and contractors. Membership of the Space Family Education, Inc., consists of parent and interested individuals JSC. A board of directors is elected every two years by the membership and is responsible for the hiring of a director, who provides day-to-day management.

The recently elected board consists of Tim Boyes, president; Vincent Berend, vice president; Gretchen Thomas, secretary; John Trainor, treasurer; and Bobbie Swan, policies and procedures.

The corporation was formed to provide parents and interested individuals at JSC with control and operation of the facility and to relieve the U.S. Government and NASA of any liability associated with child care. The primary source of financial support is through tuition fees paid by the parents and through community support, including fundraising activities handled by volunteers from the membership.

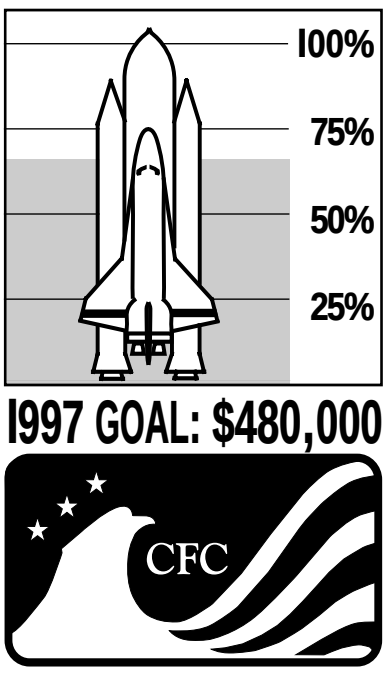
JSC Photos 97E04348, above, and 97E04346, below

Parents and children enjoy the Space Family Education Inc. Fall Carnival at the JSC Child Care Center on Oct. 31. Above: Kelly Thomas enjoys a pony ride at the Halloween carnival as her mother, Gretchen, left, watches over her. Thomas works in Engineering's EVA and Space Suit Systems Branch in Bldg. 7. Below: Bryce Smith gets a close look at some four-legged friends as father Ray Smith, whose wife, Tammy, is the IMPASS contract program support manager for Information Dynamics Inc. in Bldg. 12, looks on.

Combined Federal Campaign continues to take contributions

More than 1,320 employees had contributed $315,610 to this year's Combined Federal Campaign by the end of the third reporting period. Other JSC employees and retiree contributions brought the total to $317,294, or 66 percent of JSC's $480,000 goal.

JSC employees' generosity will go a long way to help those less fortunate in the community, said Coordinator Teresa Sullivan. The campaign officially was scheduled to run through Wednesday, Nov. 19, however contributions will continue to be accepted after that deadline. Anyone who needs additional information about the campaign may call Sullivan at x31034.



'Tis season to be wary of wild deer

By Bob Gaffney

JSC employees have experienced two recent, separate incidents of unusual encounters with deer on the jogging track at the Gilruth Recreation Center. Wildlife experts report that it is rutting season for the deer, and advise giving them a wide berth.

In both instances, rather than scurrying away to safety under nearby tree cover at the approach of joggers, the male deer stayed in place and, in one instance, lowered his head as if to challenge the approaching jogger. The jogger reversed course and completed his exercise away from the deer with no further incident.

JSC Center Operations Deputy Director Joe Fries said that while the center tolerates a small herd of deer on site, most employees never see them because they forage at night. COD responds to situations involving wild animals at the center but relies on the local game warden for advice on animal control. Fries pointed out that it is illegal to hunt or harm wild animals at the center.

Mike Shively, an agent for the Harris County Texas Agricultural Extension Service, advised employees to give any wild animal at least a 100-foot berth. Shively said the rutting season for deer in the JSC area extends from the end of October through early December, so if someone intrudes in an area where a male deer has a herd, he's going to protect that territory and the females in that herd. Wild animals usually won't attack unless they feel threatened, he said.

The popular media representation of wild animals in movies and TV creates the impression that they may be approached safely. This incorrect assumption leads to many people being hurt, he said. There have been incidents reported in other urban areas of the country where male deer have attacked people and severely injured them with either their antlers or slashing with their forelegs.

There have been no documented reports of deer attacks at JSC. However, employees should be aware that wild animals share the center with us but tend to avoid human contact. Employees are encouraged to respect that privacy and keep a watchful eye on their surroundings, especially in the areas where animals nest.

Boeing celebrates 3 million safe hours

By Kari Kelley

Boeing personnel observed JSC's Safety and Total Health Day on Oct. 15 by celebrating the accumulation of more than 3 million hours without a single, lost workday injury or accident. The excellent safety performance dates back over a six-year period.

"We have taken a proactive approach to safety", said Ron Prosser, Boeing director, Reusable Launch Systems. "Our employees are our most valuable asset."

"Boeing's safety accomplishment constitutes a remarkable achievement, particularly when one considers that their operation includes manufacturing and warehousing," said John Casper, JSC Safety, Reliability and Quality Assurance director.

"We have procedures in our shops that 'build in' safety which has been essential to our safety approach," Prosser said.

The Boeing team logged a total of 3,097,146 hours without losing a day to work-related injury or accident in support of NASA's human space flight programs including the space shuttle and International Space Station.

Boeing Reusable Launch System employees provide thermal engineering and analysis; stress and structures, payloads, cargo, and systems integration engineering; mechanical and avionics subsystems management support; mission support; light manufacturing; and a host of other engineering support tasks.

Additionally, Boeing Aerospace Operations, a wholly owned subsidiary, received its certification of ISO 9001 this summer. Boeing employees support JSC's Flight Equipment Processing Contract to test, maintain, repair, pack and ship astronaut equipment including space suits, crew communication items, cameras, tools, food, clothing and hygiene items.

Today, about 1,900 Boeing employees work on various programs in the Houston area, including the International Space Station.

Ron Prosser, Boeing director for Reusable Launch Systems, shares a plaque commemorating 3 million hours without a single lost workday injury or accident with John Casper, JSC Safety, Reliability and Quality Assurance director.

JSC Photo 97-15558

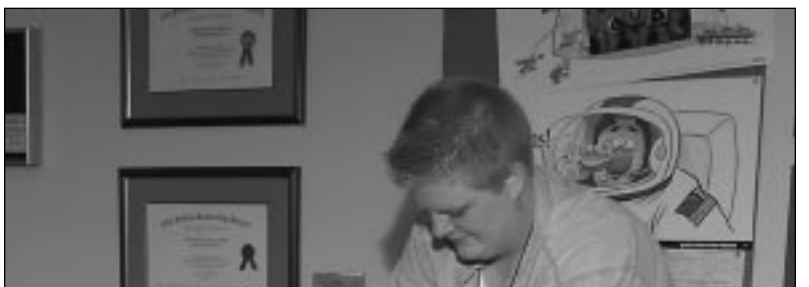
JSC Photo 97E04317

JSC Photo 97E04322

JSC Photo 97-15561

JSC Photos by Mark Sowa, Steve Candler, Benny Benavides

JSC Photo 97-15563



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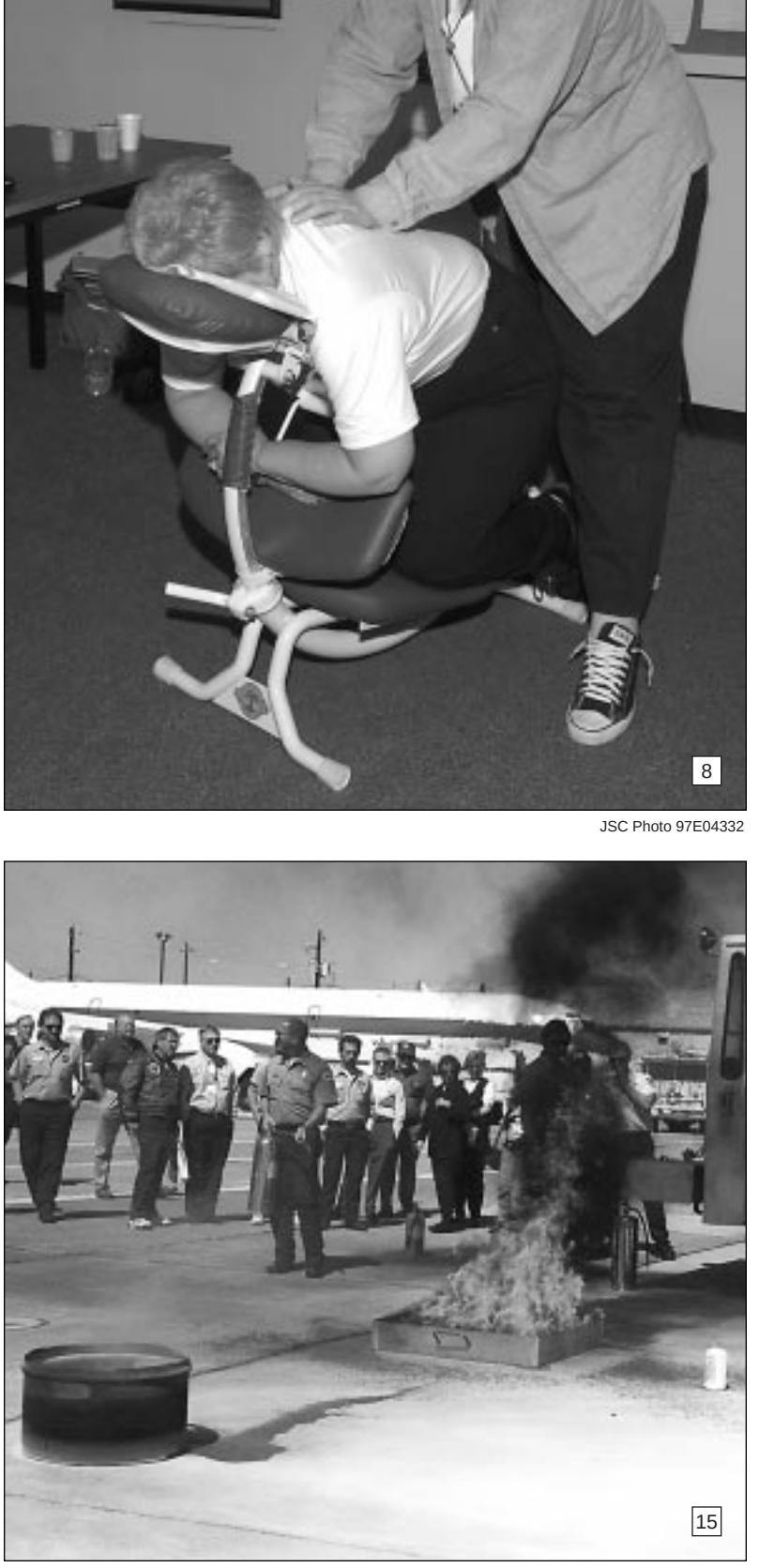

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JSC Photo 97E04331

JSC Photo 97-15561

Healthy, wealthy (in safety knowledge terms) and wise

JSC's second Safety and Total Health Day gets message across

JSC's Safety and Total Health Day was graced with beautiful weather for second year in a row on Oct. 15 as employees once again stood down from their daily tasks to reflect on their past year's efforts to remain safe and healthy and to learn more about how to stay that way for the coming year.

"I think it went great," said Larry Neu, co-chair of the Safety & Total Health Day Planning Committee along with Kelsey-Seybold's chief nurse, Lynn Hogan. "I think everybody picked up on the spirit of the day and tried to do some interesting, thought-provoking activities, and all in all I think folks got a lot out of the day. We had greater participation from the managers and their level of preparation was higher than the year before. A large percentage of the employees knew what the day was, what they were going to do that day and what their office's activities were going to be."

Hogan said employees appeared to enjoy the day, which achieved another aim, which was to provide some stress reduction and a good learning environment.

"Adult learners learn better when they need to know something," Hogan said. "They do better than if you set them down in a classroom and preach at them for an hour."

"I think it was just an amazing success, certainly from our perspective on health," Hogan said. "We had physicians at the Total Health table and people were asking really good questions. People lingered at the Total Health tables, they didn't just grab something free and run away."

Photographers captured many of the activities at JSC and Ellington Field, From left to right, top to bottom:

1) JSC employees take advantage of the opportunity to give blood to the St. Luke's blood bank. Over two days, a total of 508 donations were received.

2) David Anderson, left, and Brent Goswick demonstrate how electricity will travel through a baseball cap at the Texas/New Mexico Power Company Arc Demonstration.

3) Runners get a good start for the fun run, which started much more smoothly this year, only five minutes late.

4) At the Employee Assistance Program Booth near Bldg. 7, Peggy Halyard keeps the long lines moving.

5) Mary Flores, left, and Renita Saikia proffer literature at the Child Safety Booth near B.13.

6) At the Space Flight Awareness Booth, Becky Derbonne, left, and Lois Walker hand out posters to visitors near Bldg. 16.

7) JSC Director George Abbey joins a group witnessing a demonstration.

8) At Massage Therapy Location No. 2 in the Bldg. 30 lobby, Reta Warren receives a relaxing massage from Rowan Twosisters of Finnicky Fingers Salon, which is located in Clear Lake.

9) Officer Raul Ibarra, left, hits the handle to release Mark Welch as he slides to an abrupt stop at the Pasadena Police Community Service Crash Test Booth. Officer Glenn Deringer assisted.

10) At the Texas Society to Prevent Blindness Booth in the Bldg. 30 lobby, Imelda Otte, left, gives an eye exam to Margie Wood of Krug.

11) Texas Department of Safety Troopers Richard Vassar, with the hat, and Steve Hargett discuss public safety and the law with JSC personnel.

12) Webster Bicycle Booth volunteer Duane Johnson, standing, helps JSC engineers George Guirgis and Tomas Gonzalez try out a recumbent bicycle.

13) Vintage fire trucks are on display at the foot of vintage spacecraft at Rocket Park.

14) At the Sharp Object Damage Booth near Bldg. 17, Paula Beckstrom, left, and Jim Thornton display space gloves damaged during the STS-72 shuttle mission.

15) Visitors to Ellington Field find out how much heat and smoke are generated by an aircraft fuel spill fire.

16) JSC personnel sit on the lawn in the center mall listening to the Southern Cross Band play outside Bldg. 3.

17) The Southern Cross Band plays for the mall crowd.

18) At the Safety and Total Health Booth in the Bldg. 30 lobby, Pam Watson, left, and Leeann Harryman serve up popcorn to safety day participants. ❑

JSC Photo 97E04319

JSC Photo 97E04320

JSC Photo 97E04329

JSC Photo 97E04327

JSC Photo 97E04325

JSC Photo 97-15562

JSC Photo 97E04324

JSC Photo 97E04323

27 Years Ago at MSC

MSC tests in 1970 show water, oxygen available in lunar soil

Reprinted from the Nov. 20, 1970, issue of Space News Roundup.

Ten employees of the NASA Manned Spacecraft Center have applied for a joint patent on a simple and practical device and process for recovering water and its constituent elements, by hydrogen and oxygen, from lunar soil.

The device is based on a chemical process using hydrogen and solar energy to reduce oxides containing iron, which are constituents of lunar soil, to produce water vapor, which can in turn, be electrolyzed to yield oxygen and hydrogen.

Samples of lunar material returned by the Apollo 11 and 12 astronauts contain significant proportions of an iron-titanium oxide called ilmenite.

The apparatus described in the patent application uses a mirror to focus the sun's rays on a container of lunar soil, heating the soil to between 600 and 1,300 degrees Centigrade. Hydrogen is then introduced into the container and reduces oxygen atoms present in the ilmenite to form steam. The steam is passed through an electrolysis cell which separates the constituent elements of oxygen and hydrogen.

The hydrogen used in the reaction must be supplied initially from Earth, but may be recirculated a number of times to produce more oxygen.

The chemical process has been tested in a laboratory at the Manned Spacecraft Center using simulated lunar soil and has been found feasible. The simulated lunar soil was produced in MSC's Lunar Receiving Laboratory by grinding and mixing the proper proportions of a basalt from Hawaii and ilmenite, obtained from Canada.

The patent application notes that while neither water nor uncombined oxygen has been found on the lunar surface, both can be produced from lunar resources, offering the potential of supporting lunar exploration as well as broader space exploration. Oxygen, for example, could be used not only to support life, but also as a propellant for space vehicles.

Calculations show that with the hydrogen process, 100 pounds of lunar soil would yield nearly a pound of water; and if the iron-bearing oxides are first concentrated magnetically the yield increases to nearly 14 pounds of water from 100 pounds of lunar material.

A number of other chemical reagents are being considered in addition to hydrogen. Flourine, for example provides a greater yield of oxygen, but requires a more complicated process and does not yield water directly.

The hydrogen technique and the fluoride technique for recovering oxygen from lunar soil are being investigated further at the Manned Spacecraft Center and at NASA's Lewis Research Center in Cleveland.

MSC employees named as co-inventors of the hydrogen production process and related apparatus are David S. McKay, Everett K. Gibson, Patrick Butler, Jr., Norman H. Chaffee, Edward I. Chimenti, Alfred P. Sanders, Andre J. Meyer, Hoyt McBryar, T.R. Wellman, and Robin Brett.

JSC Photo S70-53864

Dr. W.R Downs, left, technical assistant for advanced systems, the BRN Chemical Technician Fred Harper, center, and Dewayne Casten monitor water yield of a sample in the Materials Composition Test Lab operated by MSC at Ellington Air Force Base.

Postcript

According to Norman Chaffee, one of the members of the team that worked on this process, the study and experimental evaluation of techniques for producing liquid water from lunar surface materials was a project that at the time seemed to have important near-term application, as NASA and JSC were in the middle of a spectacularly successful lunar landing and exploration program. "I got involved because I'm a chemical engineer and was familiar with chemical process principles and technology," said Chaffee, who is retired but in working part time in Public Affairs' Education and Information Services Branch. "We actually successfully demonstrated a candidate process using the mineral ilmenite, and tried to patent it. Although our NASA patent attorney, Russ Schlorff, worked really hard for us we weren't granted the patent because the process was not sufficiently unique for terrestrial applications, and the U.S. Patent Office would not issue a patent for a process application on the Moon. Be that as it may, this was one of the assignments I most enjoyed during my career."

Yeager recreates sound barrier-breaking flight on 50th anniversary

Renowned pilot Chuck Yeager recreated the historic flight in which he became the first person successfully to fly an aircraft faster than the speed of sound last month on the golden anniversary of that seminal event.

Yeager's flight in 1947 has been called "the greatest achievement since the first successful flight of the Wright Brothers."

On Oct. 14. exactly 50 years after the event, Yeager recreated the milestone flight in an F-15 fighter jet over California's Mojave Desert. The reenactment coincided with activities to commemorate the anniversary at Edwards Air Force Base, Calif., including the unveiling of a "50th anniversary of supersonic flight" stamp by the U.S. Postal Service.

Beginning in 1946, two XS-1 experimental research aircraft (later redesignated X-1s) conducted pioneering tests at Muroc Army Air Field (now Edwards Air Force Base) in California to obtain flight data on conditions in the transonic speed range. These early tests culminated in the first piloted flight faster than Mach 1.0, the speed of sound.

The XS-1, the first high-speed aircraft built purely for aviation research purposes, was designed largely in accordance with specifications provided by the National Advisory Committee for Aeronautics, now NASA, paid for by the Army Air Forces, and built by Bell Aircraft. The NACA X-1 procedures and personnel helped lay the foundation of America's space program and provided a basis for American aviation supremacy in the latter half of the 20th Century.

Gilruth Center News

Hours: The Gilruth Center is open from 6:30 a.m.-10 p.m. Monday-Thursday, 6:30 a.m.-9 p.m. Friday, and 9 a.m.-2 p.m. Saturday.

Sign up policy: All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a yellow Gilruth or weight room badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

Gilruth badges: Required for use of the Gilruth Center. Employees, spouses, eligible dependents, NASA retirees and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday; and 9 a.m.-2 p.m. Saturdays. Cost is $10. Dependents must be between 16 and 23 years old.

Hatha Yoga: A stress relieving, stretching and breathing exercise routine to unite body, mind and spirit. Classes meet from 5:30-6:30 p.m. Thursdays. Cost is $40 for eight weeks.

Nutrition intervention program: A six-week program to learn more about the role diet and nutrition play in health, including lectures, private consultations with a dietitian and blood analysis. Program is open to all employees, contractors and spouses. For more information call Tammie Shaw at x32980.

Defensive driving: One-day course is offered once a month. Pre-registration required. Cost is $25. Call for next available class.

Stamp club: Meets at 7 p.m. every second and fourth Monday in Rm. 216.

Weight safety: Required course for employees wishing to use the weight room will be offered from 8-9:30 p.m. Call for next available class. Pre-registration is required. Cost is $5. Annual weight room use fee is $90. Additional family members are $50.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is $24 for eight weeks.

Aikido: Introductory martial arts class meets from 5:15-6:15 p.m. Tuesday and Wednesday. Cost is $35 per month. New classes begin the first of each month.

Step/Bench aerobics: Classes meet from 5:15-6:15 p.m. Monday, Tuesdays and Thursdays. Cost is $32 for eight weeks. Kristen Taragzewski, instructor.

Ballroom dancing: Beginner classes meet from 7-8:15 p.m. Thursdays. Intermediate and advanced classes meet from 8:15-9:30 p.m. Cost is $60 per couple.

Country and western dancing: Beginner class meets 7-8:30 p.m. Monday. Advanced class (must know basic steps to all dances) meets 8:30-10 p.m. Monday. Cost is $20 per couple.

Fitness program: Health Related Fitness Program includes a medical screening examination and a 12-week individually prescribed exercise program. For more information call Larry Wier at x30301.

Gilruth Home Page: Check out all activities at the Gilruth online at: http://www4.jsc.nasa.gov/ah/exceaa/Gilruth/Gilruth.htm

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday and in the Bldg. 3 Exchange Store from 7 a.m.-4 p.m. Monday - Friday. For more information call x35350 or x30990.

Texas Renaissance Festival: adults, $12; children 5-12, $5.50.

EAA Christmas Dinner/Dance: Dec. 13, $25 per person

Astroworld: $19 Blue Light Special, valid only in Houston, through Jan. 4.

Moody Gardens: Tickets are $9.50 for two of four events.

Seaworld: Adult $27.25; children (3-11) $18.25.

Space Center Houston: Adult $8.95; children (4-11) $6.40 JSC civil service employees free.

Movie discounts: General Cinema, $5.25; AMC Theater, $4.50; Sony Loew's Theater, $4.75.

Shirts: JSC logo T-shirt, $10, polo style, $23; International Space Station logo golf shirts, $26 and $28.

Stamps: Book of 20, $6.40.

1998 Franklin Planner replacement refill orders being taken now.

Sweetwater Pecans: Orders are being taken now; cost is $5.75 per pound.

Metro passes: Tokens and value cards available.

Book available: *Suddenly Tomorrow Came: A History of Johnson Space Center.*

Upcoming events: EAA Spring Break Ireland Trip: March 21-29, $1,399 per person, double occupancy ($200 deposit per person, final payment due Jan. 21).

Transportation czar keeps 'em moving

When important people visit, Pete Vasquez gets them where they're going

By Lori Keith

Who do all the President's men count on for transportation when they come to JSC? Pedro "Pete" Vasquez, that's who.

Vasquez oversees all operations for the vehicle fleet and shuttle bus service. That means supporting visits by dignitaries from ambassadors to kings, important government program officials from presidential and congressional staffers to top NASA managers, and astronauts and their families.

Vasquez works in Bldg. 419 for the Center Operations Directorate's Transportation Branch, which is responsible for all ground transportation for the people at JSC, and for special event transportation at the center.

During the interview, he's busy scheduling transportation for the crew return of the latest mission, STS-86, from Ellington Field. A lot of what he does revolves around scheduling and coordinating events. He's one of two group leads for the branch.

"We provide transportation for the astronaut's families going to and from the launch, and for special and foreign dignitaries who visit the center," he said. When the President comes, Vasquez's office arranges transportation for White House staffers traveling with him. "It keeps us pretty busy."

His office also is responsible for maintaining the Special Purpose Mobile Equipment, such as front-end loaders, forklifts, cranes, tractors, trailers, motorized carts, lawnmowers—just about anything else with a motor. About half of these have been turned over to the Base Operations Support Services contractor. "We have about 50 pieces of equipment that we still maintain, or are responsible for the replacements, when the time comes."

During the past three years, the fleet has been cut in half, mostly because of the BOSS contract. This makes scheduling a bit more difficult.

Vasquez's customers are vocal in their praise. Trudy Davis, astronaut affairs coordinator, has worked with Vasquez for years, coordinating transportation for the flight crew's families.

"He's awesome. I can always depend on him," Davis said. "If he says he'll do something, it's done. I don't have to worry about it anymore."

Vasquez did the scheduling and coordination of shuttle buses for Inspection 97. "This is one of our biggest activities," he said. "I will have about 13 commercial leased buses to transport visitors and employees during the three days. An additional 10 buses will bring about 500 visitors from the Adams Mark Hotel."

Vasquez has worked for NASA since 1968. His first assignment at JSC was in the Telecommunications Section. During that time, he began going to Alvin Community College, and then to the University of Houston-Clear Lake, where he earned his bachelor's degree in Business Administration.

When asked what he enjoys most about his job, he explains, "I've been here so long it's hard to say. I guess the people I work with and the environment. I've been fortunate to have good supervisors and flexibility."

JSC Photo 97-15661

Pete Vasquez stands before one of the many conveyances his office maintains and schedules in support of JSC activities.

People on the Move

Human Resources reports the following personnel changes as of November 8:

Additions to the Workforce

Debra Bailey joins the Ascent/Descent Dynamics Branch in the Mission Operations Directorate as a flight controller.

Joyce Hayes joins the Mechanical, Booster, and Maintenance Crew Systems Branch in the Mission Operations Directorate as a flight controller.

Mark Scroggins joins the Information Systems Directorate as an archivist.

Dom Apisa joins the Facility Development Division in the Center Operations Directorate as a facilities engineer.

Promotions

Jose Garcia was selected as a senior contract price/cost analyst in the Business Systems Office.

Reassignments Between Directorates

Pete Gillette moves from the Information Systems Directorate to the Engineering Directorate.

Alicia Moore moves from the Space Shuttle Program Office to the Engineering Directorate.

Bob Beckham moves from the Engineering Directorate to the Information Systems Directorate.

Resignations

Liese Dall-Bauman of the Engineering Directorate.

Doug Lee of the Engineering Directorate.

Nancy Smith of the Engineering Directorate.

Honeycutt returns as Lockheed president

Longtime JSC employee and former Kennedy Space Center Director Jay Honeycutt has been appointed president of Lockheed Martin Space Mission Systems and Services in Houston.

Honeycutt retired in March 1997 from NASA.

Lockheed Martin Space Mission Systems and Services is a high-tech engineering and science services firm that employs more than 5,000 employees, the majority working in the Clear Lake area. Services to NASA-JSC include software and hardware engineering for the space shuttle and space station; Mission Control systems design, development and implementation; and human life sciences support. It has contracts with other NASA centers.

"We are extremely pleased to have a man of Jay Honeycutt's background and capabilities to lead this business," said Mike Camardo, president of Lockheed Martin Technology Services Group. "Jay is an exceptional leader. His extensive technical and managerial experience and knowledge of the human space program will play a crucial role in helping our customers meet their future space mission challenges."

Honeycutt

A winner of two NASA Exceptional Service Medals and two NASA Outstanding Leadership Medals, Honeycutt began his government career at Redstone Arsenal in Huntsville, Ala., as an engineer in 1960. He transferred to NASA-JSC in 1966,where he served in various progressive positions in the Apollo and shuttle programs.

While at JSC, Honeycutt served as technical assistant to the associate administrator of space flight at NASA Headquarters, and as deputy manager of the National Space Transportation System Program Office.

He also coordinated the presidential commission and congressional activities relating to the *Challenger* accident.

Honeycutt moved to Kennedy Space Center in March 1989, as director of shuttle management and operations, later becoming director.

Exchange Stores offer holiday photo processing bargain

Just in time for those Thanksgiving snapshots, JSC's Exchange Stores once again will offer a special photo processing bargain for one week.

To take advantage of the Dec. 1-5 special, employees need only drop off their film at the Bldg. 3 or 11 Exchange Stores.

The special discount prices will allow employees to process their film and receive prints at the rates:

- $2.99 for 3-inch double prints from 12, 15, 24, or 36 exposure color rolls.
- $3.99 for 4 inch double prints for 12, 15, 24, or 36 exposure color rolls.

In addition, employees who turn in their film for processing will receive a discount on the purchase of another roll of film.

The special discount prices are effective for everything *except* black and white, panoramic, half frames or advanced photo systems processing.

The photo processing service is provided to the JSC Exchange by Fuji TruColor, Dallas.

For details, contact the Bldg. 3 Exchange Store at x37362, or the Bldg. 11 Exchange Store at x35749.

Dates & Data

Nov. 21

Museum presentation: Texas Energy Museum presents "Mars Life and Exploration" Space Science and Technology Lecture Series, 5 p.m. Nov. 21 at Texas Energy Museum, 600 Main Street, Beaumont. JSC's Dr. Mike Duke will speak on "Mars Exploration." For details, call 833-5100, 880-8186 or 880-8237.

Nov. 25

Grand rounds: November Space Medicine Grand Rounds will present Dr. Victor Convertino, chief of the Physiology Research Branch at the Armstrong Laboratory, Brooks Air Force Base at 8:30 a.m. Nov. 25 at the Center for Advanced Space Studies, 3600 Bay Area Blvd. Convertino will discuss "Alterations in the Mechanisms of Normal Blood Pressure Regulation Caused by Microgravity." The presentation is sponsored by UTMB/JSC Aerospace Medicine Residency Program, UTMB's Center for Aerospace Medicine and Physiology, and USRA's Division of Space Life Sciences. For details, call Kay Nute at 244-2019.

Nov. 26

Astronomy seminar: The JSC Astronomy Club will meet at noon Nov. 26 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at x35037.

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. Nov. 26 at the House of Prayer Lutheran Church. For more information, call Jeannette Darcy at x45752.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. Nov. 26 at United Space Alliance, 600 Gemini. For details, call Patricia Blackwell at 281-282-4302 or Brian Collins at x35190.

Communicators meet: The Clear Lake Communicators will meet at 11:30 a.m. Nov. 26 at Lockheed Martin, 555 Forge River Road. For more information, contact Richard Lehman at 281-333-6004 or Melissa Sommers at 281-332-0698.

Dec. 2

AIAA meets: The American Institute of Aeronautics and Astronautics's Education and Professional Development Committee will present a leadership seminar at 7 p.m. Dec. 2 in Rm. 32C of the Lockheed Bldg., 2450 NASA Road 1. Bill Hartwell of Boeing's Russian Integration Group for the International Space Station, will discuss "Inspiratation and Enrollment-Powerful Keys to Leadership." For reservations or more information, call Charles Halliman at 991-1654.

Dec. 3

Astronomy seminar: The JSC Astronomy Seminar will meet at noon Dec. 3 in Bldg. 31, Rm. 129. Jim Akkerman will discuss "Space: Earth Orbit Closer Than You Think!" For more information, call Al Jackson at x35037.

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. Dec. 3 at the House of Prayer Lutheran Church. For more information, call Jeannette Darcy at x45752.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. Dec. 3 at United Space Alliance, 600 Gemini. For details, call Patricia Blackwell at 281-282-4302 or Brian Collins at x35190.

Communicators meet: The Clear Lake Communicators will meet at 11:30 a.m. Dec. 3 at Lockheed Martin, 555 Forge River Road. For more information, contact Richard Lehman at 281-333-6004 or Melissa Sommers at 281-332-0698.

Health Benefits Fair: The annual Health Benefits Fair will be held from 9 a.m.-3 p.m. Dec. 3 in the Bldg. 2 lobby. Representatives from more than 25 health care related providers will be present to discuss their plans and offerings. Employees, retirees, and spouses are invited. If additional information or assistance is needed call or visit Employee Services, Bldg. 45, Rm. 140, x3268l.

Dec. 4

Warning System Test: The site-wide Employee Warning System will perform its monthly audio test at noon Dec. 4. For more information, call Bob Gaffney at x34249.

Dec. 9

Aero club meets: The Bay Area Aero Club will meet at 7 p.m. Dec. 9 at the Houston Gulf Airport clubhouse at 2750 FM 1266 in League City. For more information call Larry Hendrickson at x32050.

NPMA meets: The National Property Management Association will meet at 5 p.m. Dec. 9 at Robinette and Doyle Caterers, 216 Kirby in Seabrook. Dinner costs $14. For details, call Sina Hawsey at x36582.

Dec 10.

Astronomy seminar: The JSC Astronomy Club will meet at noon Dec. 10 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at x35037.

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. Dec. 10 at the House of Prayer Lutheran Church. For more information, call Jeannette Darcy at x45752.

Communicators meet: The Clear Lake Communicators will meet at 11:30 a.m. Dec. 10 at Lockheed Martin, 555 Forge River Road. For more information, contact Richard Lehman at 281-333-6004 or Melissa Sommers at 281-332-0698.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. Dec. 10 at United Space Alliance, 600 Gemini. For details, call Patricia Blackwell at 281-282-4302 or Brian Collins at x35190.

PSI meets: The Clear Lake/ NASA Chapter of Professional Secretaries International will meet at 5:30 p.m. Dec. 10 at the Holiday Inn, NASA Road 1. Dinner costs $13. For more information, call Elaine Kemp at x30556.

NASA Briefs

Trafton announces plan to depart NASA

Wilbur Trafton, associate administrator for the Office of Space Flight at NASA Headquarters, has announced his intention to leave NASA, effective next month. NASA is proceeding with the search for a successor. Trafton has been the space agency's top official for human space flight since March 1996. During his tenure, the space shuttle has safely and successfully flown 13 missions, and the International Space Station program has moved from planning to the production of almost a quarter-of-a-million pounds of flight hardware. "I have been enormously privileged to lead this terrific team of talented people who make up the wide range of programs represented by the Office of Space Flight," said Trafton, who came to NASA as director of the space station program in January 1994.

Galileo finds Io dark spot size of Arizona

Observations taken by NASA's Galileo spacecraft five months apart reveal a new dark spot the size of Arizona on Jupiter's moon Io, indicating that dramatic volcanic activity occurred during that time. The visible change took place during the five months between Galileo's seventh and tenth orbits of Jupiter and covers about 249 miles, surrounding a volcanic center named Pillan Patera. Dark features at the center of the deposits may be new lava flows. In June 1997, an active plume was observed over Pillan by Galileo and the Hubble Space Telescope with a height of 75 miles, and both Galileo and ground-based astronomers observed an intense hot spot.

Plant growth lighting may help treat cancer

Special lighting technology developed for NASA's commercial plant growth experiments in space may help treat cancerous brain tumors in children. A technique called photodynamic therapy is using tiny pinhead-sized Light Emitting Diodes to activate light-sensitive, tumor-treating drugs. Experiments indicate the treatment can be more effective in destroying tumors than conventional surgery. Dr. Harry Whelan of the Medical College of Milwaukee, Wis., has obtained Food and Drug Administration approval to use the drug, called Photofrin II, on children's brain tumors on a trial basis. Once activated by the light, it destroys the tumor's cells, leaving normal brain tissues virtually untouched.

Latest JSC forms now available on-line

"I need a JSC form now!" someone exclaims. And then there's, "Those Forms in that file cabinet are obsolete. Where can I get a current version, fast?"

The answer is literally at your finger tips. According to Aubra Boyd, forms manager in the Information Systems Directorate, the most commonly used JSC forms are available via the Internet.

"Here's how it's done," Boyd explained, "from the JSC internal home page, click on 'JSC On-line Forms,' then click on the first line 'Search and retrieve a form….'"

For those who want to type in the address and go directly to the page the address is: http://www.jsc.nasa.gov/infosys/forms/.

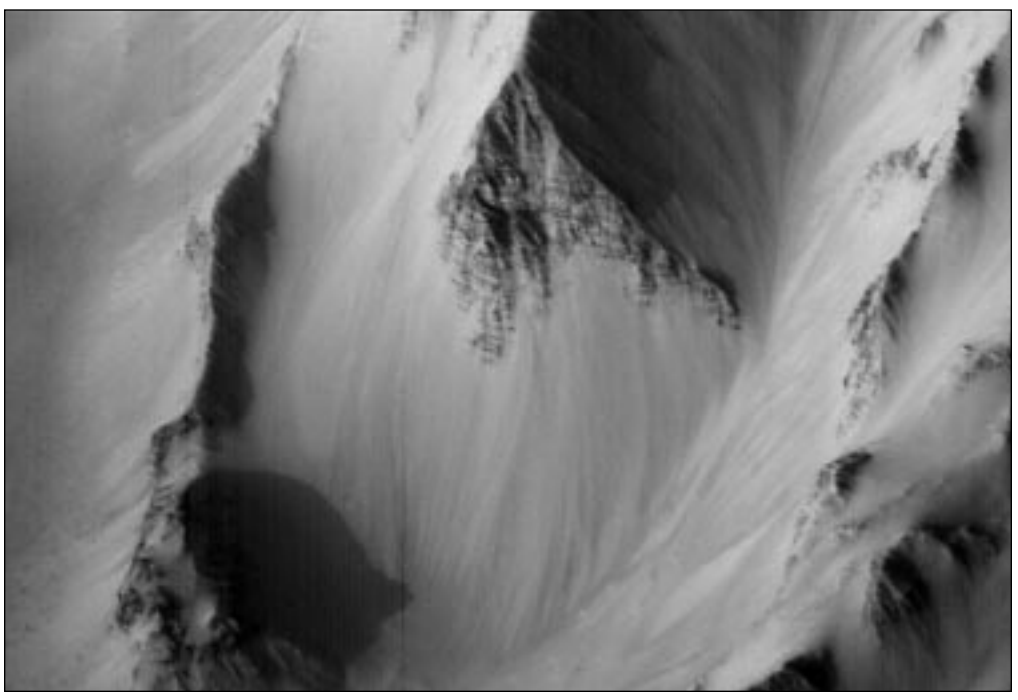
The web site provides on-line access to current versions of electronic forms, information on all active forms, general information about the JSC Forms Management Program and more.

ISD is working to make even more forms available in Microsoft Word. Several forms are available only in Delrina FormFlow version 1 (recognizable by the .frp file extension). To use these forms, remember that FormFlow version 1 is required on your PC. To request a copy of the software, contact your ISD Customer Service Agent, call the Help Desk at x34800 or send them an e-mail. Some computer systems such as Travel Manager Plus have forms embedded as part of the application or tool. The forms are completed and routed electronically and require the specific software for the application to be used. More such systems/forms will be available in the future.

Now is a great time to check what's available to you online. See what is available, then clean out those cabinets filled with obsolete forms. Don't replace the paper copies. If you make copies that you don't need then please recycle the paper. No carbon paper or NCR paper can be recycled.

"Isn't it better not to waste the paper and time in the first place?" Boyd asked. "Especially when the current version of the form is what you get at the push of a few buttons? Hard copy forms maintenance is time consuming and now just plain wasteful since we do that for you online!"

For more information about the JSC Forms Management Program or to request a new or revised form send your email to aubra.boyd1@jsc.nasa.gov or call Boyd at x36285.



NASA Photo

This Mars Global Surveyor image of the western portion of Valles Marineris shows the steep slopes of a canyon. The discovery of light and dark layers in the rock outcrops of the canyon walls indicate some 80 layers alternating in brightness and varying in thickness from 16 to 160 feet. This type of bedrock layering has never been seen before in Valles Marineris. It calls into question common views about the upper crust of Mars, for example, that there is a deep layer of rubble underlying most of the martian surface, and argues for a much more complex early history for the planet.

Mars Global Surveyor resumes aerobraking at more gradual pace

After a two-week hiatus, NASA's Mars Global Surveyor flight team resumed lowering the spacecraft's orbit around Mars on Nov. 7, this time at a more gradual pace.

The slower schedule will extend the mission's aerobraking phase by several months, and will change Global Surveyor's final science mapping orbit.

The decision to resume aerobraking came after intensive engineering analysis, computer simulations and tests with representative hardware to characterize the current condition of one of the spacecraft's two solar panels, which began to flex more than expected during the spacecraft's lowest dip into the Martian atmosphere on Oct. 6.

Under normal circumstances, the spacecraft's two 11-foot-long solar panels should remain fixed and nearly motionless during each aerobraking pass through the upper atmosphere of Mars. One of the panels, which did not fully deploy and latch after launch, moved past its latched position and has shown slight movement during the spacecraft's last three closest approaches.

"After sufficient time to study the observed motion, we concluded that it is possible to perform additional aerobraking at a slower rate, without putting undue stress on the solar panel in question," said Glenn Cunningham, Mars Global Surveyor mission manager at NASA's Jet Propulsion Laboratory. "This changes Mars Global Surveyor's final mapping orbit, but it should not have a significant impact on the ability of Global Surveyor to accomplish the mission science objectives."

The spacecraft's scientific instruments have performed flawlessly and continue to return new information about Martian magnetic properties, its atmosphere, surface features, temperatures and mineralogy since Mars Global Surveyor entered orbit on Sept. 11.

The spacecraft is in a 35-hour elliptical orbit that brings it 107 miles above the surface of Mars at its closest approach. The operations team at JPL and Lockheed Martin Astronautics, Denver, are reducing that orbit using a more moderate level of aerobraking that will slowly bring the spacecraft into the desired nearly circular mapping orbit.

Mechanical stress analysis tests suggest that the yoke that connects the solar panel to the spacecraft—a triangular, aluminum honeycomb material sandwiched between two sheets of graphite epoxy—probably fractured on one surface.

Mars Pathfinder winds down after string of successes

After operating on the surface of Mars three times longer than expected and returning a tremendous amount of new information, NASA's Mars Pathfinder mission is winding down.

Flight operators at NASA's Jet Propulsion Laboratory made the announcement Nov. 4 after attempting to reestablish communication with the spacecraft over the last month. With depletion of the spacecraft's main battery and no success in contacting Mars Pathfinder via its main or secondary transmitters, the flight team cannot command the spacecraft or the small Sojourner that had been roving about the landing site and studying rocks.

"We concede that the likelihood of hearing from the spacecraft again diminishes with each day," said Pathfinder Project Manager Brian Muirhead. "We will scale back our efforts to reestablish contact but not give up entirely. "Given that, and the fact that Pathfinder is the first of several missions to Mars, we'll say 'see you later' instead of saying goodbye."

At the time the last telemetry was received, Pathfinder's lander had operated nearly three times its design lifetime of 30 days, and the Sojourner rover operated 12 times its design lifetime of seven days.

"I want to thank the many talented men and women at NASA for making the mission such a phenomenal success. It embodies the spirit of NASA, and serves as a model for future missions that are faster, better, and cheaper. Today, NASA's Pathfinder team should take a bow, because America is giving them a standing ovation for a stellar performance," said NASA Administrator Daniel S. Goldin.

Since its landing on July 4, Mars Pathfinder has returned 2.6 billion bits of information, including more than 16,000 images from the lander and 550 images from the rover, as well as more than 15 chemical analyses of rocks and extensive data on winds and other weather factors. The only remaining objective was to complete the high-resolution 360-degree image of the landing site called the "Super Pan," of which 83 percent has already been received and is being processed. The last successful data transmission cycle from Pathfinder was completed at 3:23 a.m. PDT Sept. 27.

"This mission has advanced our knowledge of Mars tremendously and will surely be a beacon of success for upcoming missions to the red planet," added Dr. David Baltimore, president of the California Institute of Technology, which manages JPL for NASA. "Done quickly and within a very limited budget, Pathfinder sets a standard for 21st century space exploration."

The Mars Pathfinder team first began having communication problems Sept. 27. Repeated attempts to reestablish contact were unsuccessful.

"Basically we are shifting to a contingency strategy of sending commands to the lander only periodically, perhaps once a week or once per month," said Mission Manager Richard Cook. "Normal mission operations are over, but there is still a small chance of reestablishing a link, so we'll keep trying at a very low level."

JSC dedicates Educator Resource Center at Space Center Houston

JSC and Space Center Houston officials dedicated a new Educator Resource Center on Nov. 7. The new center will provide teachers easier access to tools they can use to expand and enhance the scientific and technological competence of their students.

JSC and Space Center Houston merged their unique capabilities to form a partnership for the move of JSC's Educator Resource Center outside the center gates. The ERC is part of NASA's comprehensive education program to contribute to the national educational goals.

While JSC provides equipment and materials for the ERC, the visitor center now operates the facility and provides a unique environment and resources. The move makes it easier for teachers to visit and use.

The ERC offers NASA educational materials featuring activity guides focusing on math, science and technology. Educators may access NASA's on-line resources for educators via the Internet-capable computers. Certified teachers are available for consultation. The ERC's professional staff can facilitate training to help educators get the most out of NASA's curriculum guides.

The ERC is open to educators of all grade levels. Regular operating hours are weekdays from 8:30 a.m.-5:30 p.m. with weekend appointments available. An educator may reserve a weekday or weekend appointment by calling 281-244-2129. The ERC is located inside Space Center Houston. Educators may enter through the door behind the flight deck of the shuttle mockup.

Space News ROUNDUP

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Editor . . . . . .Kelly Humphries

Health Benefits Fair heralds open season for benefits, thrift savings

The annual open seasons for the Federal Employees Health Benefits Program and Thrift Savings Program are under way, and the annual Health Benefits Fair is scheduled for Wednesday, Dec. 3.

From 9 a.m.-3 p.m. in the lobby of Bldg. 2, representatives from more than 25 health care providers will discuss their plans and offerings. Employees, retirees, and spouses are invited.

The Health Benefits Open Enrollment Season, which runs through Dec. 8, is a four-week period during which employees may change from one health plan to another; change between "self only" and "family" enrollment or enroll in a health plan even if they previously declined.

Employees may make a change or enroll by either submitting an SF 2809, Health Benefits Registration Form, to AH6/Employee Services. Open Season changes, enrollments and plan coverage will be effective Jan. 4, 1998.

Open season for the Thrift Savings Plan will extend through Jan. 31. During this period, eligible employees may begin making contributions to the Thrift Savings Plan; change the amount of their contributions; change the allocation of their contributions among the investment funds, or stop their current contributions. The next TSP open season will begin May 15.

For more information, visit the Human Resources Office Homepage at http: http://hro.jsc.nasa.gov/, call x3268l or drop by Employee Services, Bldg. 45, Rm. 140.

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