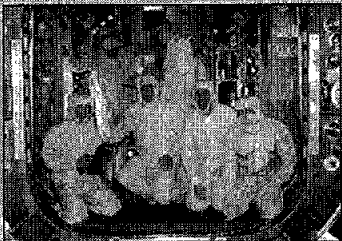


## In this issue



Crew tests International Space Station Node 1 maintenance items.

Page 2



JSC employees pitch in with local community to build house for low-income family.

Page 3



Vision Team takes on the task to broaden a visitor's experience at JSC.

Page 4



Space Center Houston has variety of activities planned for fall season.

Page 5



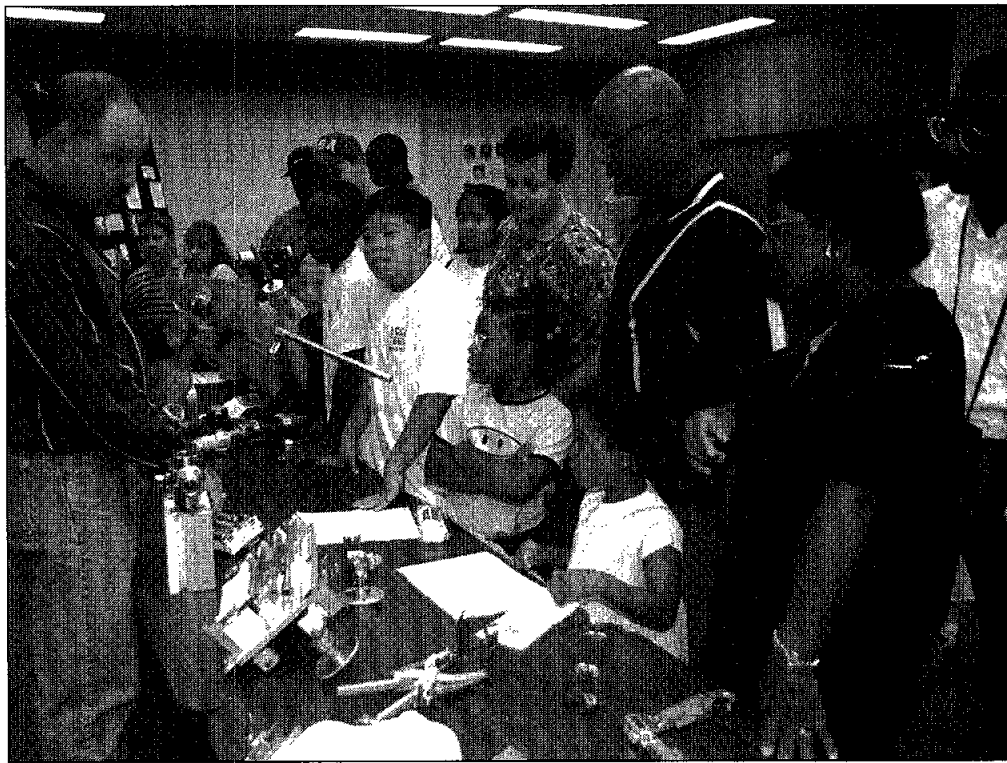
Special team hangs plaque in Mission Control Center, astronauts award Snoopys.

Page 6



Teachers, students spend summer at JSC in space workshops.

Page 7



Above: JSC's Glenn Lutz of Engineering's Crew and Thermal Systems Division explains space walking tools used by the astronauts during missions to open house guests. Right: Visitors relive history the historic Apollo-era control room in Bldg. 30. The largest estimated crowd was on hand Saturday, Aug. 23 for JSC's Open House. Visitors came from all regions of the world including England, Mexico, Canada, Germany and Australia. American visitors from coast to coast also came to the open house. Twenty buildings and facilities featuring more than 100 exhibits and demonstrations were open to help visitors "experience" human space flight and associated technology. Hundreds of NASA volunteers were on hand to help visitors understand JSC's role in making it a reality.

JSC Photos 97-10711 and 97-10712 by Robert Markowitz and Steve Candler



## Open house pleases crowd, sets records

August weather cooperated with organizers this year and the largest crowd ever estimated attended JSC's Open House.

With a theme of "Space...for all people," JSC opened its doors wide to the public from as far away as Australia for a behind the scenes look at the center. Twenty buildings and facilities featuring more than 100 exhibits and demonstrations were open to help visitors "experience" human space flight and associated technology.

"The volunteers did a fantastic job of explaining things," said a visitor from Missouri. "You could tell they were very excited about the work they're doing. The showed a lot of products that I didn't realize started from the research going on here."

Hundreds of NASA volunteers were on hand to discuss their favorite topic—human space flight—and to help visitors understand JSC's role in making it a reality. Visitors came from all regions of the world including England, Mexico, Canada, Germany and Australia. The Australians, who were vacationing in New Orleans, read about the open house on the Internet and hopped a plane for the visit to the space center. American visitors from coast to coast came to the open house.

Nearly every facet of space flight was featured in the line-up of displays and demonstrations. Mission operations, shuttle and space station training and simulations, robotics and virtual reality, manufacturing and fabrication, spacecraft propulsion and energy systems, space communications, life support and space suits, and a wealth of scientific investigations were included.

Visitors were able to tour the new Mission Control Center and relive history in an exciting film presentation in the historic Apollo-era control room.

"Everything has vastly improved in the last 20 years because of NASA," wrote a visitor from Texas on comment cards. "The space program made me proud to be an American," wrote another Texas visitor.

Guests were able to land a simulated shuttle, dock with the space station and try out a number of robotic arms and hands. Visitors also were able to manipulate space tools and test shuttle communications.

Please see **GUESTS**, Page 8

## Diverse mission studies Earth, station elements

By Kyle Herring

*Discovery* is safely back on Earth after 12 days in space studying Earth's atmosphere and testing a Japanese robotic arm serving as a prototype for one that will fly on the International Space Station.

After the Aug. 18 landing was waved off because of the threat of late-developing ground fog at Kennedy Space Center, *Discovery* ended its 23rd mission in space at 6:08 a.m. CDT Aug. 19 with touchdown at Kennedy Space Center's Shuttle Landing Facility.

With it, *Discovery* returned enough data on the Earth's atmosphere and ozone layer to keep scientists busy for years trying to corre-

late it with that gathered by high flying aircraft and weather balloons to better understand the changes and countermeasures that could protect it. According to Commander Curt Brown, the flight was much more than it had set out to be.

"This was a very diverse mission. It originally started out as a Mission to Planet Earth where we studied the Earth's atmosphere and how we as humans are affecting the Earth and how nature is creating our environment," he said to family and friends at Ellington Field during the crew return ceremony. "But we added a lot of other things from astronomy to technical research to developing things for space station

and its operations and deployment. It's amazing how many folks it takes to get us into orbit and we really do appreciate all the hard work."

The CRISTA-SPAS satellite was released from the shuttle's robotic arm about seven hours after *Discovery's* launch on Aug. 7. Payload Commander Jan Davis used the remote manipulator system to grapple and deploy the CRISTA-SPAS for its nine-day free flight mission.

The German-built satellite, flown as part of a cooperative program between NASA and the German Space Agency DARA, was retrieved Aug. 16 after for more than 200 hours of studies of the middle atmosphere using three telescopes and

four spectrometers to measure infrared radiation. Data gathered will help investigators from 15 countries understand how tracer "filaments" in the stratosphere contribute to the transport of ozone and chemical compounds that affect distribution.

"It was an ideal mission for me," Davis told the crowd at Ellington. "An ideal mission for me includes first of all, science. We did a lot of different kinds of science and I was really excited to be a part of that effort. I am looking forward to seeing what new discoveries were made. This was a very complex flight and everyone had to give 110 or 150 percent to pull it off. They did."

Please see **STS-85**, Page 2

## Low lecturer says working together helps cut waste

By Kelly Humphries

Businesses and governments need to act more like families when it comes to belt tightening, the Texas Comptroller of Public Accounts told JSC managers last week in the second Low Leadership lecture.

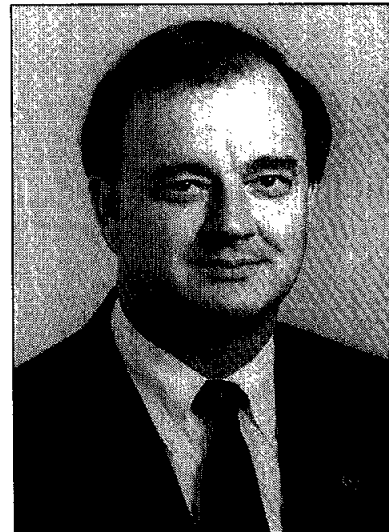
John Sharp, who took office as Texas' 35th state comptroller in 1991, used anecdotes from his efforts to eliminate waste and fraud from the Texas food stamp and Medicaid systems and his time as manager of the Texas Lottery and comptroller to illustrate his point Aug. 14 for 300 managers at the

Gilruth Center.

"The real problem with any organization, whether it's in the private sector or the public sector, is that it is sometimes difficult to make big organizations act like a family," Sharp said. "When a family has to cut back and is a little bit short on money, the family doesn't always get to say 'I'm going to give myself a raise and take care of this.' They have to find different ways to prune back."

Sharp set up the Texas Performance Review, an ongoing audit of

Please see **LOW**, Page 8



John Sharp

## Blood drive nets gallons

JSC employees once again provided a valuable service to their fellow workers and the community during the August JSC Blood Drive.

St. Luke's Hospital went away with 372 pints of blood from the two-day event held earlier this month - only two pints short of last year's record-breaking 374 pints.

"A big 'thank you' to JSC civil servants and contractors for their demonstrated efforts to help their co-workers and the community," said Amy Mendez, one of the coordinators of the event. "We appreciate

Please see **NEXT**, Page 8

# Internal space walk restores Spektr power connections

By Ed Campion

A first of its kind internal space walk inside the Russian Mir Space Station apparently restored power connections between the three functioning solar arrays located on the damaged Spektr science module and the rest of the orbiting Russian facility.

The intervehicular activity or IVA, was conducted by Mir 24 Commander Anatoly Solovyev and Flight Engineer Pavel Vinogradov last Friday. In addition to reestablishing the link to Spektr's solar arrays, the two cosmonauts made a brief inspection of the inside of the module to see if they could identify the source of the leak that caused the decompression of Spektr after an unmanned Progress vehicle struck the station on June 25. They also retrieved science data material along with personal items belonging to their fellow Mir crew mate, NASA Astronaut Mike Foale.

The journey into the Spektr module was the first of what Russian space officials plan to be

a series of space walks to try and recover as much capability of the science module as possible. The second space walk in the series is targeted for around Sept. 3 or 4 and will have Solovyev and either Vinogradov or Foale make a trip outside the station to make a visual inspection of the Spektr and to connect work handrails for future space walking activities. Foale was given the green light to begin on-orbit training recently and U.S. and Russian space managers will meet soon to give final approval for his possible participation.

The first part of their three and a half hours spent inside the Spektr module saw Solovyev and Vinogradov connect 11 cables to the specially modified hermaplate area on a new Spektr hatch cover. Eight of the cables are for power generated by the solar arrays, one is for attitude control system on the arrays and two are

spares for future use.

How much additional power will be available from the Spektr arrays is yet to be determined. The cosmonauts and Russian flight controllers will need to evaluate how efficiently the solar arrays are operating along with the arrays' ability to track the sun before being able to determine the exact increase in power generation capability. For right now, the Russians have told NASA managers to use an extremely conservative estimate of 30 percent additional power in their planning efforts for future science operations.

Following completion of the cable connection objective, the cosmonauts then performed a visual inspection of the inside of Spektr. As part of the inspection, they removed two panels along the interior side wall to check for any leak sources. While the cosmonauts reported they could not see

any obvious signs of a tear or puncture, their search was recorded on video, which is scheduled to be downlinked to Russian flight controllers for analysis.

The final portion of the internal space walk saw the two cosmonauts retrieve science data material along with some personal items belong to Foale. The science material and personal items retrieved were located near the hatchway where the cosmonauts were working. Equipment and belongings located deeper inside the module towards the rear of the compartment were not recoverable.

Foale is in the 15th week of his tour of duty on Mir. He will be replaced in September by astronaut David Wolf, who is nearing completion of his training at the Gagarin Cosmonaut Training Center outside Moscow. Wolf will be launched to the Mir aboard *Atlantis* on the STS-86 mission, which will dock to the Mir for the seventh time to bring Foale home and to deliver water and logistical supplies to the station.

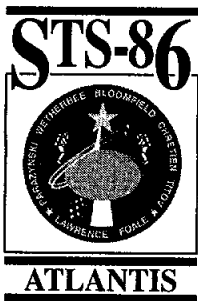


## Atlantis rolls to pad for STS-86

By Kyle Herring

On Aug. 18, while Mission Control was deciding whether the weather would bring an end to the STS-85 mission of *Discovery*, technicians at the Florida spaceport transported *Atlantis* to its seaside launch pad for its seventh voyage to the Russian Mir Space Station.

Shuttle managers tentatively have chosen 9:34 p.m. CDT Sept. 25 for launch of STS-86 to rendezvous and dock with Mir. *Atlantis* will bring supplies and equipment, along with



Astronaut Dave Wolf, in support of the continuous U.S. presence on Mir leading toward the next step in the International Space Station that begins in the summer of next year.

The crew for this 87th shuttle flight includes Commander Jim Wetherbee, Pilot Mike Bloomfield, Mission Specialist Scott Parazynski, Wendy Lawrence, Jean-Loup Chretien and Vladimir Titov. Wolf will replace Mike Foale who's been on Mir since May.

The international crew consists of a French astronaut, Chretien, and a Russian cosmonaut, Titov. The two have lived aboard Mir previously and Wetherbee has seen the station closeup on the first Phase I mission back in February 1995.

Titov and Parazynski will conduct a space walk on the fourth docked day to retrieve four suitcase-sized experiments that were attached to the Mir's docking module by Linda Godwin and Rich Clifford during STS-76 to characterize the environment surrounding Mir. The space walk by Titov will be the first by a foreign astronaut on the shuttle.

**SPACE STATION INSPECTION —** Astronauts and Boeing engineers and workers from Huntsville, Ala., take part in the Node 1 Main System Verification in the Space Station Processing Facility at Kennedy Space Center. The verification tests on-orbit maintenance items and inner vehicular activity hardware. Kneeling from left are Susan Helms, Manufacturing Engineer Harry Feinberg of Boeing, and Astronauts Carl Walz and Ken Bowersox. Standing from left are Stacy George of Boeing and Ted Kenny of Barrios Technology who supports Mission Operations at JSC. Node 1, serve as a passageway to the laboratory and habitation modules and an airlock.

KSC Photo 97PC-1136



JSC Photo S97-10699 by Hector Gongora

From left, JSC Acting Assistant Director, Technical Charlie Precourt and JSC Director George Abbey welcome home STS-85 Pilot Kent Rominger and his family. Brown and the other five members of the STS-85 crew returned home to Ellington Field last week after a 12-day mission that focused on science, technology and engineering development for the International Space Station.

## JSC employees must report mishaps in foreign countries

JSC employees who do business in foreign countries are required to report mishaps that may occur while traveling.

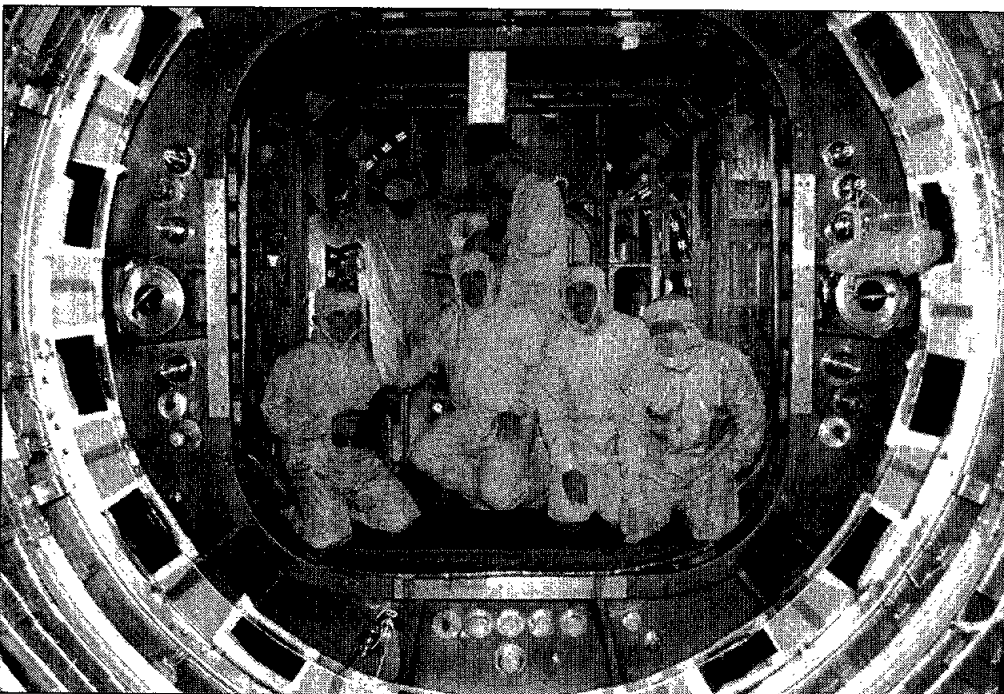
Employee are required to report any job-related injury or occupational illness, damage to JSC equipment and job-related close calls where JSC personnel could have been injured or JSC equipment could have been damaged.

If a mishap occurs, employees must follow the reporting process in Chapter 106 of JSC Procedures and Guidelines (JPG) 1700.1G, "JSC Requirements Document for Safety,

Health, and Environmental Protection," as closely as the situation will allow.

To report the mishap, call the JSC Occupational Safety Office at x34290, during normal JSC operational hours or the JSC Emergency Operations Center, telephone number x34658, after hours. If a mishap involves death, serious injury, or property damage over \$250,000, employees are required to report via telephone within eight hours.

Employees who need more information may call x34290.



## STS-85 mission allows practice for station work

(Continued from Page 1)

Brown and Pilot Kent Rominger flew a precise rendezvous to the satellite as future missions will to the International Space Station. The velocity bar, or "V-Bar," approach is part of an evaluation of the proximity operations profile to be used during assembly to ensure thruster firings do not impinge the station.

Rominger praised the team on the ground for not only getting *Discovery* into orbit, but also for a well-thought out plan that the crew could execute.

"It was an extremely payload intensive flight. Before launch you plan out and choreograph this great timeline, but you learn in the research game that once you get up there things change," he told the Ellington crowd. "Once we got up there and experiments started behaving differently than expected, there was a lot of work to be done on the ground. Plans had to be integrated to figure out a sophisticated plan that could be executed. My hat's off to the group in Mission Control that put this plan together and got it up to us so we could maximize the science," Rominger said.

Mission Specialist Bob Curbeam, following his first flight, called the view from space one that would "make a conservationist out of you." He told the well-wishers at the crew return ceremony last Tuesday that he "saw more of Earth in one orbit than I have ever seen in my life." Curbeam said that during the mission, "We looked at the solar system, we looked at stars, but I think what we learned the most about was this Earth. When you see it for the first time from orbit, it is absolutely beautiful. It is awe inspiring."

Also directly related to future space station operations, a prototype robotic arm that will ultimately find its way the exposed facility of the Japanese Experiment Module, was tested extensively throughout the flight—not only by Davis and fellow Mission Specialist Steve Robinson aboard *Discovery*, but also remotely by ground operators in Mission Control. The Manipulator Flight Demonstration Small Fine Arm was put through a series of tests just about every other day during the mission to verify the arm's ability to manipulate a simulated orbital replacement unit and a small door located on the arm's fixed support structure in the payload bay.

Robinson, a first time shuttle flyer, spoke of the teamwork needed to get the job done—both in space and on the ground.

"When we were deploying SPAS with the arm or working the MFD, we were seeing your faces and hearing your words and trying to do the right thing," he said to coworkers at the crew return. "You took us to orbit, but we brought you with us."

Throughout the mission, Canadian Payload Specialist Bjarni Tryggvason tested a device very close to his heart, since he is also the principal investigator. The Microgravity Vibration Isolation Mount garnered valuable data on the role that vibrations have on different experiment processes in the microgravity environment of space. The information obtained during the experiment's first flight will be used to design experiments for the station requiring motion-isolation systems. A less advanced version is currently flying aboard Mir.

Tryggvason devoted most of the mission to the MIM experiment, but gave much of the credit for its operations to the ground support team.

"I had my little MIM gang here in Houston supporting this experiment," he said at Ellington. "While I worked hard doing my part, they really worked hard staying abreast of where I was and they turned around data that I sent down every day and sent back up new things to try. We couldn't do this without the support of these folks."

Two space station experiments that complimented robotic arm activities included the Space Vision System, developed in Canada and the AutoTRAC Computer Vision System designed at JSC. Both used existing payload bay cameras and other payload bay hardware providing precise relative position, attitude, and rate cues in a concise graphical and digital format.

# Community News

## Employees help community build low-income houses

Some JSC employees recently took time off from space duties and entered the world of physical labor for charity.

JSC employees joined other community volunteers on Aug. 14 in Dickinson and began the construction of a house for Rotyra Anderson and her three-year-old son, Rian. Volunteers began the "Blitz Framing" as part of the Habitat for Humanity program that provides housing to low-income families.

"The first three days of the 'blitz' gets the basic house frame up and puts on a roof," said Project Manager George Parma of Engineering's Structures and Mechanics Division. "That way we keep the rain out and most of the future construction can take place rain or shine."

Parma, who organized volunteers from six Catholic churches, expects to finish the house by mid-November so the family can move in by Thanksgiving.

"I help our construction lead, Scott Shepard, make sure the windows and walls are being framed correctly, and that everything matches up when we nail all the walls together," Parma said. "We don't cut corners, we put in extra nails and an extra stud here and there. We want it to be a good quality house."

"I also spend a lot of my time going around and making sure all the people who have volunteered their time to come out and work aren't standing around. There is plenty of work to be done, but they sometimes finish so fast that Scott and I are hard pressed to keep everybody moving on to the next thing. Many of them are taking vacation time to work in some really hot weather, and we want to make sure that they feel like they are contributing, and that their time is well-spent."

Parma has helped organize four blitz builds for the non-profit organization. He has contributed his time for the last eight years and has helped build seven houses for the Bay Area affiliation.

Andy Romero of Engineering's Avionics Systems Division heard about the organization and decided to volunteer to help and to learn.

"I wanted to see what it takes to put up a house," Romero said. "It is interesting to see how volunteers go about doing it."

Besides current NASA workers, retirees also are pitching in to provide better housing for low-income families. During the "blitz framing" Don Jezewski, who retired from JSC in 1984, and his wife pitched in to raise the frame of the new home.

"This is about the sixth house we have built," Jezewski said. "We will work on any house that is here. We expect to build 24 houses in this area."

During the three-day event, more than 100 volunteers helped build the basics.

JSC civil service employees who helped included Parma, Romero, Mission Operations' Michelle MacFadyen and Pete Hasbrook and Engineering's John McManamen.

United Space Alliance employees who worked were Kevin Repa, Richard Hickman and Brian Philgreen.

Lockheed Martin employees including Jerry Brunet, and Joe and Alisha Barcio also participated in the blitz.

Boeing Aerospace employees Scott Wertel, Kathy Albright and Ed Cordes also contributed to the construction.

Working along-side the NASA volunteers was Anderson herself, nailing boards and helping in any way she could.

"Everyone will tell you this is not a hand-out, it's a helping hand," she said.

Anderson said qualifying for a home is a long process but well worth it.

"They don't let just anybody be homeowners. There is an application to fill out and a committee comes out to your house and they interview you and after the committee approves you then the board has to approve you," Anderson said. "Then you have to commit to the volunteer work. Hours must be contributed working on another house before you get on the list for your own house."

Anderson, a secretary for Texas Parks and Wildlife in Seabrook, said the main reason she wanted a house was to give her son a back yard in which to play.

In addition to this project, United Space Alliance organizer Bill Hielman began another house next door last week.

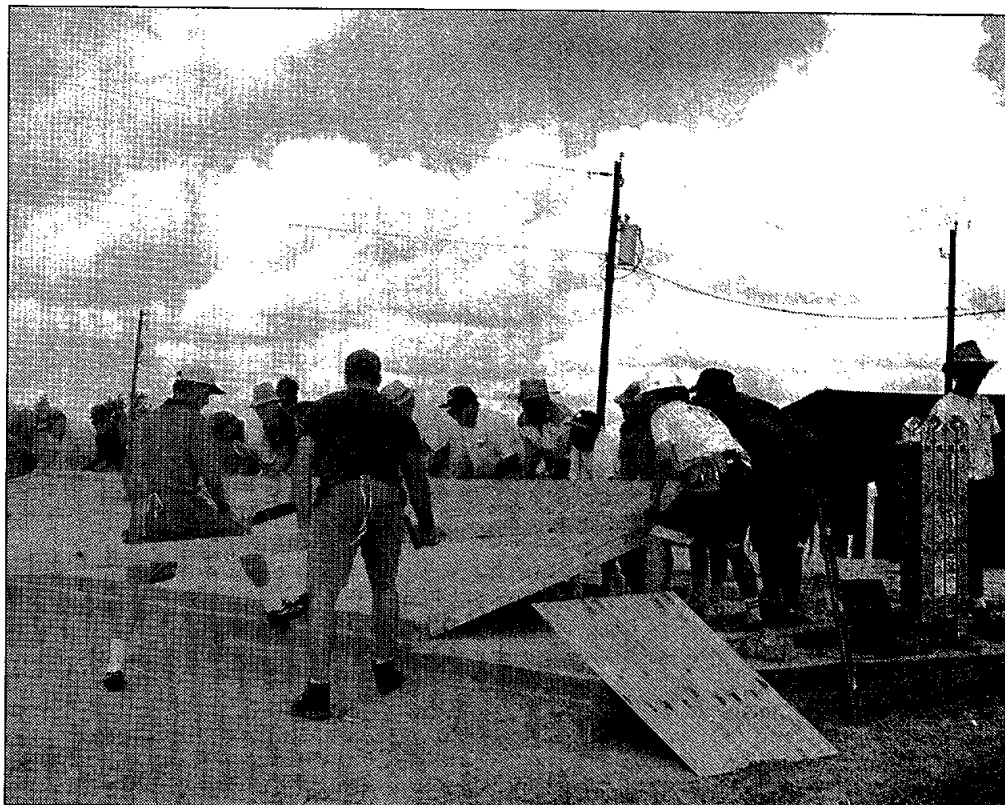
"USA is forming crews to work on selected Saturdays until completion in mid-November," Hielman said. "Join the fun, help build a house and give time to your community."

Both projects were organized by the Bay Area Habitat for Humanity program. Since its beginnings in 1990, more than 500 volunteers have built 20 houses in the Clear Lake, Galveston County area. Eligible families must be living in unsafe conditions, have adequate income to support mortgage payments and be unable to buy a house through conventional means.

"This is not a give-away," Hielman said. "Receiving families also provide 350 hours of sweat equity for the privilege of receiving a house on a 20-year mortgage."

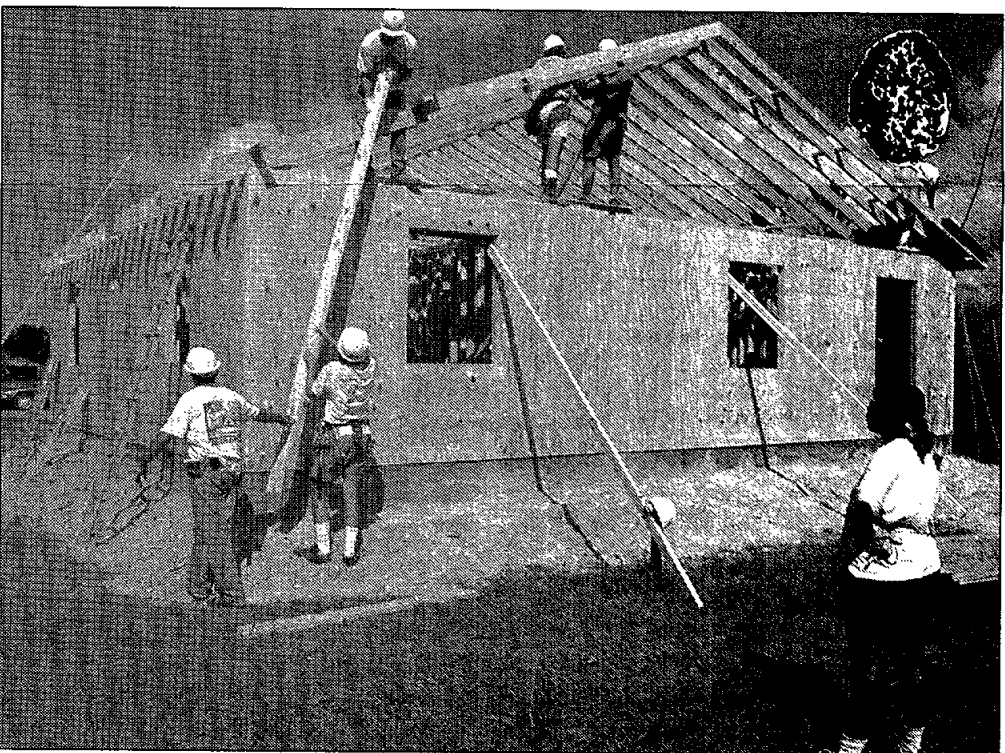
New home owners pay mortgage payments to Bay Area Habitat for Humanity, which in turn applies this money to new construction. Ten percent of the money Bay Area receives is tithed to Habitat for Humanity International to build houses internationally.

"This is my first home, and it is truly, truly a blessing," Anderson said. "It surely beats living in an apartment and paying rent increases."



JSC Photos by Steve Candler

Above: The first wall goes up on Rotyra Anderson's home in Dickinson. Left: From left, George Parma of Engineering's Structures and Mechanics Division and Andy Romero of Engineering's Avionics Systems Division prepare to install a stud in the wall of the house. Below: Anderson looks over the three days of "blitz building" progress. More than 100 volunteers, many from JSC, helped build the frame and roof of a house for the Bay Area Habitat for Humanity recipient. Besides current NASA workers, retirees also are pitching in to provide better housing for low-income families. Twenty-four homes are expected to be built on the Dickinson site, many with the help of JSC civil service and contractor employees. Since its beginnings in 1990, more than 500 volunteers have built 20 houses in the Clear Lake, Galveston County area. Eligible families must be living in unsafe conditions, have adequate income to support mortgage payments and be unable to buy a house through conventional means.



### Charities receive donations

## Northrop Grumman awards community volunteers

Two employees recently received Northrop Grumman's Community Service Award for their efforts to support the local community.

Patricia Doerr was recognized for her volunteer efforts at the Armand Bayou Nature Center. Doerr frequently volunteers her time to provide natural history demonstrations, guide trail walks and proofreads the membership newsletter.

Joanne Ashland was given the award for her work with the Bay Area Habitat for Humanity program. Ashland dedicated her time to helping the program raise funds during a recent fun run.

"Through their contribution of time and resources these employees have provided a fine role model," said Herb Anderson, general manager of the Data Systems and Services Division. "Someone who is not only an active participant within the organization but also committed to improving the quality of life within their community."

Both the Armand Bayou Nature Center and the Bay Area Habitat for Humanity will receive a \$100 donation in the name of the Northrop Grumman employee.

To qualify for the award, the employee must have an ongoing and active commitment to the organization. The recipient organization must be a registered non-profit 501 tax exempt organization and must provide a service open to all in the community and should be devoted to improving quality of life in the community. The nature center provides environmental education and preservation to the Bay Area and The habitat builds housing for low-income families who cannot qualify for a regular mortgage.

"Northrop Grumman is committed to recognizing employees who invest their time and resources to support activities within their community," said Kristin Solarczyk, manager of the Northrop Grumman Data Systems and Services Division's Community Relations Program.

## JSC Safety Alert

### Potential Fire Hazard When Leaving Desk Lamps on For Extended Periods

#### What Happened

A close call occurred at JSC when a fluorescent desk lamp was left on over the weekend. The lamp overheated, and the plastic cover over the light melted. A fire, producing harmful vapors, could have resulted.

#### Outcome Of Investigation

The lamp, designed to be mounted under a bookcase desk unit, is manufactured by the Garco Corporation Lighting Division in Portland, Tennessee, and is constructed of black metal. There was no part number on the lamp. This lamp uses an old style magnetic starter in the ballast transformer to light the bulb. If the bulb is bad, the starter will constantly try to light it by applying a higher voltage. This caused the lamp case to overheat.

#### What You Can Do

Observe the following precautions for any fluorescent lamps you have mounted under bookcases, computer hutches, or that clamp to your desk. Even if you do not have this kind of lamp, the following are good safety practices to observe:

- Make sure you have good bulbs in the lamp.
- If you notice a bad bulb, unplug the lamp immediately. Leave it unplugged until you can have the bulb replaced.
- For bulb replacement, call x36661. Do not try to replace it yourself.
- Always turn the lamp off when leaving the office, especially before a weekend or vacation.

#### What Is Being Done

JSC will replace these lamps upon request. Employee who have a Garco lamp may call x38113 for a substitution.

# Visitor Voyage

## A JSC team is working to expand the NASA experience

# SPACE CENTER

## H O U S T O N

©1989

By Karen Schmidt

On the fifth anniversary of the opening of Space Center Houston, a team of employees is looking at ways to help the center's official visitor connection expand the public's experiences.

The Vision Team, made up of employees from most JSC directorates and Space Center Houston, is in the early stages of developing new ways to showcase JSC work. Pilot programs developed by the team are receiving a "thumbs up" from visitors. In a few short months, several brainstorming sessions have produced ideas that will enable visitors to experience more of JSC's programs and projects.

"We are considering all visitors, both physical and virtual," said Engineering's Phil West, co-chairman of the Vision Team with Michelle Munk. "We are hoping that anybody who visits JSC, either physically or through a number of audiovisual avenues, can say they know more about NASA and feel a part of the program."

With so many programs ongoing at the center, the Vision Team hopes to reach audiences in a variety of ways.

"This center is so rich," West said. "We are sitting in Jed Clampett's back yard and we're not drilling like we could be. The resources are incredible and we'd like to tap into them in new ways to get the story out."

The effort began in May, when the team learned about Space Center Houston's visions and goals and developed ideas to enhance the public's visit both at the visitor center and on-site.

"This project has come in what I call two phases," West said. "Phase 1 was a lot of brainstorming on what we could do and Phase 2 is further brainstorming and implementation. We are still in the very early growth stages."

Brainstorming sessions produced several ideas. A pilot program last month offered live video feeds from JSC's KC-135 with two-way question and answer capabilities to visitors at Space Center Houston. During

the "Interactive Video Spot," West explained to visitors a new space suit test under way and guests were able to ask questions about the test and its scientists.

"We wanted to have the capability to get video data downlinked in real time to the scientists so they could update testing procedures if needed," West said. "While we were hooking up for the scientists, why not bring in Space Center Houston and let the public see the testing, too? Through the help of the Avionic Systems Division, the Imagery and Publications Office and the folks at the KC-135 office, we were able to demonstrate the effectiveness of this tool for both science and education."

By the end of the week of testing, the team had hooked up to the test's principal investigator, Space Center Houston, and two teacher education workshops on-site. On one day of testing, the team hooked up to three different groups during the same flight.

"We are bringing activities to people and people to activities that cannot be brought to them at Space Center Houston or through a tram tour," Munk said. "This is another way for guests to see what's going on when it is not physically possible to be there."

Interactive Video Spots could be widely used for a variety of audiences besides Space Center Houston, including the Internet and NASA Television. These short live spots can be used throughout the center to showcase actual work in progress and bring visitors closer to what is going on real time at JSC.

Plans are in the work to do live video conferences with the next crew to live and work in the air-tight chamber in Bldg. 7 during the Lunar/Mars Life Support Test Program Phase III. The crew will enter the chamber on Sept. 16 for a 90-day test of recyclable air and water systems. Preliminary plans call for the crew to conduct several virtual visits with Space Center Houston guests. In addition, the Vision Team is exploring new ways to showcase the X-38 project. Possibilities

include live video feeds from Bldg. 220, a new tram stop at the facility and enhancement of the current exhibit at Space Center Houston.

While virtual visits are a quick way to get visitors closer to current work, the team also is working on ideas regarding on-site facilities and access during shuttle missions. Bringing visitors closer to missions had already been expanded before the Vision Team was formed. Tram tours are now stopping at Teague Auditorium to let visitors sit in on post-flight crew briefings and daytime launches. In addition, possibly as soon as STS-86, the Mission Control Center viewing room will be open for Space Center Houston guests during missions. Work also is under way to provide a visitor stop and historical multimedia presentation in the old third floor Flight Control Room and to get more visitors to the Sonny Carter Training Facility where guests can learn about the work that is done in the Neutral Buoyancy Laboratory.

The Vision Team also is working on broadening the visitor experience inside Space Center Houston. One idea to make guests feel closer to the space program has already been implemented. A banner designed for each shuttle flight and operations crew will be displayed at the visitor center and guests will be encouraged to sign their greetings to the mission team. The STS-86 banner is now posted and plans call for it to be prominently displayed for JSC workers during the mission.

Another idea on the drawing board is to improve the communication process to make sure the public gets the most current information. The Vision Team has recognized that the Space Center Houston employees are personally delivering JSC's message to the public.

"Mission Operations representatives have great ideas about using center training already in progress and special events prior to missions to bring Space Center Houston briefing officers, tour guides and other staff more up to date," West said. "As a pilot, they have arranged a pre-flight briefing about STS-86."

West said tour guides can let visitors know, "Hey I talked to the flight control team before the flight and this is what they said."

The team also is looking at improving the walk up experience at Rocket Park. "There are a lot of visitors who walk up just to take pictures of the Saturn V rocket," West said. "We want to look at having information about our websites and JSC available there to invite guests to visit in more depth later. We also could develop a photo opportunity spot where visitors could just pull through a drive and take a picture. Ideas like this one will certainly require resources and we'll have to request the necessary support and approvals on a case-by-case basis."

In addition to improving what the visitor sees at the time of his or her visit, the team would like to provide guests with upcoming activity information.

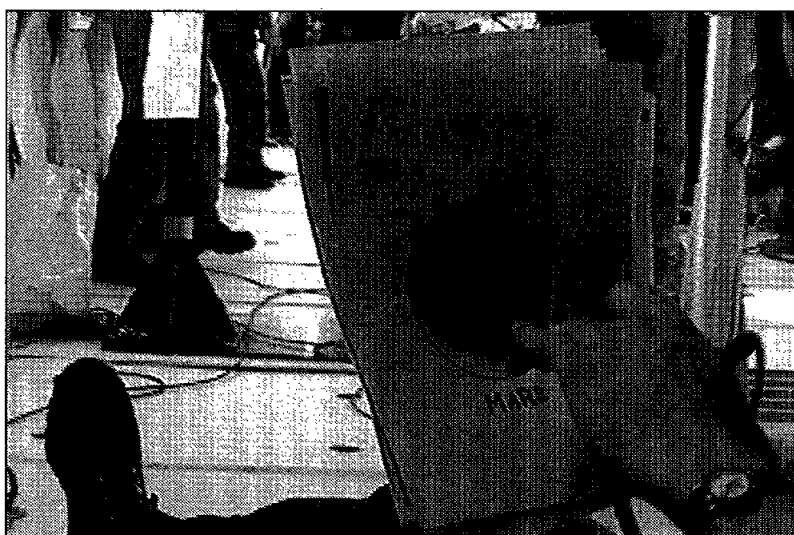
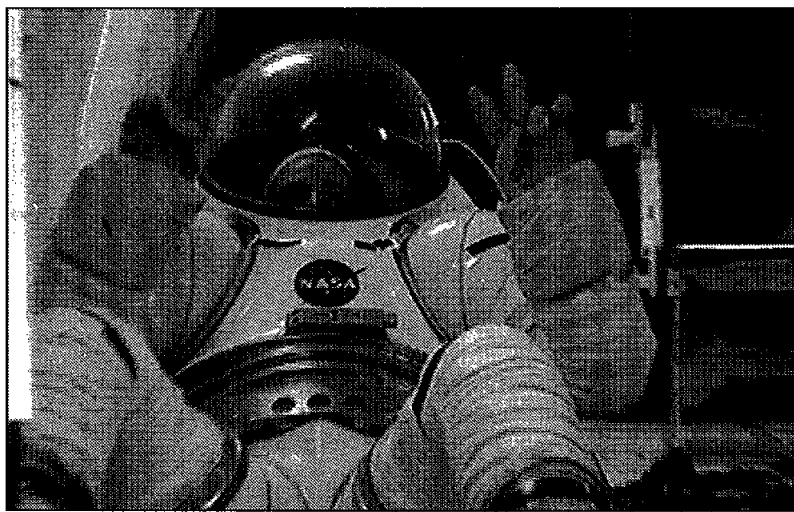
"We don't want the public to feel like once they have been there they have seen it all," Munk said. "We are working with Space Center Houston to develop upcoming schedules to give to guests when they leave."

Employees interested in participating in bringing their job closer to visitors can call West at x39236 or Munk at x31109.

"We would love employees to call us or their directorate representative and let us know if they want to discuss their work with our visitors," West said. "We could potentially bring their work to the public via video spots, have special tram stops or even have employees take their work to the visitor center."

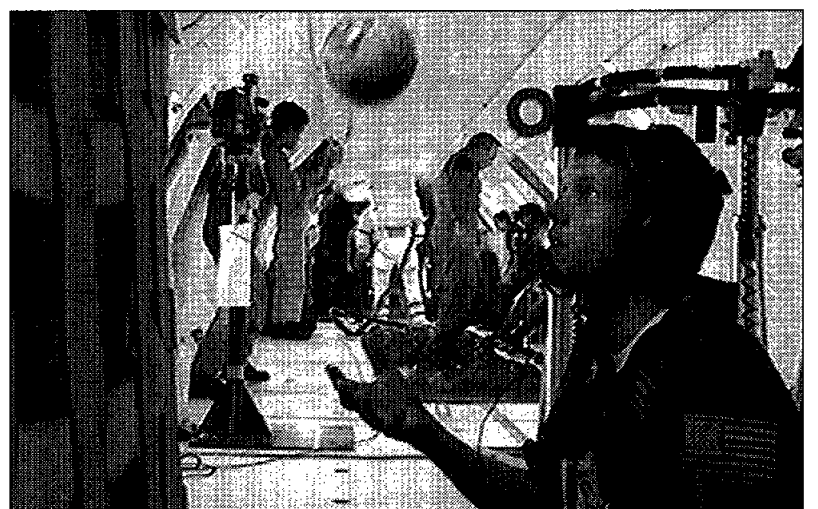
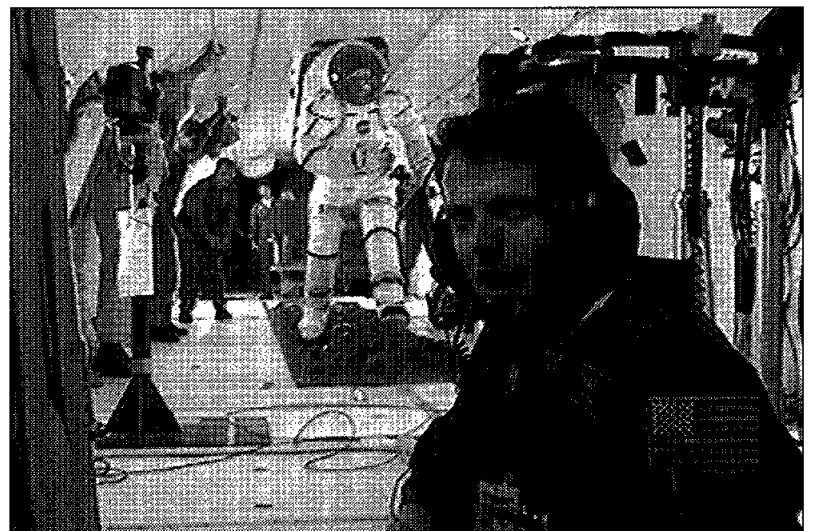
The Vision Team's effort comes at a time when the public's excitement in space exploration is high.

"The drama aboard Mir and the Mars Pathfinder mission is holding the public's interest," West said. "With attendance at Space Center Houston breaking records, the Vision Team hopes to seize this opportunity, exploring new ways to fulfill NASA's mission to communicate scientific knowledge and give the public 'Intelligent Fun.'" □



From top to bottom left to right: 1) Suit engineer and test subject Susan Cupples of the Crew and Thermal Systems Division waves to observers on the ground during a break on the recent Martian gravity KC-135 flights. 2) Phil West of the Crew and Thermal Systems Division fields questions from guests at Space Center Houston during an Interactive Video Spot last month. The live video to Space Center Houston and interactivity with guests is one way JSC is bringing on-going projects to the center's visitors. 3) West describes to visitors where the test team is pretending to be. 4) West demonstrates the transition to Martian gravity by tossing a Mars globe. A new team of JSC employees is trying to broaden communication so that the public gets the most current information about JSC's programs and projects. While the team is in its infancy, ideas are already in the works to make guests feel closer to the space program.

Video Stills  
by Bob Armstrong and  
Ricky Villarreal



*New Education Resource Center now open*

## Space Center Houston gearing up for new school year

Space Center Houston is ready for the new school year with a variety of special programs for students.

During the 1997-98 school year, the visitor center will feature special focus weeks in its Outer Space Academy. JSC scientists and engineers will provide special sessions that allow students a chance to experience space close-up. Teachers can pickup education material in the Education Resource Center and receive a two-week module of across-the-curriculum classroom activities designed to meet the national standards in science and math. During the year students may participate in:

**Oct. 13-17 Mission to Mars**—Is there really life on Mars? Students get to see a real Mars meteorite and talk with experts.

**Nov. 4-7 Meet an Astronaut**—Students can find out how to become part of the aerospace team.

**Dec. 9 Discovery Day**—This day is dedicated to students who are visually and hearing impaired.

**Dec. 15-19 Home School**—Students who learn at home will have the opportunity to participate in special activities and demonstrations.

**Jan. 12-16 Training in Microgravity**—Students will learn how astronauts train for working and living in space.

**Feb. 9-13 Robots in Space**—Students will have the opportunity to work a robotic arm and other equipment.

**Feb. 16-20 Careers in Space**—Students

can find out what lies ahead for the space program.

**March 23-27 We Have Liftoff**—Students will learn what Newton's Law and space travel have in common. Activities will focus on the rocketry, propulsion and physics of space flight.

**April 6-10 Living in Space**—Students can learn what happens to the human body and mind during prolonged periods of weightlessness.

**April 20-24 Spinoffs Week**—Students may be amazed to see how the space program benefits everyday lives.

**April 27-May 1 Home School Week**—Students who learn at home will have the opportunity to participate in special activities

and demonstrations.

**May 11-15 Tools in Space**—Students may learn more about working in space and what tools are used to accomplish tasks.

A special session has been included to prepare teachers for the new school year. Teachers may visit Space Center Houston at 6 p.m. Sept. 16 and preview the newest IMAX film, visit the Educator Resource Center, experience one-sixth gravity on the Lunar jumper, drive a lunar rover through a simulated Apollo mission and register to win two airline tickets. Free classroom material also will be available.

For additional information on Space Center Houston's education program call 281-244-2145.

## New display to highlight U.S., Russian space history

*Employees may spend Halloween on Mars*

Space Center Houston will premiere a new collection of historical space artifacts this fall and offer a special NASA night for employees for Halloween.

"Rendezvous: From Cold War to Cooperation" is a historical collection representing the Soviet Union and Russian space programs from the Cold War years to today's era of cooperation. Many of these rare artifacts were considered top secret and hidden from public view, while other pieces are from private collections around the world. The exhibit will go on display in November and remain until May.

This five-part collection chronicles the U.S. and Russian programs beginning with artifacts from 1945 to 1949. The next era in space history, Race To The Moon, will feature artifacts from the Russian program and NASA's Mercury, Gemini and Apollo programs.

Cooperation is the highlight of the Apollo-Soyuz and Skylab display and the Shuttle-Mir program display. The latter display will feature a walk through a Mir mockup. The final display will focus on the future and the International Space Station.

Other artifacts include Russian vehicles, satellites and probes, personal items of the cosmonauts, Russian film footage, photos and historical documents. The display will educate the public about the Russian program and the sharing of information technology between the U. S. and Russia.

Space Center Houston members will have the opportunity to preview the new display Oct. 11 and 12 in a special overnight preview.

Members will meet Astronaut Peggy Whitson, see the IMAX film "Mission to Mir" build a model space station and sleep under the stars in the Starship Gallery. Dinner, complete with a Russian desert and continental breakfast, is included. Members may attend this special showing at a cost of \$40 per person or \$140 for a family of four. Non-members may attend for \$45 per person and \$160 for a family of four. For reservations and information call 281-283-7774.

For Halloween, Space Center Houston is geared up to transport visitors to Mars. Trips to Mars will feature several children's activities including storytellers on a Martian terrain. A voyage to Mars will be available from 4-7 p.m. Oct. 17-18; Oct. 24-25 and Oct. 27-Nov. 1. One of these dates will be set aside for NASA employees and their families. Details are still in the planning stages. Look to future Space News Roundups for more information.

Other activities currently planned for this fall include Junior Space Explorers camp. Space Center Houston member's children ages 3-5 can be junior space explorers experiencing space-out stories times and hands-on activities. All camps are held from 10 a.m.-noon. Camps are: Sept. 13 Dmitri The Astronaut; Oct. 11 The Three Astronauts; Nov. 8 I Want To Be An Astronaut and Dec. 13 Santa, NASA And The Man In The Moon. To register for these special camps call Diane Kane at 281-244-2164.

JSC civil service employees may attend the exhibit and Halloween activities for free. Employees must show badges at the door.



Photo courtesy of Space Center Houston

**500,000TH GUEST**—Former Astronaut and Lockheed Martin's Science Engineer Analysis and Test Program Vice President Ken Reightler congratulates Alicia Tenao Peurce of Buenos Aires, Argentina, who won a free trip to an actual space shuttle launch. Peurce was the lucky 500,000th visitor of 1997 to Space Center Houston this month, earning her the trip. Peurce walked through the turnstile at the visitor's entrance amid a massive balloon drop and celebratory sirens. President Richard Allen and Reightler were on hand to congratulate the winner of a trip for four to Kennedy Space Center. "By coming to Space Center Houston, our guests are already demonstrating their interest in and support for the exploration of space and the special kind of fun we offer at the center," Allen said. "So we think our guests will be very excited at the opportunity to actually witness the space program in action by attending a launch of the space shuttle. This is a very exciting time for Space Center Houston as well, since we're enjoying record-setting attendance for the summer." The first 500 guests on hand the day Peurce walked through the sliding glass doors shared in the celebration and the visitor center's fifth anniversary by receiving complimentary commemorative tickets from the grand opening, Space Center Houston flags that were flown aboard the shuttle and free anniversary cake.

## Mission to Mir' IMAX film highlights first dockings

Space Center Houston's IMAX theater is currently featuring a new film that documents international cooperation in space.

The movie, "Mission to Mir," was produced in cooperation with cosmonauts and astronauts who participated in missions to the Russian station. With a cast of 36 Russian and American space-farers, the film highlights three *Atlantis*-Mir dockings and includes the first IMAX footage of a Soyuz launch.

In order to film the 40-minute feature, eight astronauts received extensive training in the use of the bulky 85 pound IMAX cameras.

"Of course in space it's zero gravity, but the camera has a lot of inertia," said Astronaut Charlie Precourt. "Once we got it moving, it was a challenge to try and stop it from crashing into a wall."

"Mission to Mir" is the latest of five IMAX films produced in space. The 15/70 IMAX for-

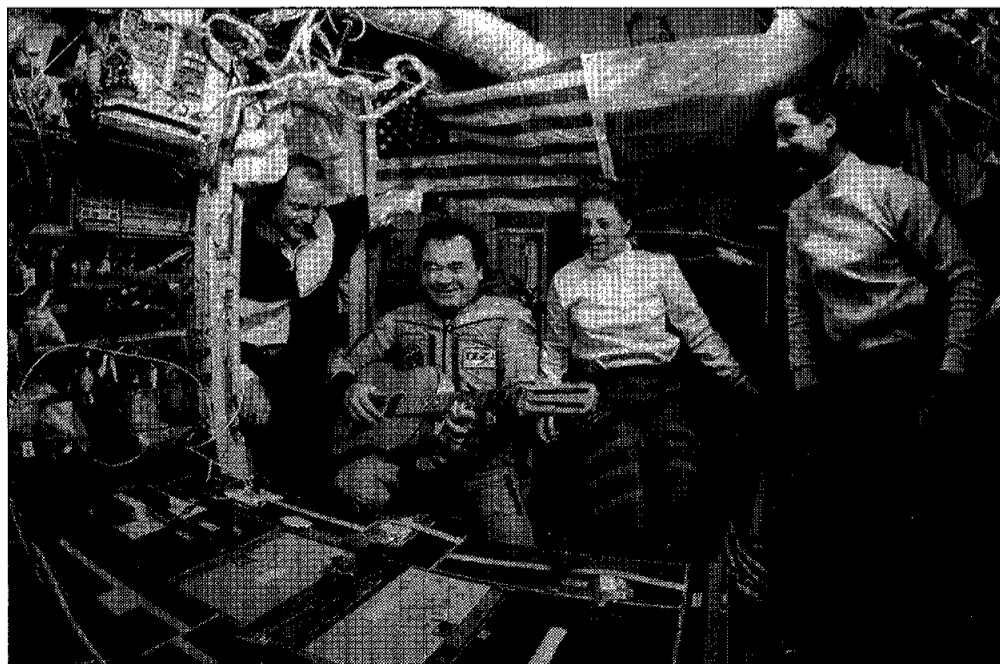
mat uses film that is 10 times the size of the 35mm standard. IMAX films are shown in specially-constructed and Space Center Houston houses the largest IMAX in Texas.

The film highlights the new international partnership in space and the complexities of life in zero gravity conditions. "I think audiences will come away feeling that it is possible for people of different nationalities and cultures to live and work together on such an

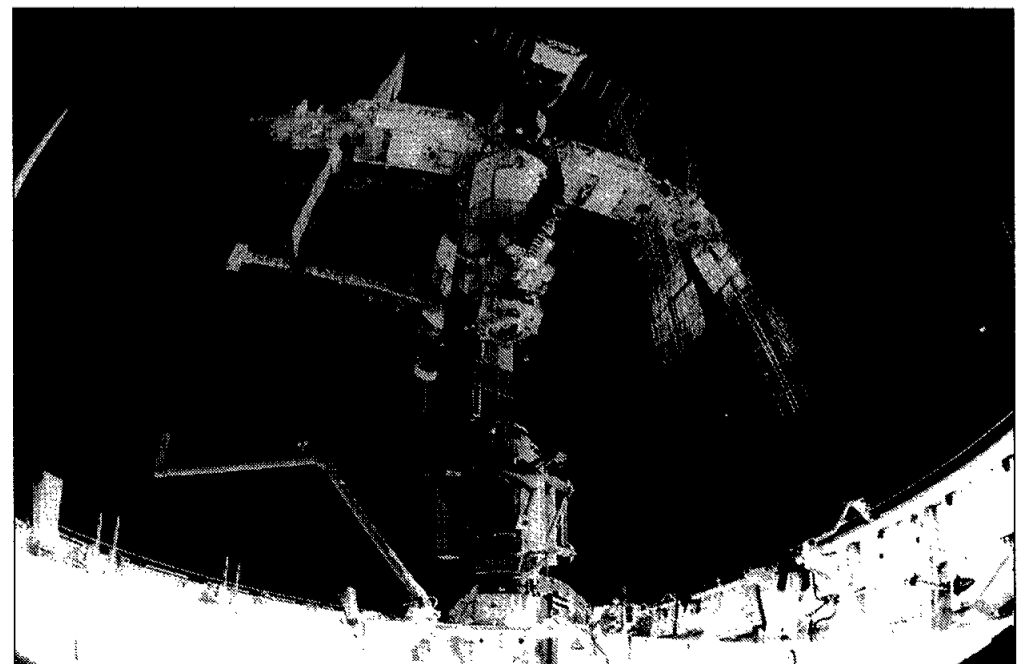
important venture as space exploration," said IMAX producer Toni Meyers.

Crews on Earth also filmed extensively at both JSC and the Star City cosmonaut facility, providing a unique look at Russian and American training techniques.

JSC civil service employees may view the new film and other Space Center Houston attractions for free. Employees must present their badge at the gate for free admission.



A scene from Space Center Houston's IMAX film shows from left Astronaut Charlie Precourt, Cosmonaut Gennady Strekalov and Astronauts Bonnie Dunbar and Greg Harbaugh.



The IMAX film 'Mission to Mir' at Space Center Houston documents the STS-74 docking of *Atlantis* to the Russian Mir Space Station. The film and a new fall display will highlight the cooperative effort of the U.S. and Russia during the Shuttle Mir Phase 1 Program.

# 14 Years Ago at JSC

## Alicia damages some buildings

Reprinted from the Sept. 2, 1983 issue of the Space News Roundup

From the beginning, the center was designed to withstand a direct hit by a hurricane, and Alicia provided the first test of that design since construction began some 20 years ago.

No major structural damage was inflicted on any building on site, but six buildings—9, 9A, 31, 36, 44 and 49—did have roof damage and some water inside. The center lost around 150 trees, a number of light poles and signs and all told the damage cost is expected to exceed \$250,000.

"In general, we came through rather fortunately," said Center Operations Director Kenneth Gilbreath. "No one was hurt, there was no critical equipment damage and we do not foresee any mission impact."

"I thought the buildings weathered the storm very well," said Associate Director Henry Clements. "We are very fortunate and Center Ops had a very good preparation plan in place which served us well."

In the aftermath of the storm, ground crews did yoemen service repairing and cleaning up the dam-

age. "I've lived in Texas all my life and have been through several storms," said Duane Marburger, project manager for Chemical and Vegetation Control, "and so I expected it to be bad out here. But when I came out here Thursday afternoon, I was shocked. It looked like we'd never get done."

Crews had to cut up and haul off some 150 trees, but Marburger said they are in the process of saving another 300. "It will take the better part of the year to get the site back in shape," he said. "But as far as the initial cleanup goes, we've accomplished in about a week what I thought would take a month to do."

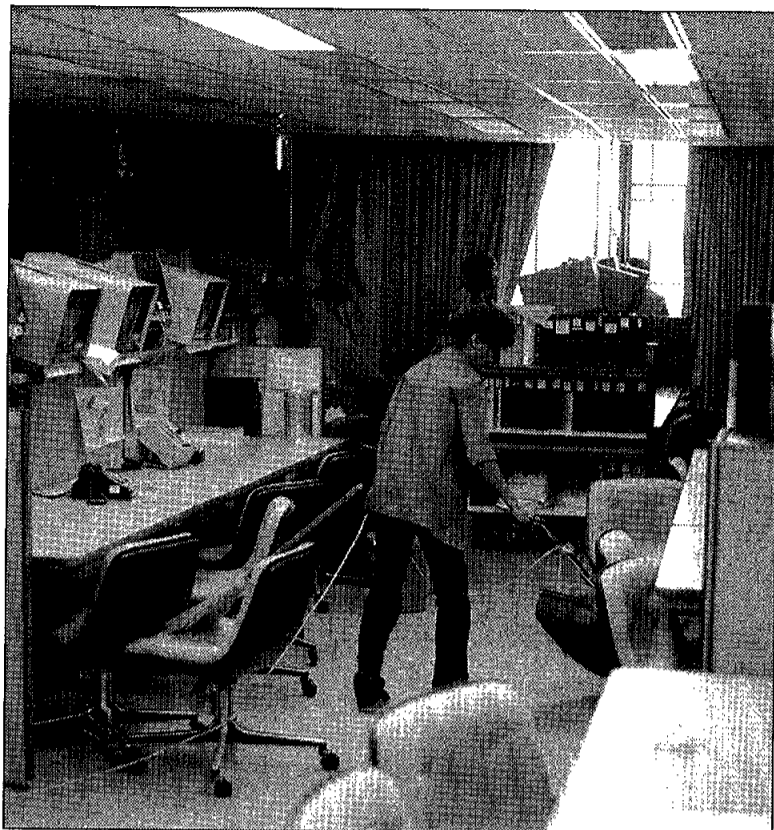
Especially hard hit was the Gilruth Recreation Center area and the area near the astronaut jogging track. The Rec Center was scheduled to resume softball games on fields one, three and four this week, but play on field two will not be possible for some time, according to Exchange Operations Manager Wally Grimes. Since several light poles were either destroyed or damaged, there will be no night games for from three to six weeks, he said. The fence around the tennis courts was completely flattened and some roof damage was done to the main Rec Center building

and the picnic pavilion. Total damage at the Rec Center grounds is estimated around \$30,000. The astronaut jogging track is covered with several trees and will be closed indefinitely, Marburger said.

During the storm, a Hurricane Rideout team kept tabs on the center from a command post on the second floor of Bldg. 30, which is sometimes cited as one of the safest buildings in Harris County in terms of strength and ability to withstand severe weather. The center was officially in Level II emergency preparations when the site was closed at noon Wednesday.

JSC goes to Level II preparations when an emergency situation is imminent. A command post is activated and general preparations are begun. During Level III, the condition the center was in when Alicia hit, final preparations are on station and all the hatches generally are battened down for the big blow.

During the first hours of the storm JSC became a haven for about 100 refugees from high water and wind and water damage. Most all of the people who came to JSC for shelter were housed in the auditorium of Bldg. 30 except for a few with animals who slept in Bldg. 420.



JSC Photo 83-38627

Cleanup was underway last week in the Mission Evaluation Room in Bldg. 45 in the aftermath of Hurricane Alicia. A window blew out in the MER and some water and wind damage was sustained. The station closes to the damaged window was that for "Water and Waste Management."

## Gilruth Center News

**Hours:** The Gilruth Center will now remain open until 2 p.m. Saturday and close at 9 p.m. Friday.

**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 badge or weight room. 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.

**Basketball, Volleyball:** Registration is currently under way for fall leagues. Basketball costs \$315 per team and deadline for registration is Sept. 10. Volleyball costs \$175 per team and deadline for registration is Sept. 9. Call the Gilruth for more information.

**NASA Fitness Challenge:** Runs through Aug. 31. Call x30301 for more information.

**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. Next class is Sept. 11. 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.

**Aerobics:** Classes meet from 5:15-6:15 p.m. Monday, Tuesdays and Thursdays. Cost is \$32 for eight weeks.

**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.

**Baseball:** Houston Astros vs. Los Angeles Dodgers 7 p.m. Sept. 13. Tickets cost \$18.50.

**EAA Texaribbean Cruise:** Nov. 22-30. \$200 deposit per person, final payment by Sept. 15

**Astroworld:** \$22.75. Season pass \$56.75. Two-day \$37.50

**Waterworld:** \$11.50.

**Astroworld:** \$19 Blue Light Special, valid for 1997 season only.

**Moody Gardens:** Tickets are \$9.50 for 2 of 4 events.

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

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

**Schlitterbahn:** Adult \$20.25; children (3-11) \$17.50.

**Splashtown:** Adult \$14.50; children (3-9) \$11.50.

**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. Mars T-shirts starting at \$14..

**Stamps:** Book of 20, \$6.40.

**Metro:** Tickets available.

## Oral history project seeks interviews from employees

JSC is conducting an Oral History Project in order to preserve and further document the history of space flight.

The Oral History Project will preserve existing interviews of the key participants of the space program that have been recorded on outdated media, and will continue to document additional interviews using state-of-the-art audio and video techniques. The project also will make a permanent record of the history of space flight widely accessible to NASA employees, other government agencies and the public.

Currently, NASA maintains audio tapes of interviews of the key figures in human space flight history. These reel-to-reel and cassette tapes have been scattered among various NASA centers, the National Archives and the National Air and Space Museum and are difficult to retrieve. The outdated media also are in extreme danger of decay. One of the primary objectives of the Oral History Project is to preserve the tapes that are at risk of deterioration. The tapes will be preserved in a digital format that will permit effortless copying and transferring of data without degradation and that can be archived easily.

Oral History Project team members are actively seeking tapes of interviews that may be located elsewhere to include in the archives. Employees who may possess original interviews of individuals who work or have worked in human exploration and develop-

ment of space, may send an e-mail to "signalho@swbell.net", so that the part of history which employees possess may be made part of the permanent files. If Oral History Project team members include an individual's interview in the archives, the provider will receive a restored copy of the interview.

In addition to the preservation of existing tapes, the Oral History Project team members conduct interviews of people who were fundamental to the development of the space project including astronauts, managers and working-level employees. These interviews will be conducted using digital audio and video formats and will then be transcribed into computer databases for subsequent search, retrieval and application. Once all of the tapes have been archived, Oral History Project team members will work in conjunction with JSC's Library to make the archives easily accessible by using new technology and will make the information available on the World Wide Web.

"We are truly excited to preserve the history of NASA and document the lessons we've learned along the way," said Rich Dinkel, deputy director of Safety, Reliability and Quality Assurance, who will oversee the Oral History Project. "It is crucial to make our accomplishments and the information we have learned from the past available to everyone, so that the American public can be as proud of NASA's history as we are."

## Roundup Deadlines

The Space News Roundup is published every other Friday. Story ideas should be submitted as far in advance as possible, but no later than two weeks prior to the date of publication.

The deadline for Dates & Data calendar items is three weeks prior to the date of publication.

Stories and ideas should be submitted to Managing Editor Karen Schmidt in Bldg. 2, Rm. 181, or via e-mail to: [karen.r.schmidt1@jsc.nasa.gov](mailto:karen.r.schmidt1@jsc.nasa.gov)

## People on the Move

Human Resources reports the following personnel changes as of August 18:

### New Management Assignments

David Petri was named deputy chief of the Guidance, Navigation and Control Development and Test Branch in the Engineering Directorate.

Matt Oндler was selected as deputy chief of the GN&C Design and Analysis Branch in the Engineering Directorate.

### Reassignments Between Directorates

Michele Ladrach moves from Center Operations Directorate to the Business Management Directorate as a contract specialist.

### Additions to the Workforce

Phil Shaner joins the Budget and Resources Management Office in the Office of the Chief Financial Officer as a program analyst. Kathleen McMonigal joins the Medical Sciences Division in the Space and Life Sciences Directorate as a medical officer.

### Reassignments to Other Centers

Paula Gal-Edd of the Office of the Chief Financial Officer moves to Goddard Space Flight Center.

### Promotions

Christine Cole was selected as the division secretary in the Crew and Thermal Systems Division, Engineering Directorate. Christine Smith was selected as the division secretary in the Payloads Office of the International Space Station Program Officer.

### Retirements

Lee Lawson of the Flight Crew Operations Directorate. Anita Jenkerson of the Space Shuttle Program Office. Walt Wood of the International Space Station Program Office.

### Resignations

Marie-France Smith of the Center Operations Directorate. Christine O'Neill of the Space and Life Sciences Directorate. Debbie Mast of the Office of the Chief Financial Officer.



JSC Photo by Steve Candler

From left, Rob Napp and Amie Allison receive congratulations from STS-85 Lead Flight Director Bryan Austin after they were selected to hang the mission plaque in Mission Control. Napp and Allison were part of the JSC Payload Operations Team supporting the Manipulator Flight Demonstration experiment. Napp and Allison spent many long hours and weekends developing, reviewing and verifying Manipulator Flight Demonstration nominal and contingency procedures.

## Napp, Allison hang STS-85 MCC plaque

The JSC Payload Operations Team supporting the Manipulator Flight Demonstration experiment earned the honor of hanging the STS-85 plaque in Mission Control for their work with the arm before and during the mission.

Rob Napp hung the plaque while Amie Allison held the ladder in the traditional ceremony held after the flight.

"STS-85 was an incredibly complicated mission due to numerous payloads each having very specific mission requirements for pointing, thermal and lighting conditions," said Lead Flight Director Bryan Austin. "Rob and Amie were rewarded with hanging the plaque because their motivation, enthusiasm, involvement and technical knowledge of the NASDA MFD payload significantly contributed the success of the mission."

Before the flight, Austin said, Napp and Allison spent many long hours and weekends developing, reviewing and verifying MFD nominal and contingency procedures.

This pre-mission work involved intensive meetings with MFD experts from NASDA, Toshiba and Hitachi both at JSC and again in Japan at the Toshiba Komakai Works plant in Kawasaki, Japan. These procedures were successfully used to operate the MFD robot arm and the Two-Phase Fluid Loop Experiment.

During the mission, their real-time support was essential to obtaining 100 percent of the planned objectives by assisting the MFD Payload Operation Control Center in real-time operations. Napp and Allison continually monitored the experiment and helped with problem resolution. Napp operated the Orbiter Communication Adapter ground computer during ground commanded operations while Allison monitored robot arm performance along with the Payload Operation Control Center.

"Their tireless work and dedication directly affected the overall success of the MFD payload on STS-85," Austin said.

## Moody Museum needs retiree volunteers

The new Moody Gardens Discovery Museum is looking for retired NASA employees to volunteer as guides for a few hours or days a week.

The volunteers would do short presentations illustrating various laws of motion and principles of science in the Discovery Science Theater, part of the "Living in the Stars" exhibit created in cooperation with JSC. They might also be called upon to help guests through the museum give short tours or presentations or scan tickets.

The museum will be focusing on the future of space travel, the International Space Station and Mars, and hosting evening star parties beginning in September.

Anyone interested should call 281-331-7256 or 409-744-4673 during normal business hours and ask for Rita Karl, Discovery Pyramid Manager (x230), or Charles Willett, Education Director. (x377).

## Fall sports sign-ups begin

Registration is now under way for various fall sports leagues at the Gilruth Center.

Registration ends Sept. 9 for the fall volleyball leagues which will start the week of Sept. 15. Cost is \$175 per team. Mixed leagues will play on Monday and Tuesday; Women's on Wednesday and Men's on Thursday.

The fall basketball league also will begin its season Sept. 15. Employees may register until Sept. 10. Cost is \$315 per team and men's leagues will play on Monday, Tuesday, Wednesday and Thursday.

Registration ends Sept. 5 for the fall softball league that will begin play in mid-September. Cost is \$275 per team for competitive league play and \$200 per team for recreational league play. Both men's and mixed league will play on Monday, Tuesday, Wednesday and Thursday.

The fall flag football league will begin its season Sept. 22. Registration for this league ends Sept. 16. Cost is \$335 per team and the men's league will play on Tuesday and Wednesday.

Registration will end Sept. 13 for the fall soccer mixed league which will begin play on Sept. 20. Cost is \$275 per team and the mixed league will play on Saturday.

For more information call x33345.

## Astronauts award Silver Snoopys

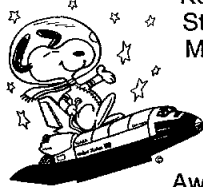
JSC astronauts recently presented Silver Snoopy awards to 23 employees.

The civil service employees who joined the ranks of Snoopy owners are Richard Slater of the Business Management Directorate; T.J. Creamer and Brian Kelly of Flight Crew Operations; Mike Eubanks, Sharon Marston, Tim Brady, Keith Day, John Craft, Mike Red and Brad Irlbeck of the Engineering Directorate; Mike Gaunce of Space and Life Sciences; Tom McPherson of the Phase I Program Office; Mike DeMasie of Space Operations; and Tim Adams of the Safety, Reliability and Quality Assurance Office.

Contractor employees honored

with Silver Snoopy awards are Tony Cambiaso, Robert Reynolds and Joe Rebokus of Boeing Aerospace Operations; Bob Dugan of Hamilton Standard; Dolores Bellflore of Kelsey-Seybold Clinic; Debbie Korth, Peggy Delaney, and Stuart Johnston of Lockheed Martin Space Mission Systems and Services; and Susan Widmer of MRI Computer Services.

The Silver Snoopy Award, administered through the Space Flight Awareness Program, is the astronauts' personal award for outstanding contributions toward flight safety and mission success. It is presented to less than one percent of the NASA and contractor workforce.



## Travel office to be closed during contract transition

JSC's travel services contract with Omega World Travel expires on Aug. 29 and the new contract with American Express Travel Related Services Inc., will begin on Aug. 30.

To accomplish this transition, the travel office in Bldg. 1 will close at noon Friday, Aug. 29. Travelers, travel coordinators and

secretaries must have all reservations made prior to 11:30 a.m. that day and tickets and orders must be picked up by noon. For the afternoon of Aug. 29, travel will be handled on an emergency basis only and approval for emergency travel must be authorized by the JSC Transportation Officer.

Effective Aug. 30, American Express will begin providing travel services for all NASA installations as the new agency-wide travel services contractor. All reservations and traveler profiles will be electronically transferred from Omega to American Express.

Over the Labor Day Weekend, American

Express will handle all emergency reservations through their Emergency Travel Service by calling 1-800-847-0242.

On Tuesday, Sept. 2, American Express will begin full travel services at JSC. All telephone numbers for travel services at JSC will remain the same

## Dates & Data

### Sept. 2

**ASQ meets:** The Bay Area Section of the American Society for Quality will meet at 6 p.m. Sept. 2 the Ramada King's Inn on NASA Road 1. Bill Sherman will discuss "The History and Development of International Standards." Dinner costs \$9. For more information call Ray Swindle at 281-335-6948.

### Sept. 3

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

**Communicators meet:** The Clear Lake Communicators will meet at 11:30 a.m. Sept. 3 at the Lockheed Martin, 555 Forge River Road. For

details, contact Richard Lehman at 281-538-1854.

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

### Sept. 4

**Warning system test:** The site-wide Employee Warning System will undergo its monthly audio test at noon Sept. 4. For more information call Bob Gaffney at x34249.

### Sept. 5

**Crew briefing:** The STS-85 crew will discuss its 12-day mission at 1:30 p.m. Sept. 5 at Teague Auditorium. For details call Helen Harris at x38413.

**Registration deadline:** Registration is currently under way for Fall Softball Leagues which will begin play mid-September. Registration ends Sept. 5. For details, call x33345.

### Sept. 8

**Thermal and fluids workshop:** The Engineering Directorate will host the eighth annual Thermal and Fluid Analysis Workshop from Sept. 8-13 at the University of Houston Clear Lake. For more information call Carlos Ortiz at x38879.

### Sept. 9

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

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

**Registration deadline:** Registration is under way for Fall Volleyball Leagues which will start the week of Sept. 15. Registration ends Sept. 9. For details, call x33345.

### Sept. 10

**Registration deadline:** Registration is under way for Gilruth Center Fall Basketball Leagues which will start the week of Sept. 15. Registration ends Sept. 10. For details, call x33345.

**MAES meets:** The Society of Mexican American Engineers and Scientists will meet at 11:30 p.m.

Sept. 10 in the Bldg. 3 cafeteria. For details call G.D. Valle at x38835.

**PSI meets:** The Clear Lake/ NASA Chapter of Professional Secretaries International will meet at 5:30 p.m. Sept. 10 at the Holiday Inn, NASA Road 1. Dinner costs \$15. For details, call Elaine Kemp at x30556.

### Sept. 11

**Airplane club meets:** The Radio Control Airplane Club will meet at 7:30 p.m. Sept. 11 at Clear Lake Park Community Bldg. For details call Bill Langdoc at x35970.

### Sept. 12

**Astronomers meet:** The JSC Astronomical Society will meet at 7:30 p.m. Sept. 12 at the Lunar and Planetary Institute, 3600 Bay Area Blvd. For more information call Chuck Shaw at x35416.

## News Briefs

### Cassini launch remains on schedule

The Terminal Countdown Demonstration of the Air Force Titan IV rocket for NASA's Cassini mission has been successfully completed and launch of the Saturn explorer remains on schedule. The dress rehearsal was a retest after leaks were repaired on the Centaur upper stage identified during the initial demonstration on Aug. 5. The Cassini spacecraft is scheduled for liftoff from Cape Canaveral Air Station, Space Launch Complex 40, on Oct. 6 at 4:38 a.m. JSC time. This will begin Cassini's 6.7 year journey to explore the planet Saturn.

### NASA selects replacement for Hubble instrument

NASA has selected a proposed scientific investigation that includes the development of a new spectrograph for the Hubble Space Telescope. The Cosmic Origins Spectrograph is planned for installation during the fourth servicing mission scheduled for late in 2002. The new instrument's capabilities will be a major enhancement to Hubble's spectrographic capabilities at ultraviolet wavelengths. It will allow astronomers to study the very early Universe and the creation of the heavy elements during the first period of star formation billions of years ago.

### New manufacturing method could lower air travel costs

NASA and Boeing recently demonstrated a new composites manufacturing method—using an advanced NASA-developed stitching machine—that is expected to have a major impact on the way aircraft wing structures are fabricated. By replacing large metal structures on airplanes with composite materials, the aeronautics industry expects to achieve large savings on weight and production that should translate directly into lower fares for the public in the near future. Composite wing structures are expected to cost less and weigh less than aluminum wings while remaining as damage-tolerant and carrying the same loads from weight and pressure. Part of the weight and time savings come from the elimination of many of the 80,000 metal fasteners found on an aluminum wing.

## Foreign teachers have out-of-this-world experiences

For 23 teachers from around the world, it was the ultimate field trip—without their students.

Elementary and secondary school teachers from U.S. State Department schools who attended the Aerospace Science In-Service Institute recently had a common mission—gathering data about space technology to share with their American students abroad.

In its 10th year, the institute offers two weeks of workshops—made possible by a collaboration between

the University of Houston's College of Education, the Office of Overseas Schools and JSC.

Some of the teachers arrived at NASA with stars in their eyes.

"It is the dream of my life. I'm finally here and I can't believe it," said Ana Laura Ruiz-Barrios, a 12th-grade physics teacher from the American School of Guatemala. Houston native Mauri Ulivi made the journey home from the American International School in Genoa, Italy, to attend.

In one workshop, teachers were given a chance to manipulate Earth toys and asked to predict how they would operate in microgravity. A videotape demonstrating the actual results is one of the many resources the teachers will be able to share with their students, who will use mathematics, graphing and drawing skills to make their own predictions.

As interest in photographs of Martian landscapes coming back via Pathfinder and Sojourner reached its zenith, the institute also featured a

briefing on Mars exploration and a chance to view and touch lunar and Martian meteorites.

Other workshops included visits to Mission Control and the space food lab, a peek inside space station and shuttle mock-ups, a flight physiology lesson, "Mission Math" classroom activities and a field trip to the Challenger Center at the Houston Museum of Natural Science.

One teacher said it was valuable to gain an understanding of the repercussions of living in microgravity.

## Educators wrap-up summer workshops

Remember those first-day-of-school assignments to write an essay about summer vacation adventures? For 125 teachers who came back to school at JSC development workshops this summer, those essays could be very long.

Family members and close friends of JSC civil service and contractor employees spent a week learning about NASA's programs and the engineering development and scientific research at JSC. Teacher participants received several sessions in using NASA education materials and carrying out the hands-on activities to demonstrate principles of math, science and technology.

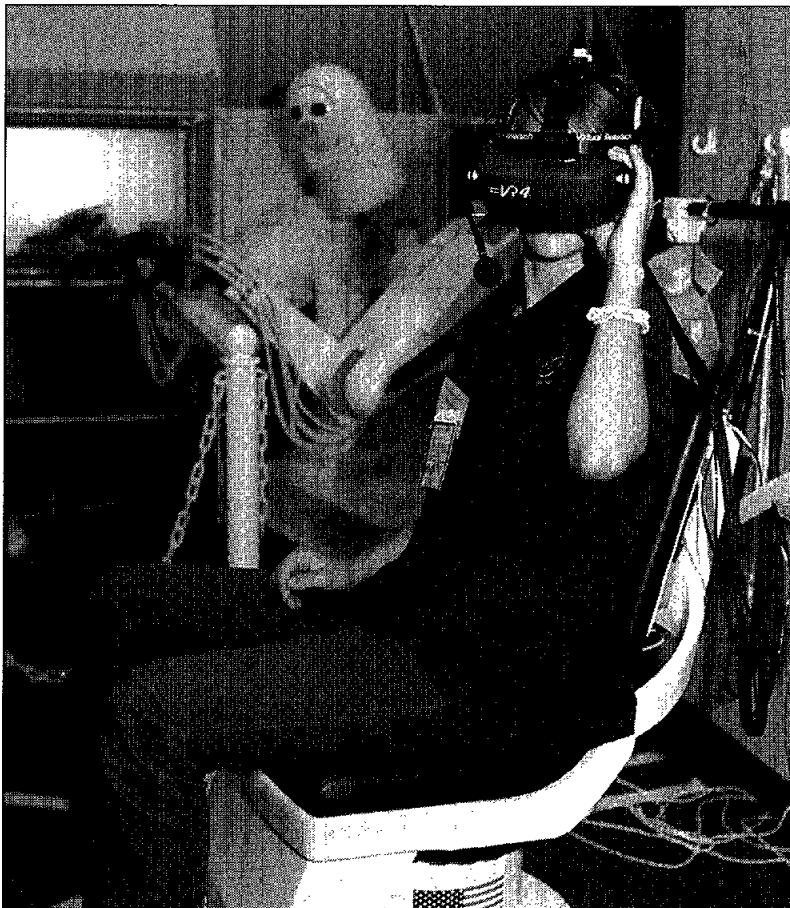
Middle school teachers from Clear Creek ISD immersed themselves in technology training based on the International Space Station. The teachers explored how to apply current technology to classroom instruction and how the space station program can be used to teach subjects across the curriculum.

The Pathfinder's landing on Mars and events at the Houston Museum of Natural Science finished off a workshop on the geology of Mars and planning for robotic and human exploration of Earth's sister planet.

The agencywide Education Workshop for Elementary School Teachers, or NEWEST, attracted 25 teachers from around the U.S. Teachers compete for slots through a program administered by the National Science Teachers Association. The group specialized in creating classroom projects on Mars with emphasis on Internet-based teaching and information resources.

Life science teachers from middle schools in Colorado, Kansas, New Mexico, Oklahoma, Texas and South Dakota devoted three full weeks at JSC to an intensive study of the space station and its applications to life science investigations. The teams created a physiology-based classroom activity. Each team will derive about 20 percent of the data necessary to solve the research problem, then teams will share their findings via the Internet.

"Overall, I think we sent our educators back to the classroom well equipped for the new year," said Billie Deason, lead of the education team in the Office of Public Affairs. "If a few teachers inspire a student to focus on an engineering, science or math career, then our resources were well spent."



JSC Photo 97-10287 by Steve Candler

Students of the International Space School Foundation explore virtual reality in JSC's Robotic Systems Evaluation Lab. Ten science camp student groups, ranging in age from middle school to college, visited JSC this summer along with accompanying teachers.

## Low series seeking to expand center management vision

(Continued from Page 1)

state government programs, which has been credited with saving taxpayers more than \$8.5 billion. A significant amount of savings came from the state's switch from the use of paper food stamps to computerized bank-type Lone Star cards.

The Texas Performance Review was established not for the sake of finding \$1 billion or \$2 billion, Sharp said, but to see if state spending could be cut back while keeping the government working as well or better than before. Some of the initiatives involved technology advances "that we borrowed from some of the contractors that some of you folks work for."

The food stamp program review began in 1991, Sharp said. The review showed that the state was paying \$12 million a year to paper companies for the paper, another \$66 million for printing, \$6.2 million for a courier to carry the printed

stamps to Texas distribution center, and postage to send 1.3 million pieces of mail every week.

Additional costs were incurred by grocery stores, which had to hand-count stamps they took in, and banks that had to recount them after they were redeemed. Then, the state had to hire another courier service to send stamps back to the Federal Reserve, which spent \$24.2 million a year to shred the used stamps. And still, Sharp said, every time a federal narcotics officer made a bust, some 40-60 percent of cash is food stamps, indicated a large amount of fraud.

"It didn't take a rocket scientist to figure out that maybe we were spending a little bit more on overhead than we are on feeding poor kids," he said. "Consider, we've blown 150 million bucks here and we've yet to put a piece of cheese in a poor kid's mouth anywhere in the state of Texas."

For the past two years, the state has been using the electronic bank cards, which "are hard to sell on the corner for crack cocaine." Sharp admitted that fraud occurs, but it requires the complicity of a people who have a card-reading machine and is easier to police.

The day the cards went into use, he said, 22,000 people dropped off the food stamp rolls in Houston and it turned out that the intended recipients had died and the people who were receiving their mail had been using the vouchers to illegally obtain food stamps. Even with that reduction, the city sold \$4.5 million more in food through the Lone Star cards. The experience was similar in Dallas, where 613,000 left food stamp roles and about the same amount of food is being purchased.

Sharp said neural network technology, which is helping locate credit card fraud by allowing the computers to learn as they perform their

programs, is being employed to reduce fraud in Medicaid. In much the same way as credit card companies can tell if a card is stolen when several tanks of gas are purchased on the same day as a pair of expensive tennis shoes, the technology is able to pinpoint medical providers who are soliciting low-income residents on which to run expensive but unnecessary medical tests.

"The point is that there are things we can do within our families and our business and everywhere else that can make things actually work better and cost less money," he said.

The George M. Low Leadership Series, sponsored by the JSC Human Resources Office, is intended to stimulate thoughtful discussion and expand the vision of the center's leaders. It honors Low, who joined the Manned Spacecraft Center in 1964 and served here as deputy center director and manager of the Apollo Spacecraft Program Office.

## Guests enjoy freedom to explore

(Continued from Page 1)

NASA astronauts were on hand for autographs and picture taking. The crew of the upcoming 90-day closed chamber test explained the special challenges of living in a self-contained environment for months on end.

Guests also were able to bring a little bit of the space program home because some demonstrations yielded souvenirs such as personalized name plates, aluminum shuttle components, vacuum molded plastic parts, photos of visitors in a shuttle seat, and JSC decals.

Mars was featured with the latest photographs from the Sojourner rover on the Red Planet and literature about possible human exploration of the red planet.

Teague Auditorium offered slide presentations about the past, present and future of space travel.

Astronauts and scientists discussed a variety of topics.

"I enjoyed hearing Astronaut John Young speak at Teague Auditorium," said a visitor from Texas. "He was best of all. Please be sure to have him speak at Teague in 1998."

Outside the center's gates, Ellington Field and the Sonny Carter Training Facility offered numerous attractions such as the KC-135A "Vomit Comet", the 747 Shuttle Carrier Aircraft, and the T-38 training jets for visitors to see. The Texas-sized 6.2 million gallon pool for simulating zero gravity for spacewalk training was featured at the Carter site.

"I liked the fact that it was open to park and walk anywhere and that so many buildings were open with knowledgeable personnel," said a visitor from Texas.

*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 other Friday by the Public Affairs Office for all space center employees. Deadline for the submission of articles is Friday, three weeks before the desired date of publication.

The Roundup office is in Bldg. 2, Rm. 181. The mail code is AP2. The main Roundup telephone number is x38648, and the fax number is x45165.

Electronic mail messages may be directed to kelly.o.humphries1@jsc.nasa.gov or karen.r.schmidt1@jsc.nasa.gov.

Editor . . . . . Kelly Humphries  
Managing Editor . . . Karen Schmidt

## Next blood drive scheduled for Safety, Total Health Day

(Continued from Page 1)

the generosity of donors and have many that donate at every drive. It really made us feel good when St. Luke's gave special awards to our co-workers who reached gallon marks."

Thirty-two employees reached the one gallon mark while 10 employees received a special two-gallon award. Three employees were awarded the three-gallon donation award and two JSC employees won awards for donating four gallons. Tom Baugh of the Institutional Business Management Office received an award for reaching the six-gallon mark.

Mendez said St. Luke's also encourages families and friends of patients to donate blood for individuals who they know are in need of

blood. Not only are people able to contribute to the overall blood supply, but by replacing blood for a specific patient, there is an opportunity to financially assist with some of the processing costs associated with blood transfusions.

"At the blood drive on Aug. 12 and 13, we displayed a poster with the names of people who we knew needed replacement credits," Mendez said. "We plan to continue doing this at all our blood drives."

The hospital also sponsors drives that are strictly replacement drives, where credit for blood donations are applied to a patient's account either here or at another hospital."

The next opportunity to donate at a JSC on-site blood drive is scheduled in conjunction with Safety & Total Health Day on Oct. 15-16.