

August 13, 1999

# SPACE CENTER Roundup

VOL. 38, NO. 15 LYNDON B. JOHNSON SPACE CENTER, HOUSTON, TEXAS

## Chandra opens new eye on universe

**C**olumbia's astronauts glided to a smooth night landing at the Kennedy Space Center July 27, concluding their five-day mission to deploy the Chandra X-Ray Observatory.

Commander Eileen Collins flew *Columbia* to a perfect touchdown at 10:20 p.m. CDT on Runway 3-3 at the Cape's Shuttle Landing Facility, completing a mission spanning nearly 1.8 million miles. Pilot Jeff Ashby, Flight Engineer Steve Hawley and Mission Specialist Cady Coleman joined Collins on the flight deck for entry and landing. Mission Specialist Michel Tognini of the French Space Agency was seated alone down in the middeck. It was the 12th night landing

Please see **MISSION**, page 2



NASA Photo STS093-322-017

The history-making crew of STS-93: (left to right, front) Commander Eileen Collins and Mission Specialist Michel Tognini; (back) Mission Specialist Steve Hawley, Pilot Jeff Ashby, and Mission Specialist Cady Coleman.

## JSC invites community to Open House 1999 *A Pathway to the Future*

**J**SC civil servant and contractor volunteers are gearing up for the center's Open House event on Saturday, August 28. Quickly becoming a late summer tradition for many in the Houston area, organizers for this growing event anticipate a record crowd with increased cultural diversity.

The event provides JSC employees the opportunity to personally share the excitement of space exploration with the people who make it possible.

"We hope our visitors will have a rewarding day as they tour our center for a better understanding of how their investment in NASA makes it possible for us to not only explore space, but also to provide real benefits to all our lives here on Earth," said JSC Director George W. S. Abbey.

"Based on the popularity of Open House in past years, we're expecting quite a turnout for this year's event," said Rob Navias, 1999 Open House chairman. "We have more exhibits to display, more buildings to tour and more entertainment than ever before."

Entitled "Pathway to the Future," the event is free to the public, placing JSC on center stage to showcase its many contributions to the human space flight program. More than 19 buildings on site will be open to the public, including Bldg. 30 housing Mission Control, where visitors can view both the space shuttle and International Space Station flight control rooms; Bldg. 5, where U.S. and Russian simulators are maintained; and Bldg. 9, where ISS, space shuttle and Soyuz mockups reside.

The variety of technological research being conducted at JSC, such as composite

materials development, plant growth, life support systems and physiological studies, will be on display in Bldgs. 9S, 29, and 37. NASA's new X-38 crew return vehicle and the inflatable TransHab module also will be featured.

A new feature for this year's event will be *A Musical Voyage Through Space*, a combination of terrestrial compositions performed by the Clear Lake Symphony and celestial imagery captured during space flight in the refurbished Teague Auditorium at 4 p.m.

Teague will also host other special programs throughout the day for the public focusing on the International Space Station and Mars exploration.

The famed astronaut band, "Max Q," and the Houston Livestock Show and Rodeo will provide entertainment for JSC guests.

Also in the Teague Auditorium, at 11:30 a.m. the crew of STS-93 will make a presentation on their historic mission.

Gift shops and souvenir areas will be open in Bldgs. 2, 3, 9, and 11. Snacks and beverage concessions will be available at outdoor locations as well as in Bldgs. 3 and 11. Astronauts will be available in the cafeterias, three other buildings and Ellington Field to sign autographs.

There will be numerous educational activities for children, as well as free tram transportation for visitors. Map brochures will be available to provide guests with information about the various sites available for tours, some of which are only open to the public on this day.

"The volunteers' amazing effort is appreciated and demonstrates the commitment that these employees and friends have made not only to their jobs, but also to the community," said Jason Kruska, co-chairman of the Volunteer Coordination. ■



*We have more exhibits to display, more buildings to tour and more entertainment than ever before.*

— Rob Navias

*The success of Open House ultimately depends on the volunteers taking charge and helping out across JSC for this important day.*

— Jason Kruska



VPP Star flag makes JSC debut.

Page 2



JSC prepares for annual Open House weekend.

Page 4



Team manages JSC's valuable information.

Page 6

# Flag presented to JSC as official VPP Star site

By Mary Peterson

*It's the Academy Award of safety and health programs, and Johnson Space Center is a winner!*

In a special presentation ceremony held in Bldg. 9 on Monday, July 26, JSC became the only federal entity that has won both OSHA Volunteer Protection Program Star site status and ISO 9000 certification. JSC is now among an elite group of only some 500 companies nationwide to be proclaimed a VPP Star site by OSHA. This is a major accomplishment and a very significant honor. Only one other NASA facility, Langley Research Center, has received a Star designation.

Against a red backdrop emblazoned with the NASA logo, and just feet from the enormous shuttle mockup, an estimated crowd of 300 watched enthusiastically as John Miles, administrator of OSHA Region VI, presented the official VPP Star flag to Center Director George Abbey along with a framed certificate declaring, "The Occupational Safety and Health Administration certifies Johnson Space Center meets the requirements of the VPP Star," approved May 25, 1999.

Miles opened his remarks by saying, "It's like coming home, since I worked for 3½ years at JSC during the Mercury, Gemini, and Apollo years. In doing so, I know the commitment you have to safety and health, and it is time to recognize NASA [JSC] for what it has done."

Miles commended JSC for the lost-work-day rating at 0.2, a remarkable figure, he said, when compared to the nearest like-type industry, which would be aircraft manufacturing service. It is even more remarkable, considering that JSC is also the largest facility in OSHA's



The VPP Star site flag will join others in front of JSC's Bldg. 1 as a testament to the center's commitment to a safe work environment. The VPP Star site flag shown here, held by Rachel Windham, was flown aboard *Columbia* during STS-93 and will be showcased in the lobby of Bldg. 1.

Region VI (Texas, Louisiana, Arkansas, Oklahoma, and New Mexico) area to be granted Star status.

"You should give yourself, and every employee, a hand," said Miles. With that, a hearty round of applause filled the air.

Master of ceremonies, Rich Dinkel, deputy director of the Safety, Reliability & Quality Assurance Directorate, commented to the crowd that the Star flag presented had flown aboard the just-completed STS-96 mission. It will be mounted in a display case in Bldg. 1, while OSHA has provided another, more durable Star flag to be flown on site.

Upon receiving the flag, Center Director George Abbey thanked those in attendance as well as the extended family of JSC employees, saying, "This is a great event, and I expect it to have even greater meaning

in the future. You are safety. Each of you is a member to this, and you will make a difference when we go beyond space station, the moon, and, eventually, on to Mars." It was also appropriate, he said, that the presentation occurred on the 30th anniversary of the Apollo 11 landing on the moon.

"Thank you for everything you are doing now," Abbey said, "and for everything you are going to do for the center in the future. Receiving the VPP Star is a great tribute to your 'stick-to-it-tive-ness' and dedication."

Credit was roundly given to all who contributed to achieving OSHA's most prestigious award, and included, in addition to Abbey, who was billed as the driving force behind JSC safety, Deputy Center Director Capt. Jim Wetherbee, the Executive Safety Committee, Mary McClain,

representing the American Federation of Government Workers, Local #2284, members of the Johnson Space Center Safety Action Team, each VPP point-of-contact, and each and every JSC civil service and contractor employee.

As a return salute to OSHA, Abbey then presented Miles with a Department of Labor flag that, like the Star flag, had also been flown on STS-96.

Also on hand for the occasion were Bill Klingbeil, OSHA Region VI VPP manager, several members of the VPP on-site inspection team, local OSHA representative Ray Skinner, and several corporate mentors represented who had helped JSC accomplish its goal.

Following the ceremony, a reception was held at Gilruth Center. ■

Continued from Page 1

## Mission

in shuttle program history and the 19th consecutive landing at the Florida spaceport, the last landing at Edwards Air Force Base being STS-76 in March 1996.

About 15 minutes prior to landing, *Columbia* provided a light show for residents of Houston as it sped overhead, visible in the nighttime sky as an orange streak headed for Florida. *Columbia* was at an altitude of about 200,000 feet at the time, traveling about 15 times the speed of sound.

The astronauts returned to Ellington Field Wednesday morning, July 28, where they were greeted by a crowd of 500 to 600 people including Vice President Al Gore, JSC Director George W. S. Abbey, NASA Associate Administrator for Space Flight Joseph Rothenberg, JSC civil servants, contractor employees and the public.

"I want to congratulate all of the astronauts of STS-93," said Gore. "I also want to thank the training team and everybody at the Johnson Space Center. What a great job!"

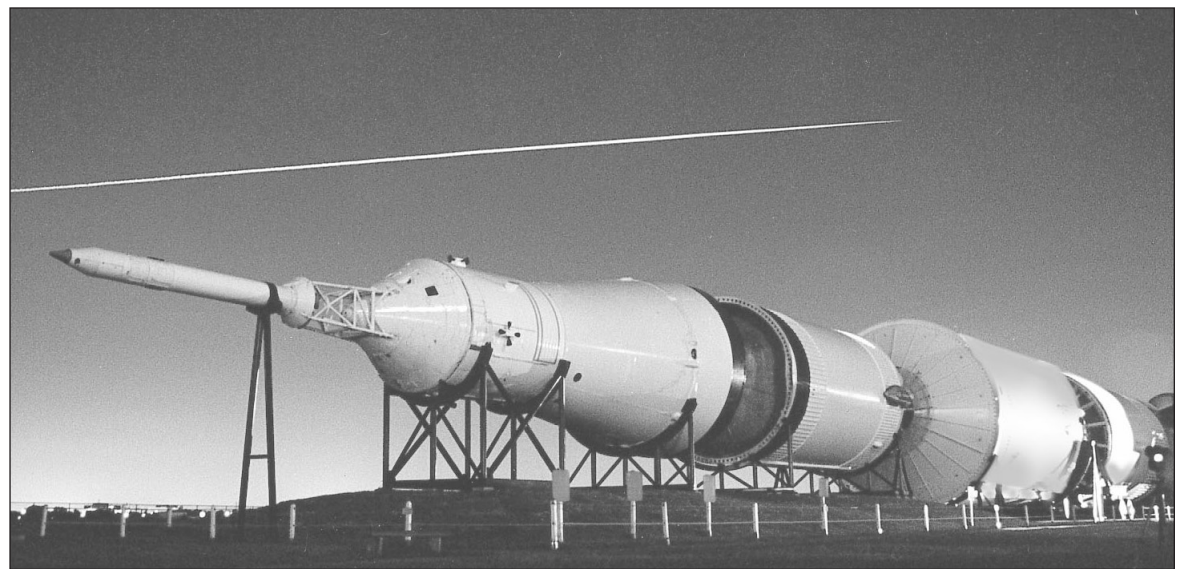
Gore reminded the crowd that the mission was unique in a number of ways. "I want to just remind you that there are quite a number of achievements that we are celebrating here. First of all, Jeff Ashby, who was born in Dallas, completed his first flight. Steve Hawley now has the unique distinction of flying on two of the "Great Observatory" missions, having also helped deploy the Hubble Space Telescope in 1990. And Cady Coleman was the one who actually was in

charge of the deployment of the telescope. We want to congratulate Cady Coleman for successfully deploying the Chandra Telescope. Michel Tognini of France has conducted science on both the Mir and, now, the space shuttle. And, of course, we have the very first [woman] commander of the space shuttle."

In introducing Collins, Gore said that she "stands here as a hero to all girls and boys, women and men, Americans and people all over the world as the very first commander of the space shuttle."

Collins commented on the public's intense interest in space exploration. "As I travel across the country and talk to people throughout America, there is so much interest in the space program." She said that she is constantly asked why the shuttle program isn't covered more on television. "There really is a lot of interest out there, and I think we need to tap into that."

Collins thanked the STS-93 Training Team including Lisa Reed, training team lead; Al Park, control instructor; Ed Schoenstein, DPS/navigation instructor; Kevin Jennings, systems instructor; Darryl Davis, communications instructor; Bill Preston, payloads instructor; Robert Carter, simulator operator; and Stacie Hughes, crew scheduler.



*Columbia* streaks across the night sky above Rocket Park.

Photo by Brian Zemba

Collins closed with a few words on the space shuttle, referring to it as a rocket, a spacecraft, a mini-space station and an airplane. "That shuttle is a fantastic, amazing, tremendous, reliable flying machine," Collins said.

Ashby related a story that summarizes his thoughts about flying with Commander Collins. "Way back in my flying career, many, many years ago, I had an occasion where I was flying a small airplane with an enlisted man from my squadron," said Ashby. The engine quit and the two did a dead stick landing in the desert. "It was a pretty frightening event. And we walked away. And as we walked away, the young enlisted man told me that he would fly with me anytime. And I felt that was the highest compliment that I could ever be paid as a pilot. Well, last night, I rode through my second dead stick landing with

Eileen Collins at the controls. And Eileen, I just want to tell you that I will fly with you again anytime."

Following their speeches, the astronauts met with well-wishers in the crowd and signed autographs.

Left behind in orbit is the Chandra Observatory, which was deployed July 23 during the first day of the mission. The telescope was designed to assist astronomers in their studies of the evolution of the universe. It is intended to help explain the role of black holes, quasars, exploding stars and galactic collisions.

Chandra continues to operate as it was designed, circling the Earth in an elliptical orbit with low and high points slightly above 6,200 miles and just under 87,000 miles. The first images should be transmitted to Earth between mid and late August. ■

**C O M M U N I T Y N E W S****Meteorologist George addresses Hurricane Preparation Seminar**

**H**urricanes, tornadoes, and current global weather patterns were among the many subjects discussed during an annual Hurricane Preparation Seminar, held July 20 in Bldg. 37 and sponsored by JSC Medical Sciences Division and Wyle Laboratories.

Guest speaker Chuck George, KPRC-TV meteorologist, shared his insights into this year's hurricane season and predictions for future activity.

According to George, were a hurricane to hit the Texas Gulf Coast, the most favorable place for it to make landfall, from the vantage point of Houston, would be in the extreme

southern part of the state and, secondly, to the north of the city. Wind around a hurricane blows in a counterclockwise direction, with the northeast quadrant being its "dirty" side and the southwest quadrant its "clean" side. On the clean side, ocean water is pushed away from the coast, thus minimizing coastal flooding. Although Houston would be on the dirty side of one that made landfall far south, its effects would most likely not be felt.

Forecasters are paying closer attention to the role that sunspots play in affecting weather patterns. "The current thinking is that sunspots affect the Earth's magnetic field, which in turn affects La Niña and El Niño, and that somehow affects the weather," said George. "In the future, if an increase in sunspot activity were to be seen, then forecasters might be able to predict that El Niño will strengthen within a year, and that six months thereafter there will be floods on the West Coast." El Niño led to heavy rainfall in the West Coast during the winter of 1998-99.

The other speaker at the conference, JSC Emergency Preparedness Manager Bob Gaffney, said that the frequency for a major hurricane is 1 in every 10 years and that 16 years have passed since the last major one hit Houston.

People can survive hurricanes if they make evacuation plans well in advance.

"Thirty hours in advance of when tropical force winds are expected to make landfall is the time when people should begin their evacuation plans," said Gaffney. People need to leave the Clear Lake area in the event of a hurricane because it is



Chuck George, KPRC-TV meteorologist, discusses current hurricane activity along the Texas Gulf Coast during the recent Hurricane Preparation Seminar.

JSC Photo S99-07648 by Bill Stafford

vulnerable to storm surge in a Level 4 or Level 5 storm.

Local communities will issue evacuation recommendations about 30 hours before expected landfall of a hurricane. The JSC hurricane rideout team captain will make recommendations to the center director on when the center should close based on community safety announcements and potentially unsafe conditions at the center prior to and during the storm. According to Gaffney, "If you haven't made evacuation plans 30 hours in advance of expected landfall, you are well behind the power curve."

Don't forget about cats and dogs. "Take your pets with you when you evacuate. Decide where you are going to evacuate and call ahead to see what animal shelters are available there," said Gaffney.

For more details, visit the Spaceflight Meteorology Group Web site at: <http://www.srh.noaa.gov/smg/tropic.html>, Houston/Galveston National Weather Service Office Web site at: <http://www.sr.noaa.gov/FTPROOT/HGX/HTML/index3.html>, the National Weather Service hurricane information Web site at: <http://hurricanes.noaa.gov/> or the National Hurricane Center/Tropical Prediction Center Web site at: <http://www.nhc.noaa.gov/> ■

**Snapp becomes first JSC employee to receive NASA fellowship**

**L**ee Snapp, JSC's computer security manager, has become the first JSC employee to be selected for a NASA administrator's fellowship. The NASA Administrator's Fellowship Program, now in its third year, sends up to six employees annually on a two-year career development assignment that may involve research, teaching, and other special assignments.

During the first year of his fellowship, Snapp will live and teach on the Flathead Reservation in northwestern Montana. His principal task will be to develop a four-year engineering program for the Salish Kootenai College, one of 31 tribal colleges in the United States, while also representing NASA to the students, faculty, and local community. This small college of about 1,000 students is located in Pablo, Montana, and serves students from 25 Native American tribes. During the second year of his fellowship, Snapp will work in Washington, DC, under the sponsorship of the National Research Council.

"I look forward to a very challenging road ahead," said Snapp. "It's a real privilege to represent NASA both in the Native American community and in a part of the country that has had very little hands-on contact with our nation's space program. I especially want to thank the fine people throughout our JSC community who so kindly supported me during the NAFFP application and selection process. Without them, this assignment would never have been possible."

During the time of the fellowship, Dr. Frank E. Martin, the current JSC deputy computer security manager, will fill Snapp's job until his return to JSC the following year.

Snapp graduated from the U. S. Air Force Academy in 1969 with a

bachelor's degree in aeronautical engineering. He holds a master's degree in astronautics from the Air Force Institute of Technology School of Engineering. He came to JSC in 1989 after retiring from active duty. Since coming to JSC, he has been a principal architect of JSC's computer security program and is

currently responsible for developing the policy and providing day-to-day oversight of the center's computer security program.

The NASA Administrator's Fellowship Program seeks to provide a crossflow of talented teachers and researchers from NASA into minority-serving colleges and universities across the country.

The National Research Council,

which manages the NAFFP for NASA, annually may select up to six NASA employees to teach at minority-serving colleges and universities and additionally may select up to six outstanding faculty members from minority-serving colleges and universities for 18- to 24-month research assignments at various NASA centers.

Not all positions are necessarily filled; this year's group consists of seven people, of which only two are NASA employees. Snapp's counterpart is Dr. Gregory V. Clarke from Goddard Space Flight Center who holds a doctorate in structural mechanics. Dr. Clarke will be teaching at Howard University in Washington, DC.

As Snapp departs, JSC also will gain one NASA administrator's fellow, Dr. Jean M. Hampton, a professor at Texas Southern University. Dr. Hampton holds a Ph.D. in environmental toxicology and will spend her fellowship working at JSC as a toxicologist in the Life Sciences Directorate. ■



Lee Snapp

**Inspection 99 prepares for record attendance**

**P**reparations are under way for Inspection 99, the continuation of JSC's annual event that brings the technological advances and knowledge base of the center together with the private sector November 3, 4, and 5.

Inspection provides an opportunity for representatives of industry, business, community, and education to take an up-close look at NASA-developed technologies for a broad range of applications, ranging from information technology and biotechnology to training and manufacturing. Last year, Inspection drew 2,700 attendees from more than 45 states and 21 foreign countries.

"Due to the tremendous success of previous Inspection Day events, we are expecting a significant increase in attendance this year," said Charlene Gilbert, Inspection 99 chairperson. "Our goal is to make efficient use of the guest's time and to have top-quality exhibits to show them."

*Representatives who would like more information on Inspection 99 or are interested in registering, should be directed to the I99 Web site at <http://inspection.jsc.nasa.gov>.*



## Safety tips *for* Open House

**A**s we prepare for the upcoming Open House weekend – it's important to remember safety as a top priority. This year, we expect more than 100,000 visitors to JSC, many of whom will be children and elderly and present unique safety considerations.

Open House volunteers will attend a training session, which includes safety, but it's important for all of us to keep these issues in mind for our upcoming visitors.

Mary Lee Meider of the Occupational Safety and Quality Assurance Branch offers these reminders:

Take extra care when driving and crossing streets on site during Open House. Visitors may not be aware of our regulations such as crossing streets at crosswalks or stopping cars for pedestrians at crosswalks.

A nurse-staffed first aid station will be available in the Bldg. 8 clinic lobby during Open House. The clinic's ambulance also will be available.

- The emergency number is x33333. It will be on the back of volunteers' badges.
- Drink plenty of fluids. Houston's climate and extended periods outdoors can make people prone to dehydration. JSC will have more free water stations located around site near information booths this year, as will Ballunar Lifftoff.
- Be prepared to help visitors evacuate during a fire alarm by directing them to stairs on upper floors and building exits.
- Check your tour area throughout the day for potential hazards – including tripping hazards or slipping hazards, sharp objects/edges along the tour route, and shock hazards (exposed wires).

As you check for hazards, keep in mind a lot of children will be among our guests.

Safety professionals will be walking around and available all day to help with any issues that may arise. ■

## Ballunar Lifftoff Festival *promises entertainment, education*

**O**ne hundred brilliantly colored hot-air balloons will create a kaleidoscope in the sky above JSC August 27, 28 and 29 as part of the annual Ballunar Lifftoff Festival. A perennial favorite, the ballooning extravaganza will showcase skydiving acrobatics, ballooning contests and evening balloon glows.

"This has really become an international ballooning event," said Claudette Alderman of the Clear Lake Chamber of Commerce, a co-host of the Festival. "We'll have balloons coming from all over the world including Europe."

The Festival will begin Friday at 6 p.m. with opening ceremonies and a Grand Parade of Balloon Pilots at JSC. The evening will be capped by a balloon glow at 7:30 p.m. Weekend activities will start with competitive flair as balloonists and skydivers participate in various competitions including a "Key Grab" contest

Saturday at 7 a.m. In this event balloonists endeavor to grapple a ring from the top of a 20-foot pole for a "high dollar prize."

"This is the first year Ballunar Lifftoff Festival has been sanctioned by the Balloon Federation of America as the Texas Championship event," said Alderman. "So it is now the qualifying event for national competitions such as Albuquerque."

Balloon launches take place in the early morning hours shortly after dawn or just before dusk. Onlookers can watch a mass ascension of the balloons at 6 p.m. Saturday.

Also taking to the skies will be daring skydivers jumping from more than 13,000 feet high, performing aerial acrobatics on their way down to a landing field.

On the ground attractions include musical entertainment, an arts and craft fair, food booths, and business exhibits. Event hours are 6 p.m. to 10 p.m. Friday, 6 a.m. to 10 p.m. Saturday and 6 a.m. to 7 p.m. Sunday. The schedule is subject to change.

Admission is \$3. Children under 12 are admitted free.

Ballunar Lifftoff Festival Inc., a nonprofit educational foundation, sponsors the event and is dedicated to helping the public learn about aviation and space exploration. It also funds educational activities to help young people learn about space, mathematics and science. ■

## Ask not how your center can serve you...

**V**olunteers are still needed for Open House on Saturday, August 28. JSC will be open to the public from 9 a.m. to 5:30 p.m. Volunteers are needed from 8 a.m. to 6:30 p.m., but can offer their services in two-hour increments – two hours, four hours, six hours...or all day. Additional Spanish-speaking volunteers are especially needed.

More than 100,000 people attended the 1998 Open House, and at least as many are expected this year. This event is important to the center. It is an opportunity for us to show the public what we do, how their tax dollars are spent and what they're getting in return.

Volunteers will serve at the information booths and water stations situated throughout the center. They'll have a chance to interact positively with visitors, to help show them how important the center is to the community and the nation.

Volunteers should attend one of seven training sessions to receive vital information needed for Open House '99. These sessions will be held in the Bldg. 30 auditorium.

### Please attend one of the following sessions:

- 10 a.m. Friday, August 13
- 10 a.m. and 2 p.m. Monday, August 16
- 2 p.m. Tuesday, August 17
- 10 a.m. and 2 p.m. Wednesday, August 18
- 2 p.m. Thursday, August 19

*It is not too late for you to make a difference and help the community by signing up as a volunteer for Open House '99!*

The easiest way to sign up is by going to the volunteer home page. This can be accessed at:  
<http://www4.jsc.nasa.gov/openhouse/Databases/>

## Open House

### Key Facts:

9 a.m. - 5:30 p.m. Saturday, August 28, 1999

Free to the public

Information Line: 281-244-5312

Web site: <http://openhouse.jsc.nasa.gov>

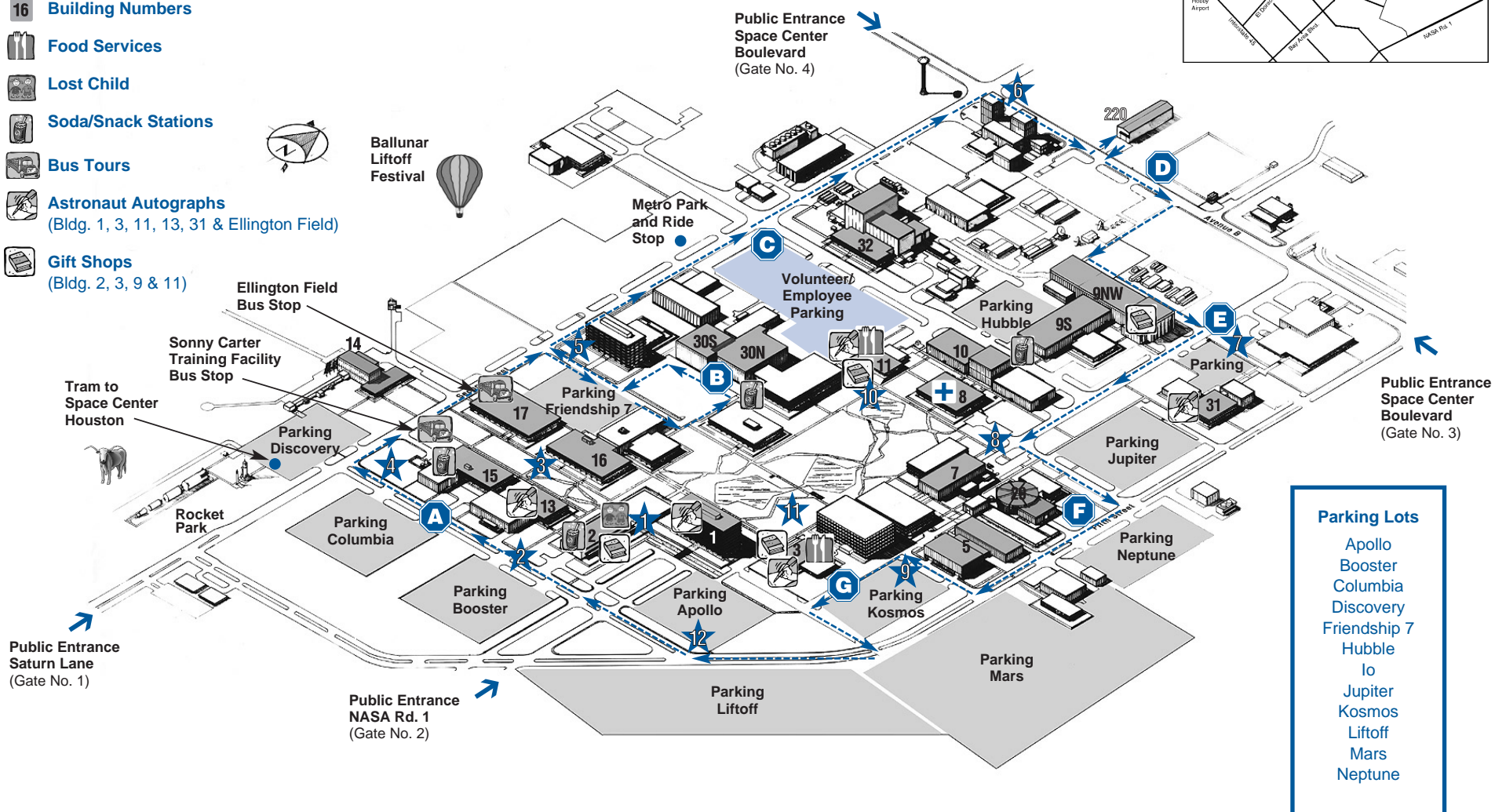
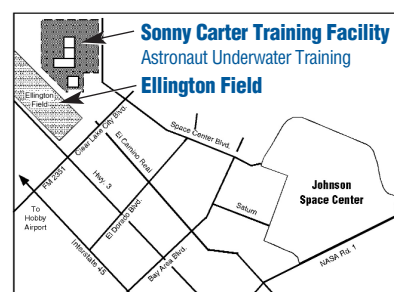


*This is the first year Ballunar Lifftoff Festival has been sanctioned by the Balloon Federation of America as the Texas Championship event.*

– Claudette Alderman

**Johnson Space Center****OPEN HOUSE****August 28, 1999**

- +** First Aid
- ★** Information Booths & Water Stations
- B** Tram Stops
- Tram Route
- 16** Building Numbers
- 🍽️** Food Services
- 👶** Lost Child
- 🥤** Soda/Snack Stations
- 🚌** Bus Tours
- 📸** Astronaut Autographs (Bldg. 1, 3, 11, 13, 31 & Ellington Field)
- 🛍️** Gift Shops (Bldg. 2, 3, 9 & 11)

**Houston, Texas****Here's where to go, what to see during JSC Open House**

**H**ere is a building-by-building rundown on most of what visitors to JSC's 1999 Open House will be able to see.

**Building 1**

The lobby of the center's most prominent building, Bldg. 1, will be open to the public for the first time this year with exhibits highlighting JSC's Human Resources area, the NASA/JSC budget, and the Equal Opportunity Programs Office. Astronauts will be available to sign autographs from 10 a.m. to 4 p.m.

**Building 2**

NASA experts will show visitors how to "Download SPACE!" information from the Internet. The Lost Child Center and Lost and Found are also located in Building 2N. In the Building 2S lobby, children will be able to build a shuttle glider, sit and color for a while, or build and launch a rocket. Meanwhile, parents can check out the Mars Millennium Project, a White House initiative for which Houston was the pilot program.

**Teague Auditorium**

The Clear Lake Symphony will perform *A Musical Voyage Through Space*, a special compilation of celestially inspired music complemented by imagery captured during space flight at 4 p.m.

**Building 3**

Astronaut autographs will be available from 1:30 p.m. to 4:30 p.m. The cafeteria and gift shop will be open all day, and entertainment, courtesy of the Houston Livestock Show and Rodeo, will be held outside from 11 a.m. to 2 p.m.

**Building 5**

Guests will see where astronauts train in sophisticated simulators for the shuttle and the space station. View a model of the Russian Soyuz. Tour both the Motion Base

and Fixed Base shuttle trainers. Walk through the Space Station Training Facility.

**Building 7**

Advanced closed-loop life support chambers and a spacesuit lab are housed here. Visitors will see how engineers and scientists design, develop and test tools, life support systems, spacesuits, heating and cooling systems.

**Building 9**

**Building 9NE** will showcase space shuttle mockups and trainers. Check out space shuttle equipment, view the Full Fuselage Trainer and see robotic "hands" to be used for space station activities.

**Building 9NW** will showcase the International Space Station mockups and trainers. Also view the Space and Life Sciences Outreach Exhibit – "Working Together Across the Sciences" – which interacts with children and adults alike. Search the Internet for space-related research and data. The Life Sciences Data Archive contains information from experiments conducted in space from the Mercury Program to the present shuttle missions, as well as a "Just for Kids" site to teach children about space.

**Building 9S**, with its Mockup Fabrication Facility, will show guests how tools, mockups, composite materials and other structures used for trainers or spacecraft development are made.

**Building 10**

Check out the Fabrication and Assembly Facility. See a water knife cut through metal and other materials up to 5 inches thick. Watch how measuring devices are calibrated.

**Building 11**

Astronaut autographs will be available from 1:30 p.m. to 4:30 p.m.

**Building 13**

NASA astronauts will sign autographs from 10 a.m. to 4 p.m. Visitors can

discover what it takes to stop a shuttle landing faster than 200 mph by examining a shuttle tire, nose landing gear and drag chute. View Apollo-Soyuz docking hardware used to connect U.S. and Russian spacecraft in 1975.

**Building 14**

Compare the latest in high definition television (HDTV) technology with current broadcast TV. See how astronauts conduct live video press conferences in space.

**Building 15**

View shuttle upgrades including displays on future propulsion systems. Learn how NASA plans to use extraterrestrial resources to generate spacecraft propellant and crew breathing air and water. See displays on laser-initiated pyrotechnics, batteries, mini-fuel cells, rocket engines, electromechanical actuation, and cable failure detection. View computer chips under optical and electron microscopes in the Receiving Inspection and Test Facility.

**Building 16**

Visit the home of the main labs to test all shuttle systems – software and hardware – so problems can be detected and fixed before flights. Watch as the shuttle docks with the International Space Station. Fly the shuttle from final approach to touchdown using a laptop landing simulator used by shuttle pilots.

**Building 17**

Building 17 houses the Space Flight Food Facility. Samples of current space food selections from the space shuttle, International Space Station, and Russian flight menus will be on display.

**Building 29**

Here, see advanced life support chambers and examine plant growth in space. Attendees will see concepts of how plants can be used to provide food, contribute to air revitalization and water and waste recovery

during long space flights. View displays of advanced spacesuit technology for use in future planetary applications.

**Building 30**

Building 30 houses the Mission Control Center, where visitors can see the Apollo Mission Control Room, the White Flight Control Room where shuttle operations are conducted, and support rooms. Check out the Ascent/Entry Trainer, the simulator that provides a desktop platform for shuttle training. In the Building 30 auditorium, watch a video of the latest shuttle mission. Tour the Emergency Operations Center where experts coordinate emergency responses at JSC and support local communities during hurricane season, severe weather threats and industrial accident alerts.

**Building 31**

Building 31 is the home of the Planetary and Earth Sciences Laboratory, which houses lunar and other astromaterials and information about orbital debris. You can meet a NASA astronaut and get an autograph from 10 a.m. to 4 p.m. Get a close-up look at a lunar sample, a meteorite from Mars and cosmic dust.

**Building 32**

At the world's largest human-rated space simulation chamber, equipment is tested in conditions simulating the vacuum and temperatures of space. Displays include spacesuits, and a partial mockup of the TransHab, NASA's first inflatable habitation module proposed for use on the International Space Station.

**Building 220**

Get a close-up look at NASA's newest spacecraft – the X-38 Crew Return Vehicle Number 201, scheduled to fly in 2001. ■

# Ripped from the ROUNDUP

Ripped straight from the pages of old Space News Roundups, here's what happened at JSC on this date:

1 9 6 4

**N**icknamed "canned man," a machine that breathes oxygen and exhales carbon dioxide is being developed to evaluate portable space life support systems. The Lockheed-California Company reported August 7.

The "canned man" test equipment will simulate human respiratory functions in testing back-mounted portable life support systems to be used by astronauts in Apollo space flights and moon landings. The test machine can also be hooked up to a pressure-suited man to provide life support while under the test.

The "canned man" bears little resemblance to either a human being or even a robot. It is a console-like piece of equipment seven feet tall, 10 feet wide, and three feet deep.

1 9 7 4

**A**n automated blood pressure monitoring system developed for the NASA Integrated Medical and Behavioral Laboratory Measurement System Program is being evaluated for use in studies on control of high blood pressure in human beings.

The system uses the blood pressure cuff, originally developed for IMBLMS, in conjunction with an automatic blood pressure monitoring system to obtain blood pressure measurements. The NASA-funded Southwest Research Institute, Biomedical Applications Team, San Antonio, recognized that the pressure ramp programmer used in the IMBLMS Program could be modified to provide continuous blood pressure monitoring.

1 9 9 4

**T**he Space Shuttle *Columbia* knifed through a haze of low fog Tuesday morning, ending a three-and-a-half year hiatus from flight and beginning a secret five-day Department of Defense mission.

As the last of the three shuttles to return to flight thundered smoothly into orbit from Kennedy Space Center's Pad 39B at 7:37 a.m. CDT, it carried a special distinction for the men and women of the Mission Control Center at JSC – the first flight controllers to fly aboard a shuttle.



JSC Photo S99-07704 by Robert Markowitz

*Apollo 30th anniversary commemorative Christmas ornaments* like the one shown here presented to Apollo 11 Commander Neil Armstrong are on sale for \$25 in the Exchange Stores in Bldgs. 3 and 11.

## Making points with tickets

By Mary Peterson

**E**verybody likes to make points, right? Well, not always. Especially if they're points assessed because of traffic and parking violations at JSC. And they can add up quicker than the best excuses that Security hears, and that's a lot.

"Officer, I wasn't speeding. I'm driving my wife's car, and she'd kill me if I did that!" or "I couldn't have been caught by your radar. I was driving in a whole pack of cars," or "I don't feel good, and I've been taking this medicine, and it was bothering me, and, well, I just couldn't see the stop sign." And, there's always the old standby, "I was running late for a meeting."

Well, prepare to run a little later for your meetings if you have to walk, because, speeding 15 mph or more over the speed limit on site will get you 10 points, which is an automatic revocation of driving privileges for a minimum of 15 days.

Depending on the violation, points are assessed in increments of 1, 2, 3, 5 and 10. The most serious violations (those that will get you the most points) are operating a vehicle without a valid operator's license or permit, current insurance, or proper registration; altering a decal or laminating a decal to use on another automobile; submitting false information regarding participation in a carpool; failure to remain and provide information at an accident scene not involving death or personal injury; and speeding 15 mph or more over the posted speed limit.

Even the most creative arguments likely won't change the ticketing officer's mind, because Security calibrates its radar guns daily to ensure accuracy. Moreover, they are used by a select group of inspectors who are specially trained and certified to Texas State standards. Some of the equipment is hand-held and used in Security vehicles, while the large radar device that flashes your speed for the entire world to see is placed variously around the center. The center's recent emphasis on crosswalk safety has resulted in more security surveillance in the pedestrian zones, especially during the 20-mph time periods.

A frequently overlooked source of points comes from illegal parking, according to Cindy King, physical security specialist. "People get in a hurry and think they can park in almost any available space," she said, "as long as they don't see a 'No Parking Allowed' sign. That's not true, because a substantial number of parking spaces on site are assigned. Sometimes employees think that a reserved space that hasn't been used for a while is fair game. It isn't, and they're surprised when they're penalized with ticket points." An oft-heard lament is, "I parked in the reserved spot because it was the weekend/night, and I didn't think they were reserved during non-duty hours."

"The Security Office notifies JSC supervisors, or Facility Security Officers in the case of contractors, of all traffic citations issued to their assigned

employees, along with decisions rendered on administrative reviews and appeals. The supervisors and FSOs then take appropriate administrative or disciplinary action based on established policies and procedures," said Dick McMinimy, group lead in Security Operations. "Anyone not satisfied with the results of an administrative review may then appeal the point assessment or suspension action to the JSC Traffic Appeals Board within two weeks from the date of the administrative review decision."

The decision rendered by the TAB is binding on the JSC Security Branch. The point assessment process is designed to encourage proper driving behavior. Consequently, the TAB does not look favorably upon serious rule infractions, such as speeding in pedestrian zones. Most employees are not aware of the

TAB process until they are in danger of having their decal revoked, and then they may be reluctant to ask about it. Questions should be addressed to Cindy King at x33251.

The easiest thing to do is simply obey the rules. The size and complexity of the center, like any city, requires rules and regulations. They're not there for the employees' inconvenience – they're in place for their protection. And they will be enforced.

For more information about the JSC Traffic Code or related matters, employees may contact the Customer Service Support Desk, Bldg. 110, or phone x37200. ■

*“What do you do if you feel wrongly accused? Is there any recourse? Certainly there is. Just like municipal court, we have our own traffic appeals process.”*  
– Dick McMinimy

## TICKET WINDOW

### Exchange Store hours

Monday-Friday

Bldg. 3 7 a.m.-4 p.m.

Bldg. 11 9 a.m.-3 p.m.

All tickets are nonrefundable.

Metro tokens and value cards are available.

For more information, please call x35350.

The following discount tickets are available at the Exchange Stores:

General Cinema Theaters	.....	\$5.50
Sony Loew's Theaters	.....	\$5.00
AMC Theaters	.....	\$4.75
Fiesta Texas	.....adult .. \$18.25 .. (child under 48") ..	\$15.50
Astroworld One-day Admission	.....	\$21.00
Astroworld Season Pass	.....	\$54.75
(valid at all Texas Six Flags Theme Parks and Water World)		
Water World	.....	\$10.75
Moody Gardens (2 of 6 events)	.....	\$9.75
Sea World	.....adult .. \$27.25 .. child (age 3-11) ..	\$18.25
Schlitterbahn Water Park	.....adult .. \$20.75 .. child (age 3-11) ..	\$17.50
Space Center Houston	.....adult .. \$10.25 .. child (age 4-11) ..	\$6.50
Space Center Houston Annual Pass	.....	\$18.75
(JSC civil service employees free.)		
Splash Town Water Park	..... adult .. \$14.50 (child 48" and under) ..	\$11.50

Volunteers needed to work in the Exchange Stores for Open House and receive a T-shirt, free lunch in the cafeteria and a 20 percent off coupon. Contact Lisa Rasco at x39364 for scheduling information.

# On the books: managing JSC's valuable information

They're called records, and almost every JSC employee creates them. They pertain to all information that the center makes or receives that relates to the management of its business.

Once ownership of JSC records is transferred to the National Archives, those that aren't classified become available to the public for reference. Actor/director Ron Howard's production staff, for example, researched JSC-originated records to create authentic replicas of such things as the inside of the command module, down to the details of what items were Velcroed to the inside of it, to produce the movie "Apollo 13."

To assist the center in tackling the job of managing its federal records, including ISO 9000 quality records, the Information Systems Directorate has assembled a new group of records management personnel.

Newly appointed JSC Records Manager Patti Stockman, who has been team lead over the area for two years, says many employees don't even realize they create or have federal records in their possession. "I think it's because perhaps they've never heard of federal records, or else they don't really know what comprises a record."

"The Code of Federal Regulations, which legally mandates how we should manage them, says that all information created, regardless of physical form or characteristics, made or received by an agency in connection with transaction of its business as evidence of our organization, functions, policies, decisions, procedures, operations, or other activities, constitutes federal records," said Stockman.

Recently, ISO 9000's emphasis on management of quality records, as well as legal spotlights on federal electronic records outside of NASA, has generated a new emphasis on control of records. But Stockman says that apart from federal, agency and ISO requirements to control JSC federal records, there are several other good reasons to do so including historical, NASA's public accountability, and sheer operational efficiency.

An example of operational efficiency at JSC is the space conservation achieved. "Since June 1, 1998, JSC has shipped 831 boxes of records in 65 different shipments to the National Archives and Records Administration's Federal Records Center in Ft. Worth, freeing up that much filing space at the center," said Stockman. The FRC basically functions as a warehouse for storing JSC records until it is time to

either destroy the records or transfer ownership to the National Archives.

"On the other hand, in the same period we have made 114 separate retrievals of records stored in Ft. Worth for JSC civil servants and contractors for their reference use in ongoing work," said Stockman.

overlooking some of their records. He emphasizes that not only are documents and drawings federal records, but also microform, audio and motion picture film, and video, as well as electronic files.

"We are required to manage all of our records, but some of those most important

was recently selected as JSC records management specialist. With a "down and in" focus, Hutchins serves as consultant to all JSC records coordinators and custodians, facilitating the smooth management of all federal records.

Last year, ISO audit identification of weaknesses in JSC's control of its records led to a successful center-wide effort to inventory, and bring under solid control, all of its quality records. According to Hutchins, this success was a major milestone on the road to improved JSC records management and contributed significantly to JSC's ISO 9000 certification.

Because of her ISO involvement, Hutchins has been responsible for training nearly 450 JSC employees and contractors since late 1997 in how to manage their records. Most were ISO quality record custodians, for whom training is mandatory. Other federal records custodians and coordinators also were included.

"Quality records are simply a subset of all our federal records and are identified as such by ISO quality requirements," said Hutchins. "All of our JSC records, whether 'quality' or not, must be managed the same."

The entire records management staff is turning its attention to leading the center in further improvements in records management. Stockman and Hutchins will be networking with major JSC contractors' records managers to inform them of changes in requirements and guidelines for managing their federal records. Hutchins also plans regular roundtable meetings with JSC records coordinators from across the center.

In addition, records management training will become a regular offering through the JSC training catalog. John Smith, director of records management at NARA-Southwest Region, has personally taught more than 200 civil servants and contractors. According to Hutchins, Smith has been exceptionally well received, with participants requesting spin-off or more frequent training.

For assistance in managing or dispositioning records, see the JSC Records Management Web site: [http://stic.jsc.nasa.gov/collections/STIC\\_home/recordsl/](http://stic.jsc.nasa.gov/collections/STIC_home/recordsl/). There, employees can find policy and procedural guidance, as well as on-line forms for every record-related action. Employees may also contact Stockman at x31849. ■



JSC Photo S99-05739 by James Blair

**John Smith, director of records management for the National Archives and Records Administration - Southwest Region, explains to JSC records custodians Peter Fisher, left, and Leslie Myers, right, that ISO quality records are a subset of JSC's federal records.**

Because of the significant traffic to and from the FRC, two ISD employees, Dina Berumen and Ethel Reed, facilitate all of JSC's records shipments.

Stockman, who is responsible for management oversight of the entire center records management program, focuses her attention on moving JSC forward in records management.

The JSC archivist, Mark Scroggins, assesses the record status of collections for organizations. He also assists in locating appropriate retention schedules for records.

Scroggins points out that the magnitude of JSC records, both in media and types, sometimes contributes to employees'

at JSC include most program records, unique one-of-a-kind records such as mission documents and voice tapes, as well as certain fiduciary files in the areas of finance, procurement and personnel," Scroggins said. "If employees are in doubt about whether their files are records, we'd rather they err on the side of caution."

Sometimes employees may even tend to think of some items as their personal property, particularly ones containing their own annotations. However, Scroggins points out that personal annotations often make a record more valuable and unique than clean versions of the original.

Nancy Hutchins, who has served as JSC's ISO 9000 quality records manager,

## Governor Bush appoints JSC technologist to key post

The full senate of the state of Texas recently confirmed the nomination of Dr. Kumar Krishen by Governor George W. Bush to the Texas Board of Licensure for Professional Medical Physicists for a five-year term. This board supports the implementation of the Texas Medical Physics Practice Act, Texas Civil Statutes, Article 4512n, concerning the regulation and licensure of medical physicists.

Dr. Krishen serves as the chief technologist for the Technology Transfer and Commercialization Office at JSC.

"Professional medical physicists support the calibration of medical instrumentation and the analysis and interpretation of medical data for physicians," said Krishen. "This appointment provides me an opportunity to serve the state of Texas in an area of importance to the quality of our lives. It also uses the experience, training, and knowledge I have gained by working at JSC."

Dr. Krishen has advanced original concepts concerning remote sensing, health systems, science payloads, sensor systems, communications and tracking systems, mission support technologies, and automation and robotics technologies through his involvement on agency, interagency, and international panels and committees. These include the



JSC Photo S99-06209 by Robert Markowitz  
**Dr. Kumar Krishen**

Texas Advanced Technology Panel, Office of Space Flight Senior Technology Team, NASA Minority Universities Technical Steering Committee, Agency Communications Working Group, U.S. National Committee Commission F

NASA Council on Science and Technology, Space Technology Interdependency Group, Sensor Working Group, Microwave Working Group, Photonics Working Group, JSC Wavelet Technology Working Group, High Temperature Superconductivity Working Group, Operations Technology Working Group, In-Space Experiments Evaluation Committee, State of

of URSI, IEEE United States Activities Board, Accreditation Board for Engineering and Technology, JSC Small Business Innovation and Research Technical Steering Committee, and the JSC Technology Coordinating Committee.

Dr. Krishen is the postdoctoral advisor to the NASA NRC Program and doctoral advisor to the NASA Graduate Program and NASA Summer Faculty Program. Dr. Krishen has taught graduate-level courses at Kansas State University, the University of Houston, and Rice University where he served as an adjunct professor from 1986 to 1996.

Dr. Krishen is a fellow of the Society for Design and Process Science and is the recipient of many honors including medals, awards, and commendations from universities, industry, and government organizations. He is listed in *2000 Outstanding People of the 20th Century* (England), *Who's Who in the World*, *Men of Achievement* (United Kingdom), and several similar publications. Dr. Krishen serves on the editorial boards of the *Journal of Integrated Design and Process Science* and the *International Journal of Advanced Manufacturing Systems*. ■

**PEOPLE** *on the* **MOVE****Key Management Assignments**

*Sheila Cowan* was selected as chief, Electrical Branch, Facility Engineering Division, Center Operations Directorate.

*Tony Ceccacci* was selected as chief, Guidance and Propulsion Systems Branch, Systems Division, Mission Operations Directorate.

*Wendell Mendell* was selected as deputy chief, Earth Science and Solar System Exploration Division, Space and Life Sciences Directorate.

*Bill Panter* was named manager, Avionics Office, International Space Station Program Office.

*Larry McWhorter* was named deputy manager, Avionics Office, International Space Station Program Office.

*Ralph Roe* was named manager, Space Shuttle Vehicle Engineering Office, Space Shuttle Program Office.

*Greg Edeen* was named deputy branch chief, Mechanical Design and Analysis Branch, Structures and Mechanics Division, Engineering Directorate.

*Lesia Roe* was named deputy manager, Space Station Payloads Office, International Space Station Program Office.

**Promotions**

*Steve Janney* was selected as a contracting officer in the Projects Acquisition Office, Business Management Directorate.

*Christine Mack* was selected as a contracting officer in the Acquisition Policy and Systems Office, Business Management Directorate.

*Ginger Gibson* was selected as a support services specialist in the Center Operations Directorate.

*Julie Barnes* was selected as an employee relations specialist in the Human Resources Services Branch, Human Resources Office.

*Bobbie Wood* was selected as an employee relations specialist in the Human Resources Services Branch, Human Resources Office.

*Candy Hunt* was selected as a personnel programs analyst in the Human Resources Office.

**Reassignments Between Directorates**

*John Compton* moves from the International Space Station Program Office to the Mission Operations Directorate.

*Richard Jackson* moves from the Space Shuttle Program Office to the Mission Operations Directorate.

*Ernie Smith* moves from the International Space Station Program Office to the Mission Operations Directorate.

*Ron Spencer* moves from the International Space Station Program Office to the Mission Operations Directorate.

*Kathy Lueders* moves from the Propulsion Test Office, White Sands Test Facility, to the International Space Station Program Office.

*Sharyl Butler* moves from the Engineering Directorate to the Safety, Reliability, and Quality Assurance Office.

*Julie Mattheaus* moves from the Space Shuttle Program Office to the Safety, Reliability, and Quality Assurance Office.

**Reassignments Between Centers**

*Yolande Harden* moves to NASA Headquarters.

**Retirements**

*Jack Barneburg* of the Engineering Directorate.

**Resignations**

*Theresa Lucero-Lowe* of the Mission Operations Directorate.

*Nadine Naisbitt* of the Mission Operations Directorate.

*Rob Moreland* of the Engineering Directorate.

*Sally Stokes* of the Information Systems Directorate.

*Christine Cwierty* of the International Space Station Program Office.

*Yvette Sanders* of the International Space Station Program Office.

*Patricia Lacey* of the International Space Station Program Office.

**DATES & DATA****August 13**

**Astronomers meet:** The JSC Astronomical Society will meet at 7:30 p.m. August 13 at the Center for Advanced Space Studies, 3600 Bay Area Blvd. For more information, call Chuck Shaw at x35416.

**August 17**

**Drive Your Dream:** The Bay Area Turning Point Advisory Council is offering a chance for you to "Drive Your Dream." A raffle will be held on August 17 for a 2000 Lexus ES300, a \$4,000 travel voucher, and a Sony 53" TV. Proceeds will benefit the Bay Area Turning Point, a local nonprofit agency that provides support to survivors of domestic abuse. Only 1,000 tickets will be sold for \$100 each. For details or to purchase a ticket, call Jennifer at x48084.

**August 18**

**Astronomy seminar:** The JSC Astronomy Seminar Club will meet at noon August 18 and 25 and September 1 in Bldg. 31, Rm. 248A. For details, call Al Jackson at x35037.

**Communicators meet:** The Clear Lake Communicators, a Toastmasters club, will meet at 11:30 a.m. August 18 and 25 and September 1 at Freeman Library, 16602 Diana Lane. For more information, call Allen Prescott at (281) 282-3281 or Mark Caronna at (281) 282-4306.

**Scuba club meets:** The Lunarfans will meet at 7:30 p.m. August 18. For details, call Mike Manering at x32618.

**Spaceland Toastmasters meet:** The Spaceland Toastmasters will meet at 7 a.m. August 18 and 25 and September 1 at the House of Prayer Lutheran Church. For more information, call George Salazar at x30162.

**Spaceteam Toastmasters meet:** The Spaceteam Toastmasters will meet at 11:30 a.m. August 18 and 25 and September 1 at United Space Alliance, 600 Gemini. For more information, call Patricia Blackwell at (281) 280-6863.

**August 19**

**Directors meet:** The Space Family Education board of directors will meet at 11:30 a.m. August 19 in Bldg. 45, Rm. 712D. For more information on this open meeting, contact Gretchen Thomas at x37664.

**NSS Meets:** The Clear Lake area chapter of the National Space Society will meet at 6:30 p.m. August 19 at the Freeman Memorial Branch Library, 16602 Diana Lane. For more information call Murray Clark at (281) 367-2227.

**August 22**

**Westside NSS meets:** The Westside group of the Clear Lake area chapter of the National Space Society will meet at 2 p.m. August 22 at Silicon Graphics, 11490 Westheimer, Suite 100. For details, call Murray Clark at (281) 367-2227.

**NASA BRIEFS****NASA SCIENTISTS USE SATELLITES TO TRACK A DISEASE**

Using weather satellites to spot the early signs of an El Niño, scientists may be able to help save East Africans and their livestock from Rift Valley Fever, a mosquito-borne disease that can be fatal to humans and animals.

NASA and Department of Defense researchers have determined that rising sea-surface temperatures in the western equatorial Indian Ocean, combined with an El Niño in the Pacific, can lead to abnormally heavy rains in East Africa. These rains create a favorable habitat for the mosquitoes that carry the Rift Valley Fever virus, spreading it to humans and animals.

Researchers at Goddard Space Flight Center and the Department of Defense-Global Disease Infections System, Walter Reed Army Institute of Research, Washington, DC, studied nearly five decades of data to produce these findings. According to their report in the July 16 issue of the journal *Science*, satellite data can help predict Rift Valley Fever outbreaks up to six months in advance.

**NEW CENTER AIMS TO IMPROVE FOOD IN SPACE**

NASA has selected Iowa State University, Ames, IA, to head up research that could lead to better food for astronauts and safer, more nutritious packaged foods for everyone.

Iowa State will head the National Food Technology Commercial Space Center, working to improve food for long duration space missions and to enhance the packaging, preparation and storage of commercially produced food.

JSC will sponsor the center. The value of the five-year cooperative agreement is approximately \$2.8 million. Commercial partners will provide additional resources in a collaborative effort to develop the new technologies.

**NEW SCALE ASSESSES RISKS OF CELESTIAL OBJECTS**

Planetary scientists have developed a new means of conveying the risks associated with asteroids and comets that might collide with the Earth. A risk-assessment scale, similar to the Richter scale used for earthquakes, will assign values to celestial objects moving near Earth. The scale will run from zero to 10. An object with a value of zero or one will have virtually no chance of causing damage on Earth; a 10 means a certain global climactic catastrophe.

The scale was created by Dr. Richard P. Binzel, professor of Earth, Atmospheric and Planetary Sciences at the Massachusetts Institute of Technology. It is named the Torino Impact Hazard Scale after the Italian city in which the scale was initially adopted by the International Astronomical Union in June 1999.

**SPACE CENTER Roundup**

The Roundup is an official publication of the National Aeronautics and Space Administration, Johnson Space Center, Houston, Texas, and is published by the Public Affairs Office for all space center employees. The Roundup office is in Bldg. 2, Rm. 181. The mail code is AP3. The main telephone number is x38648, and the fax is x32000. Electronic mail messages may be directed to:

Editor .....William Jeffs .....william.p.jeffs@jsc.nasa.gov  
Assistant Editor .....Nicole Cloutier .....ncloutie@ems.jsc.nasa.gov

**PRSRST STD  
U.S. POSTAGE  
PAID**

WEBSTER, TX  
Permit No. G27