



If you ever need emergency medical help, a JSC co-worker may be the one who provides the assistance. Story on Page 3.



Amateur archaeologists from JSC have found Indian artifacts as much as 10,000 years old in the Clear Lake area. Story on Page 4.

# Space News Roundup

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## Key assignments

### Aaron new assistant to director

John Aaron, acting assistant administrator for the Office of Exploration at NASA headquarters, will be returning to JSC in December as a special assistant to Director Aaron Cohen.

NASA Administrator James C. Fletcher announced Monday that Dr. Franklin D. Martin has been named assistant administrator for the Office of Exploration, effective Dec. 1.

Aaron said he plans to remain in Washington through the end of the year to facilitate the transition. His return is one of several key personnel moves announced this past week.

In Engineering, Richard E. Mayo has been assigned as assistant to the director for space station, and William A. Chandler becomes assistant to the director for the National Space Transportation System (NSTS) and Orbiter.

In Administration, Wayne L. Draper has been officially installed as JSC's comptroller, and Clyde L. Lowrimore as deputy comptroller. Draper has been acting comptroller since September.

Martin, who has been deputy associate administrator for space station

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NASA Photo

Commander Hoot Gibson leads the way for the STS-27 crew during Monday's Terminal Countdown Demonstration Test at Kennedy Space Center. Following him are Pilot Guy Gardner and Mission Specialists Bill Sheperd, Mike Mullane, and Jerry Ross. Also in the background is Flight Crew Operations Director Don Puddy.

## STS-27 launch target moves into December

Following a two-day flight readiness review (FRR) at Kennedy Space Center, a target launch date of Dec. 1 has been set for STS-27.

"I've just finished hearing comprehensive assessments of flight readiness from both government and contractor representatives of all Shuttle elements and systems," Associate Administrator for Space Flight Richard Truly

said late Wednesday. "I am pleased to report that the Space Shuttle *Atlantis* is as ready to fly as *Discovery* was at this same point before the STS-26 mission last September."

During the FRR, a meeting held prior to each Shuttle flight, the condition of all Shuttle elements plus various support areas required for launch, mission, landing and the ferry flight back to Kennedy are reviewed. *Atlantis'* FRR began Tuesday.

Meanwhile, at Launch Pad 39B, technicians replaced a faulty fuel isolation valve on *Atlantis'* auxiliary

power unit (APU) number 2 Monday. The valve problem was detected during a seven-minute hot-fire of the three Orbiter APUs last week. The APUs provide power to the hydraulic systems that operate the Orbiter's aerodynamic surfaces, such as the rudder and elevons.



**STS-27**

Also, the Terminal Countdown Demonstration Test (TCDT), or "dry count," was completed Mon-

day. The TCDT, a dress-rehearsal of launch day and the final major test before the start of STS-27's terminal countdown, began at 6:40 a.m. CST Sunday with the countdown picking up at T-minus 24 hours. The test concluded at the T-minus 20 seconds mark at 10:16 a.m. CST Monday.

The dry count was the first opportunity the flight crew for STS-27—Commander Hoot Gibson, Pilot Guy Gardner and Mission Specialists Mike Mullane, Jerry Ross and Bill Sheperd—has had to board *Atlantis* on the launch pad.



Huntoon

## Huntoon presented Space Act Award

By Barbara Schwartz

Director of Space and Life Sciences Carolyn Leach Huntoon has earned the Space Act Award and a check for \$15,000 in recognition for her exceptional contributions to space-related biomedical research and development.

JSC Director Aaron Cohen presented the award Nov. 10. Dr. Arnauld Nicogossian, Director of Life Sciences at NASA Headquarters, made the nomination.

Nicogossian cited Huntoon for outstanding scientific and technical research in the areas of metabolism, medical endocrinology and biochemistry during the past 20 years. "Her

work has been instrumental in establishing U.S. leadership in space science," he said. "Her efforts have also led to the development of new technologies and procedures which are utilized widely in the clinical field of medicine."

Huntoon began her career with NASA by conducting scientific research on the endocrine control mechanisms that are involved in physiological changes occurring in astronauts during exposure to the weightless environment of space. She utilized sophisticated techniques, biological assays, and computer technology, often developed within her own laboratory, throughout

Gemini, Apollo, Skylab, and into the Space Shuttle program, to greatly expand the scientific knowledge of space medicine.

Nicogossian says that primarily through her efforts there now exists scientific literature essential to an understanding of the complex endocrine control changes that occur when humans are exposed to zero gravity. He credits her studies with providing a basis for flight surgeons to make critical decisions regarding astronauts' health during space flight. The research has contributed to understanding the metabolic processes associated with spaceflight and return to Earth. It also ensures health safety

during extravehicular activity and enhances toxicological monitoring.

Huntoon has been instrumental in establishing and operating scientific laboratories at JSC in biochemistry, toxicology, microbiology and cell biology. These laboratories are recognized for their excellence and contributions to biochemical analyses of metabolic samples from space flight and ground-based simulated space flight. She assisted in developing computer-based physiological mathematical models of spaceflight-induced changes that are considered major breakthroughs in investigative physiology.

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## TDRS-3 'flawless' so far, may support *Atlantis* flight

The Tracking and Data Relay Satellite (TDRS) launched by *Discovery* on Sept. 29 has performed flawlessly on all tests to date and may support the next Space Shuttle mission, officials at Goddard Space Flight Center reported this week.

In JSC's Electronic Systems Test Laboratory, link performance tests are under way using a ship's set of communications equipment to transmit data to the new TDRS. After TDRS relays the data back through the White Sands Ground Terminal and Mission Control Center, the data is evaluated.

"The satellite is performing very well," said Bobby Vermillion, supervisor of JSC's Communications Evaluations Section. "We're approximately 75 percent through the tests and we've had no major problems occur."

The Operations and Network Interface Office also is participating in operational tests of switch-overs from one TDRS to the other, said James Brandenburg, manager. All tests results have been good so far, and three more exercises are

scheduled before the launch of STS-27.

The satellite tests are expected to be complete Saturday, Vermillion said. For STS-27, the new TDRS satellite will provide overlapping coverage with the first TDRS because of its current location for testing. The day after STS-27 is complete, it will be moved to its permanent orbit at 171 degrees west.

Since its launch by the STS-26 crew, the 5,000-pound communications satellite, known before launch as TDRS-C and now as TDRS-3, has been moved to 150 degrees west longitude over the equator. The location is considered the best for communications with the White Sands Ground Terminal in New Mexico, for spacecraft antenna testing, for pre-mission tests and mission support for STS-27.

Following deployment of the satellite's antennas and solar arrays, its thrusters were first fired on Oct. 2 to start TDRS drifting toward the test location. The satellite's movement was stopped by additional firings on

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JSC Photo by Sheri Dunnette

Rose Wilson, left, and Betty Sue Feddersen, the incoming and outgoing secretaries to the JSC Director, go over some transition plans on the ninth floor of Bldg. 1.

## Wilson becomes new secretary to JSC director

Rose Wilson has been selected as the new secretary to JSC Director Aaron Cohen.

Betty Sue Feddersen, who has served as secretary to the JSC Center Director for the past 13 years, is assuming a new position as an administrative assistant in the Office of the Director.

"Betty Sue will be missed in the Director's immediate office, but she will still be part of the JSC family," Cohen said.

Wilson has been working as the senior secretary to William Huffstetter, manager of the New Initiatives Office, for the past nine months. She comes to this new position with a total of 15 years government service.

"We are fortunate to have both these capable employees supporting our senior managers," Cohen said.





JSC Photos by Jack Jacob



## ON-CALL: JSC volunteers park ambulances at work for quick response to area emergencies

By Beverly Green

Many of the jobs filled by people at JSC demand split-second decision making that can mean life or death for their co-workers in space. But there are others, too, whose volunteer jobs can make the same difference right here in Clear Lake.

If you or one of your family members or friends are involved in an accident or have a medical problem, it could be the hands of a co-worker that help save your life.

These co-workers are the trained volunteers who regularly drive ambulances to work at JSC so they can be on-call for the Clear Lake Emergency Medical Corps (CLEMC).

"Send me a Clemcee unit," a CLEMC volunteer may hear a voice request over the scanner radio after a medical emergency has occurred.

"There have been incidents when a JSC co-worker has been injured and we've come to help," said Al Mercier, CLEMC paramedic and a senior software specialist for Unisys. "Sometimes our co-workers are surprised when they see our faces."

"We see a lot of the side of life that we may not be familiar with working on site," said Karen Godek, who serves as a unit leader for one of the three CLEMC ambulances. Unit leaders are responsible for

managing weekly meetings, verifying volunteer scheduling, coordinating additional training for volunteers and ensuring the availability of supplies.

As CLEMC members, aerospace workers juggle their professional and volunteer commitments. Typically, a volunteer may be on call twice a week from 6 p.m. to 6 a.m., although some schedules may require several volunteers to be on call during daytime working hours. "Supervisors are very supportive and if an emergency arises during working hours we've been able to make up the time or take annual leave," Mercier said.

"Each of CLEMC's three units operates as it's own entity and each ambulance is maintained for state specifications," said Godek, a JSC aerospace engineer who verifies on-board flight software and serves as a medical technician for CLEMC.

Medical techniques such as the Heimlich maneuver, transporting an expectant mother to a hospital, or bandaging a minor injury are a few of the responsibilities that are routine for CLEMC volunteers.

"Unfortunately, folks run boats into something from time to time and need medical assistance for minor cuts or bruises but we are also prepared to provide to community members suffering from other

medical emergencies," said Mercier.

"Training in this area is ongoing in order to ensure that volunteers remain abreast of changes in the field. Changes are constant in the medical field in order to improve the quality of treatments year to year," said Godek, who has been a CLEMC member for nine years.

"Our paramedics are actually the volunteers with a higher degree of medical training and they are able to administer drugs and are trained to interpret the cardiac monitor of a patient and can do basic interpretation of what problems have occurred," added Godek. Protocol prescriptions are written by Dr. David Hearn who serves as medical adviser for CLEMC.

"During the early '70s there was only one ambulance service in the 878-square-mile area which includes everything from Galveston to Clear Lake," said Mercier, who is also CLEMC historian. "Population on this side of the lake was growing. Therefore, we decided to adopt a blueprint from the volunteer fire department to provide greater medical service for this community," he said.

"Approximately 12 years ago this type of medical assistance was a relatively new concept in this state. My brother-in-law, (one of the first emergency medical technicians in Texas), was teaching these courses and

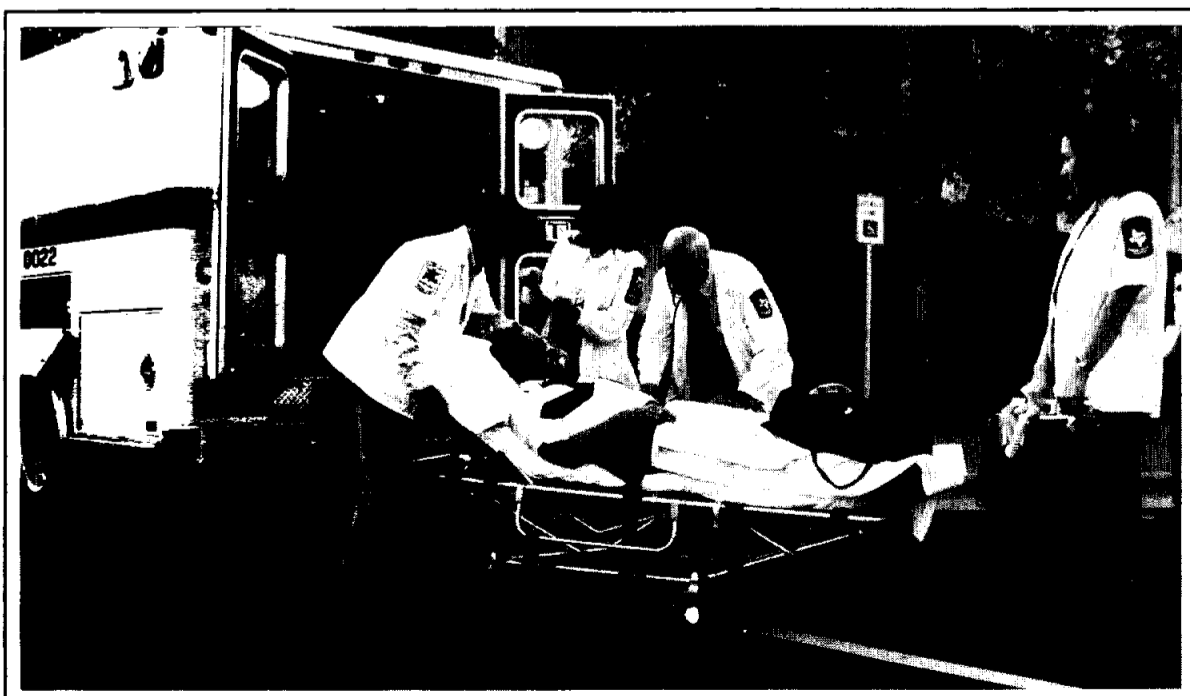
I decided to take one of the courses," said Godek. "Since then, I've received state certifications as an Emergency Medical Technician Special Skills," she said.

"We have a good operation and good people working," added Mercier.

"Some volunteers continue taking courses and learn different techniques to help in cases of emergency," said Anival Ramirez, another senior software engineer for Unisys. "More advanced training helps volunteers to assess the immediate needs of heart attack victims or unconscious patients," said Ramirez, who teams with his wife on occasion during an ambulance shift.

"Emergency medical technicians are oriented during a 120-hour course including classroom, ambulance and hospital involvement," explained Ramirez. "During this level of training time is spent in the emergency room of area hospitals," he said. Technicians are trained for basic assessments of injuries and learn to treat minor injuries such as bandaging or splinting a patient's injury," he said.

Ten other JSC community workers are also members of CLEMC and serve as emergency care attendants, ambulance drivers, emergency medical technicians and paramedics.



Top left: Emergency medical volunteers Rick Shimon, Richard Bassett and Chris Clagett, left to right, demonstrate how they lift patients into an ambulance. Top right: JSC volunteers for the Clear Lake Emergency Medical Corps include, left to right, Chris Clagett, Andrew Yee, Karen Godek, Richard Bassett, Faith Vilas, Pat McLaughlan, Cinda Chullen and Rick Shimon. Right: Emergency Medical Technicians Richard Bassett and Cinda Chullen operate the ambulance radio. Above: Clagett, Godek, McLaughlan and Chullen show how patients can be stabilized for transportation to a hospital.

# Inadvertent connection gets Magellan fire blame

Investigators report that the inadvertent connection of two pins on connectors that weren't supposed to be able to connect caused the small electrical fire that damaged the Magellan spacecraft last month.

The fact that the connectors were in a hard-to-reach area and were not fused or buffered contributed to the mishap, according to the Magellan Electrical Mishap Investigation Board, which released its findings Nov. 9.

The fire occurred the night of Oct. 17 in the Spacecraft Assembly and Encapsulation Facility (SAEF-2) clean room at Kennedy Space Center. The Venus radar mapper was being

prepared for its scheduled launch aboard the Space Shuttle *Atlantis* in April. The mishap is not expected to significantly affect the processing schedule.

The primary cause of the mishap was the inadvertent mating of at least two pins of connector "P2" to jack "J3" on a test battery. The connection occurred as a technician was standing inside the forward equipment module (FEM) of the spacecraft, attempting to "blindly" hook up connector "P2" to jack "J2."

The mismatch of these connectors created a short circuit within the connector that resulted in electrical

arcs which created additional short circuits that, by using the energy stored in the battery, produced damage to the battery, connector and thermal blanket.

Investigators said that in attempting to make the proper connection, the technician apparently made a "scooped" connection of the bottom pins opposite the main "key" on top that prevents full connection. Post-mishap testing showed that it was possible to have connected as many as 10 of the 37 pins on the keyed connectors.

The board recommended an alert be issued that such inadvertent connections are possible with such

connectors, and that future designs should consider the use of "scoop-proof" connectors.

It also recommended that the procedure for mating the Magellan test battery should be revised to permit easier access and greater visibility of the battery's connectors and mating surfaces. In addition, the board said wire leading to test connectors should be buffered or fused in future designs.

The board commended the actions of the crew working on the spacecraft following the mishap, but observed that Kennedy's fire department was not called until about 7 minutes after the mishap began.



When a technician accidentally plugged a connector into jack "J3" at the bottom of this array instead of "J2" at the top, the result was a small fire that caused minor damage to the Magellan spacecraft.



JSC Photo

Jerry Elliott, left, and Dale Haines inspect some of the Indian artifacts they have found in the Clear Lake area. Some of the pieces are as much as 10,000 years old.

## Indian artifacts

### Relics of past found near outpost of future

By James Hartsfield

JSC is an outpost on the frontiers of the future, but surrounding it, and maybe even inside it, are the relics of the past.

JSC employees Dale Haines and Jerry Elliott went looking for such signs of the past recently and came back with Indian artifacts dating back as far as 10,000 years.

Haines, an engineer in the Space Station Projects Office, has been an amateur archaeologist and Indian lore aficionado for years. Elliott, an Osage-Cherokee Indian, also works in the space station office. And when Haines started taking Elliott on quick visits to some known local sites, the combination was a winner.

Haines and Elliott hit big with several extremely rare finds, the most exciting of which was a flint dart point that dates back to between 6,000 and 8,000 B.C. The San Patrice dart point is from the Paleo-Indian historic stage, the period which holds the most ancient artifacts ever found in Texas.

The two also found a variety of

arrowheads, bone tools, flint flakes and the largest intact piece of pottery Haines has found in his years of looking—the bottom of a clay pot. The artifacts are identified and dated using "A Field Guide to Stone Artifacts of Texas," a book that details the type of artifacts found in Texas and dates them.

"I've been inspired by Indian lore all my life. It's fascinating to me to find something they made and used, especially something 10,000 years old," Haines said. "I found my first artifact when I was 12 years old."

Apparently, Indian civilizations once thrived in the area around JSC. "Normally, you can find artifacts in areas where fresh water flows into salt water, where Indians found clams or oysters. Indians live had to have a source of fresh water near because they couldn't carry water with them very far," Haines explained. "I don't know of any finds on the grounds of JSC, though. But artifacts have been found on land near the Lunar and Planetary Institute."

One formation that may signal the presence of artifacts are piles of oyster and clam shells. Ancient Clear Lake residents would harvest and eat the shellfish, often throw the shells into the same piles for years. Many of the finds Haines and Elliott have made were in the Clear Lake and Galveston Bay area, Haines added.

Having the right partner can help. The success Haines and Elliott have had when they've teamed up has been almost uncanny.

"Every time we've gone out together, we've found something remarkable," Elliott said. "I have a real sense of where these things are, apparently."

Other books that Haines uses to identify artifacts includes "The Indians of Texas" and a copy of Cabeza de Vaca's report to the king of Spain, written in 1542. De Vaca was the first European to explore the Texas coast. Haines also cooperates with the Texas Archaeological Society, sharing information about his finds.

## Employees may join, alter Thrift Savings allotments until Jan. 31

Open season has begun for the Thrift Savings Plan at JSC, and eligible employees will have a chance to join or change their contributions until Jan. 31.

Thrift Savings Plan booklets are being distributed to all eligible employees.

During open season, employees may join the plan, terminate current contributions, change the amount of contributions or waive enrollment.

The effective dates for elections or changes will be Jan. 1, Jan. 15, Jan. 29, and Feb. 12, depending on when each election form is received by the Employee Services Section in Bldg.

45, mail code AX76. For more information, call the section at x38409.

The Thrift Savings Plan is a retirement savings and investment plan designed to provide federal employees with the same savings and tax benefits provided by many private corporations.

Employees may contribute a portion of their salaries, up to 10 percent, and NASA will match that contribution with up to 5 percent of an employee's salary. NASA makes an agency automatic contribution of 1 percent whether or not an employee contributes. Employee contributions are tax deferred until the money is withdrawn.

## Satellite's performance excels

(Continued from Page 1)

Oct. 11 and 12 when it arrived on station.

Spacecraft communication systems were activated between Oct. 7 and 18. All systems performed flawlessly and testing is ahead of schedule, according to Dr. Dale W. Harris, TDRS project manager at Goddard. Although tests and calibrations will not be complete, NASA hopes to use TDRS-3, along with TDRS-1 launched in April 1983, for improved communications during STS-27.

TDRS-3 is the third to be launched. The first has been in operation since 1983 and is located at 41 degrees west longitude. The second was lost with the *Challenger*. The fourth, to complete NASA's constellation of three on-orbit satellites, is scheduled for launch aboard *Discovery* in February.

TDRS, built by TRW Space & Technology Group and owned and

operated by Contel Federal Systems, provides comprehensive telecommunications services by relaying voice, television, digital and analog signals between low-Earth-orbiting spacecraft and the ground.

Orbiting at 22,250 miles above the Earth, the tracking and data relay satellites look down on NASA's fleet of low-Earth-orbiting spacecraft and shuttles, tracking them worldwide and relaying two-way communication between them and mission control centers through a single ground station at White Sands.

With two operational TDRS, low-orbit spacecraft are in communication with Earth for about 85 percent of each orbit. Before the TDRS system, spacecraft could communicate with Earth only when they were in sight above one of several ground tracking stations, typically less than one-sixth of an orbit.

## Award is given to Huntoon

(Continued from Page 1)

Spinoffs from Huntoon's biomedical research and instrumentation have been adopted and used throughout the scientific community. Her ion specific electrode and mass spectrometer technology have been used on Navy submarines for the past 10 years to assess both the crew members' health and the cleanliness of the work environment in confined areas.

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## Aaron returns to JSC position; Mayo, Chandler change jobs

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since 1986, will now be responsible for coordinating agency planning activities that expand exploration and the human presence beyond Earth, particularly to the Moon and Mars.

Before moving to Headquarters, Aaron was deputy manager and acting manager of the Space Station Program Office at JSC. He was assistant chief and then chief of the

spacecraft software division at JSC from 1979 to 1984.

Mayo will become the engineering directorate's focal point for space station activities and responsible for the overall planning, coordination, integration and management of engineering support to the program. For the past year, he has been on temporary assignment to the Space Station Program Office at Headquarters as acting director

of the European Programs Division.

Chandler will be responsible for coordinating, integrating and managing engineering's support to the Space Shuttle program until he retires from NASA on Dec. 30. He has been system manager for the Orbiter Crew Escape System for the past two years.

Draper became acting JSC comptroller when Larry G. Damewood retired in September.



JSC Photo by Benny Benavides

CAMERA CHECK — Members of the STS-27 crew inspect the Linhof Earth observation camera they will use during their upcoming flight. The camera, frequently used on Shuttle flights to obtain sharper images of the world below, produces a 4-by-5-inch negative. From left are Guy Gardner, Mike Mullane, Jerry Ross, Bill Shepherd and Hoot Gibson.