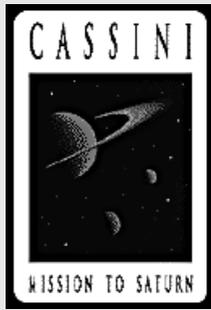


Cassini



**Repair work completed:** Damage to insulation on the Huygens probe was repaired in the Payload Hazardous Servicing Facility. The assembled spacecraft was returned to Launch Complex 40 on Cape Canaveral Air Station for mating atop the Titan IV/Centaur launch vehicle. The new launch date is Oct. 13, with the launch window extending from 4:55 to 7:15 a.m. EDT.

STS-87



**Columbia (24th flight OV-102)**  
88th Shuttle flight  
Pad 39B  
Launch date: Nov. 19, 2:18 p.m.  
USMP-4; Spartan 201-04  
The U.S. Microgravity Payload-4 (USMP-4) (above) undergoes preflight processing in the Space Station Processing Facility. The tubular structure at left is the Advanced Automated Directional Solidification Furnace (AADS), used to study the solidification of semiconductor materials in microgravity. The drum element at right is the Isothermal Dendritic Growth Experiment (IDGE), for the study of molten metals as they solidify.

STS-89

**Endeavour (12th flight OV-105)**  
89th Shuttle flight  
Pad 39A  
8th Mir Docking  
Launch: Jan. 15, 1998, 1:03 a.m.  
Crew: Wilcutt; Edwards; Dunbar; Anderson; Reilly; Wolf (returning from Mir). OV-105 will be the second orbiter to dock with Mir.

# Spaceport News

America's gateway to the universe. Leading the world in preparing and launching missions to Earth and beyond.

John F. Kennedy Space Center

## KSC inaugurates safety philosophy learned from world's safest company



Senior managers, including Center Director Roy Bridges Jr., were the first NASA/KSC employees to participate in DuPont safety training, presented Sept. 17 by Harold Dey, a former plant manager for DuPont.

Many of its products are household names, such as Corian® countertops and surfaces. Others are common to the space program, such as Mylar® and Kevlar® synthetic materials.

But did you know that the manufacturer of these and hundreds of other products, Delaware-based DuPont, is one of the world's safest companies, if not the safest?

Founded in 1802 near Wilmington by French immigrant Eluthere Irenee du Pont de Nemours, the first DuPont product was gunpowder, which may explain the company's commitment to a safe working environment.

DuPont has grown since then to more than 180 sites worldwide offering an array of products that include chemicals, fibers, petroleum and polymers.

(See Safety, Page 2)

## Global Surveyor arrives at Mars

Mars Global Surveyor slipped into orbit around the Red Planet on Sept. 11, circling above Mars Pathfinder on the surface. Launched Nov. 7, 1996, Global Surveyor is now going through an aerobraking process that will lower it to its final low-altitude orbit. In March 1998, the spacecraft will begin a mapping mission of the surface that will yield more data than all previous Mars missions combined.



## CFC fund drive starts Oct. 1

This year's Combined Federal Campaign (CFC) for NASA employees officially begins with a kickoff rally in the KSC Training Auditorium Oct. 1 at 9 a.m. Center Director Roy Bridges Jr., Marlins/Manatees official Ken Lehner and United Way Director Rob Rains will be on hand to welcome attendees and present awards to the CFC slogan/drawing winners.

This year's motto is *Com-*

*bined for Caring.* The goal is \$200,000, and employees should receive their pledge cards in early October.

This year's CFC volunteers will have an opportunity to visit local United Way agencies, such as the Central Brevard Sharing Center for a firsthand look at how CFC directly benefits people in the local community. The campaign extends through the end of October.

## Calling all space visionaries

Planning is under way for the annual special issue of *Spaceport News*. This year's theme is the future of space exploration. What missions will the United States pursue in the next century, and what vehicles will carry us there? Should we return to the Moon, or head straight for Mars? What is your vision of the future in space? Share it

with your fellow workers in the Nov. 21 issue. Ideas — along with your name and a daytime phone number — can be sent to Paula Shawa, e-mail address Paula.Shawa-1@ksc.nasa.gov or via regular mail to:  
Paula Shawa  
Mail Code: SHER-11  
Kennedy Space Center,  
Fla. 32899

# Safety. .

(Continued from Page 1)

As a whole, DuPont is the safest company in the world. DuPont began keeping injury statistics in 1912, 60 years before the U.S. federal requirement to keep such records. The company's safety performance has improved 250 times since then.

DuPont's safety philosophy is so comprehensive and so well instilled in its employees that its *off-the-job* injury rate is lower than the industry average for on-the-job injuries. Comparisons between on-the-job injury rates are even more startling. Whereas the all-industry average is in the range of about three to five injuries per 200,000 exposure hours, at DuPont the rate for the same time frame is less than 0.05 injuries per 200,000 exposure hours.

"A plant manager at DuPont can quote you his employees' lost time rate, and that record remains with him, not the plant," observed Safety Assurance Director Joel Reynolds. "We'd like to change the culture here so everyone shares the same sense of responsibility for employee safety."

KSC's current Lost Time Frequency rate of 0.43 injuries per 200,000 exposure hours is well above the industry standard, but NASA wants it to be even better, Reynolds said.

The cultural transformation begins from the top down. On Sept. 17, senior NASA and contractor managers from KSC participated in a one-day seminar held by DuPont, taking the first step toward a new outlook on safety. Space Flight Operations Contractor United Space Alliance also has begun DuPont safety training of its top managers. Booster refurbishment contractor USBI, which reports to Marshall Space Flight Center, is the first KSC organization to fully implement the DuPont

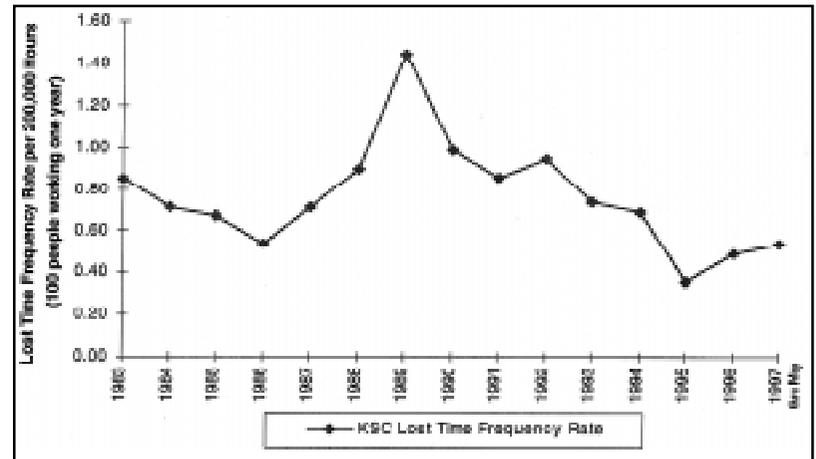
program. DuPont's safety philosophy is based on 10 simple points:

1. All injuries are preventable.
2. Management, from the top of the corporation to first-line supervisors, is responsible for preventing injuries.
3. All operating exposures that could result in injuries or occupational illnesses can be controlled. All sources of danger should be eliminated when possible. If not, an effective safeguard can be provided.
4. Safety is a condition of employment. Each employee must believe that he or she has a responsibility to work safely.
5. Employees must be trained to work safely. Effective training programs are needed to teach, motivate and sustain safety knowledge.
6. Management must audit performance in the workplace to assess safety program success. Inspections of both facilities and the programs are essential to make sure a safety culture is in place, but also to detect and remedy any problems.
7. All deficiencies must be corrected promptly. Prompt action overcomes the hazard but also reinforces the message that safety is a priority.
8. Off-the-job safety is part of the overall safety effort. Safety awareness shouldn't be turned on when an employee arrives at work and then off when he/she heads home. It's an internal process.
9. Safety is good business. Injuries cost money, and their cost undermines competitiveness.
10. People are the most critical element of the safety program. DuPont states that 96 percent of safety incidents are caused by people, not by faulty equipment or inadequate safety standards.

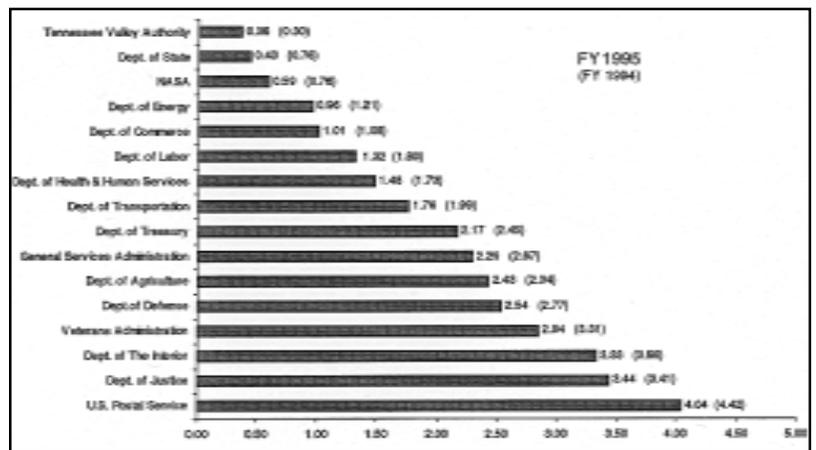
The biggest hurdle is the acceptance by every employee — from the top manager to the worker on the shop floor — that they are responsible for their safety as well as the safety of their co-workers.

The next step for the top managers who took the Sept. 17 training will be to develop a plan for getting this message across to all employees.

## KSC Lost Time Frequency rate (100 people working one year)



## Federal agency Lost Time Frequency rate comparison



## DuPont safety performance versus all industry (Lost work cases per 200,000 hours)



Note: Lost Time Frequency rate refers to the number of lost accidents per 100 employees in one year, or 200,000 hours. Lost Work Cases is a similar measure. Lost Time Severity rate, another key safety metric, refers to the number of lost days per 100 employees in one year/200,000 hours. At KSC, it costs about \$24,000 each time an injured worker goes off the job and receives workmen's compensation.

# Challenge for USA Florida is making a good record better

With a work force of about 5,000 people, United Space Alliance's Florida operations is about twice the size of the largest DuPont plant currently listed on its top 10 safety performers roster. It will take from September through the end of the year to train about 500 managers and line supervisors in the DuPont safety philosophy.

But work force size isn't what concerns USA Safety and Reliability Director Jimmy Rudolph the most. It's how to take a good safety record and make it better, not by a little, but by a lot.

For the past four years in a row, the Shuttle processing contractor has won the National Safety Council award for Central Florida companies with more than 250 employees, something that's never been done before. USA-Florida's safety record is better than the industry average, but for Rudolph and other USA managers, it's not enough.

"We've leveled out," Rudolph observed, achieving the same safety record the last three years in a row. Furthermore, DuPont's safety record is 10 times better, not just for last year, but for the last 10 years.

The USA-Florida operation includes the ground operations division, which is KSC, and the integrated logistics division, which is the NASA Shuttle Logistics Depot in Cape Canaveral. Senior managers from both areas have already had the DuPont safety training. They then pooled together 60 safety action items that could be classified as behavioral, processing or management in nature, and ranked these.

Among the top priorities were a greater commitment to safety from senior management; clear and objective communication of safety goals; improvement of the safety modification

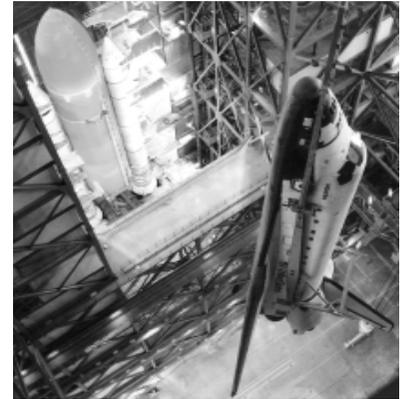
process; linking compensation to safety and more meaningful feedback to the work force regarding safety issues.

One of the most concrete changes that will come from the cultural transformation at USA-Florida is that safety will become part of the appraisal process, Rudolph said. "The new appraisal form will include safety as a line element."

Another key change will be making dollars available to make hardware and work processes safer. SFOC workers

rely on Standard Practice Instructions (SPIs), nine volumes of basic work procedures. Rudolph anticipates that the SPIs will change to reflect a greater emphasis on safety.

In January, USA-Florida line supervisors and managers will carry the DuPont safety message to the workers doing the hands-on work. "This is like round one," Rudolph said, adding that he expects to eventually see double-digit improvements in USA's safety record.



USA FLORIDA hopes that it can improve further an already good safety record. Even USA Chief Executive Officer Paul Smith has experience with DuPont's safety philosophy.

## USBI scores big with DuPont safety philosophy

USBI began the switch to the DuPont philosophy in the early 1990s, following an edict from its parent company, United Technologies Corp., in Hartford, Conn.

"UTC's accident rates compared to its peers in the the industry were high, with commensurate high workmen's compensation costs," said USBI Safety, Reliability and Quality Assurance Director Dick Beagley.

UTC kicked off a from-the-top-down implementation of DuPont's safety philosophy. One key move was linking management compensation and safety.

"We learned that lesson in a hurry," Beagley recalled. A worker at KSC lost part of a toe while performing a hydrolasing operation. "The manager and line supervisor were on their way to Hartford within 24 hours of the incident to explain to senior

management what had happened and why. That was one trip no one wanted to make again."

Operations personnel were trained first, beginning with top managers, who in turn trained managers and engineers reporting to them, and so on down the line — all 900 USBI workers have been trained. The need to include administrative personnel in the training became apparent when an administrative-related injury broke the record of two million man-hours without any lost time.

Safety personnel became consultants rather than enforcers, added Ed Horchar, Operational and Systems Safety manager.

Don't expect immediate results from the training, Beagley said. "Change doesn't happen overnight. You're talking about a major cultural shift. It took a couple of years before we really saw the

training start to bear fruit."

One of the most sensitive aspects was the unresponsive employee. "This cannot be a silent program," Beagley said. "You can't be indifferent to it." Accordingly, USBI took a "move or remove" stance toward those unwilling to change, a painful but necessary process.

Safety is now part of the metrics used to measure USBI's performance. A review board meets monthly to check safety and health practices throughout the company; and at an all-hands meeting held twice a year, safety is a key consideration. "It's important to emphasize that schedule does not take precedence over health and safety," Beagley said.

The results are impressive. In 1986-1989, USBI had a Lost Time Frequency rate of 1.2 cases per 100 employees. That dropped to 0.30 in 1997. The Lost Time Severity rate dropped from 23.7 to 1.2 days per 100 workers for the same period. At Hangar AF, considered to be the most hazardous work area, workers have gone five years without a lost time injury. The Parachute Refurbishment Facility, another USBI site on KSC, is on a 12-year roll of no lost time from injuries.



DUPONT safety training has resulted in five years without a lost time injury at Hangar AF, a hazardous work area where spent solid boosters begin the disassembly and refurbishment process.

## Two Voyager spacecraft still going strong after 20 years

Twenty years after their launch and long after their planetary reconnaissance flybys have been completed, both Voyager spacecraft are now gaining on another milestone — crossing that invisible boundary that separates our solar system from interstellar space.

Science instruments on both spacecraft are sensing signals that scientists believe are coming from the heliopause — the outermost edge of the Sun's magnetic field that the spacecraft must pass through before they reach interstellar space.

"During their first two decades, the Voyager spacecraft have had an unequalled journey of discovery. Today, even though Voyager 1 is now more than twice as far from the Sun as Neptune, their journey is only half over, and more unique opportunities for discovery await the spacecraft as they head toward interstellar space," said Dr. Edward Stone, the Voyager project scientist and director of NASA's Jet Propulsion Labora-

tory, Pasadena, Calif., which manages the Voyager Interstellar Mission for NASA.

Voyager 2 was launched first on Aug. 20, 1977, and Voyager 1 was launched a few weeks later on a faster trajectory on Sept. 5.

Initially, both spacecraft were only supposed to explore two planets — Jupiter and Saturn. But the incredible success of those two first encounters and the good health of the spacecraft prompted NASA to extend Voyager 2's mission to Uranus and Neptune.

Remote-control reprogramming has given the Voyagers greater capabilities than they possessed when they left Earth.

Both have enough power and attitude control propellant to operate until about 2020.

Voyager 1 will pass Pioneer 10 in January 1998 to become the most distant human-made object in our solar system.

Power for the spacecraft comes from Radioisotope Thermoelectric Generators (RTGs).



THIS replica of Sputnik I hangs in the National Air and Space Museum in Washington.

### 40th anniversary of Sputnik is Oct. 4

On Oct. 4, 1957, the Soviet Union successfully launched the first artificial satellite and the world changed forever.

A new term, the space age, was created and a year later, so was the National Aeronautics and Space Administration (NASA).

Sputnik was a diminutive 23 inches in diameter and weighed just 184 pounds. About four months later, on Jan. 31, the United States matched the Soviet achievement with the launch of Explorer I, the first U.S.

satellite. But the damage to national pride had already been done. Sputnik I was equipped with two radio transmitters, and the audible signal they sent down to Earth was a symbolic reminder that the Soviets had succeeded in getting into space first.

A symposium is planned in Washington, D.C., at the end of this month to study the impact of Sputnik. More information is available on the symposium Web site at <http://www.hq.nasa.gov/office/pao/History/sputconf.htm>

## Earth science spacecraft reaches critical milestone for 1998 launch

NASA's first Earth Observing System Spacecraft (EOS), EOS AM-1, has reached a critical milestone with delivery of the last of five scientific instruments.

Complete system tests will follow to validate the resilience of the spacecraft, after which EOS AM-1 will be shipped to Vandenberg Air Force Base,



Calif., for launch processing.

The EOS series of spacecraft are the cornerstone of NASA's Mission to Planet Earth

enterprise. First launch is targeted for June 1998. The polar-orbiting spacecraft will be able to observe the Earth with unprecedented accuracy and capability.

## USA seeks commercial market for Space Shuttle payloads

United Space Alliance (USA), the Shuttle Space Flight Operations Contractor (SFOC), has teamed up with Virginia-based SpaceTec Inc. to develop a commercial market for Shuttle payloads.

Under the agreement, SpaceTec will work with potential payload

customers, identify candidate payloads for flight, and provide comprehensive end-to-end products, services and expertise to customers. USA signed a similar agreement earlier this year with SPACEHAB Inc., also in Virginia.



VOYAGER 2 lifts off aboard a Titan/Centaur-7 20 years ago. It is currently 4.9 billion miles from Earth, having traveled 6.9 billion miles to date, and is departing the solar system at a speed of 35,000 miles per hour. Voyager 1 is traveling slightly faster at about 39,000 miles per hour.

# Life and death training

## *Grueling Mode 6 simulation prepares KSC rescue crews for the real thing*

**A** crash landed Space Shuttle is a sight that you will likely never see, but on Sept. 4 KSC managers imitated the improbable. Incorporating a cast of 75 participants, KSC's Emergency Egress Rescue Working Group developed an exercise that would push ground controllers, medical staff,

rescuers and convoy workers to their physical and mental limits. A pre-dawn simulated Shuttle landing with failed nose landing gear set the stage for a Mode 6 flight-aided egress scenario that workers called the most realistic test of their abilities to date, as these photos show.



### Employees of the month



HONORED in September: Seated are, from left, Sonny Talley, Safety and Mission Assurance; Deborah Bell, Shuttle Processing; and Kent Hawley, Chief Financial Officer's Office. Standing are, from left, Bernadette Brightman, Logistics Operations; Juan Calero, Payload Processing and Pauline Shook, Installation Operations. Not shown are Patti Phelps, Public Affairs; Mike Kromann, Engineering Development; Ernest Cody, Checkout and Launch Control System; Mary Tinsley, Administration Office; Gladys Escobar, Procurement Office; and Jody Fluhr, Space Station Hardware Integration Office.

**T**asked with retrieving seven

fully suited crew members from a crew module mockup — played by six astronaut candidates and one medical person — transferring them to a makeshift triage site on Runway 33 and then airlifting selected victims to Orlando Regional Medical Center (ORMC), the response team successfully completed the entire operation in less than one hour. Physicians from KSC's medical staff teamed up with doctors from the University of Florida and ORMC to provide the quick triage support. NASA and ORMC choppers were used in the airlifting operations. Test coordinators considered the exercise an excellent simulation and convened a debriefing later that day with all participating organizations to discuss lessons learned and to outline possible improvements.



## Drive to register bone marrow donors set for Nov. 5

Each year, more than 16,000 people in the United States are diagnosed with fatal blood diseases such as leukemia and aplastic anemia.

For many, the only hope lies in a bone marrow transplant, but finding a suitable donor is difficult. Only 30 percent of patients who need a transplant will have a compatible family donor. The other 70 percent of patients must find an unrelated volunteer marrow donor.

The National Marrow Donor Program (NMDP) is a congressionally authorized, nonprofit organization dedicated to making possible such matchups. In its first 10 years, the program has made possible nearly 4,500 marrow transplants around the world.

KSC showed its recognition of the need for donors last year when nearly 900 employees registered in a single day to become donor candidates, a record for the NMDP.

The KSC Biomedical Office is teaming with the American Red Cross and the Leukemia Society of America for this year's drive on Nov. 5.

Registering as a bone marrow donor candidate is a simple process requiring only a small sample of blood. It is not the same as donating blood, and takes less time. There is a critical shortage of potential donors from all minority populations. A patient is most likely to find a

match from someone with a similar racial or ethnic constitution, since tissue types are inherited much the same way as skin, eye and hair color. Although all ethnic minorities in the United States account for 27 percent of the population, only 13 percent of the NMDP volunteer donors are ethnic minorities.

For more information, contact Jennifer Murray or Dr. George Martin at the NASA Biomedical Office, 867-7568, or e-mail George.Martin-1@ksc.nasa.gov or Jennifer.Murray-1@ksc.nasa.gov, co-organizers of this year's drive.

Several information sessions about the NMDP will be held the following days:

**Oct. 7, 14 and 21:** 11:30 a.m., Training Auditorium;

**Oct. 15 and 22:** 11:30 a.m., Building EO, Cape Canaveral Air Station; and

**Oct. 8 and 23:** 11 a.m., Room 3316, Operations Support Building, Launch Complex 39 Area.

Volunteers are needed to support the 1997 drive, and can learn more at an Oct. 2 at 11:30 a.m., volunteer meeting in the Training Auditorium. Employees who registered last year are especially encouraged to volunteer.

## A little tile goes a long way



SHUTTLE tile and blanklet display was presented to Peg Horan, principal of Our Lady of Lourdes Church school in Melbourne, by United Space Alliance Thermal Protection System Facility (TPSF) Manager Dave Sanders (left) and NASA TPSF Manager Bruce Lockley Sept. 5. The display will be used in fifth and sixth grade science classes.

## Property Awareness custodians recognized for their efforts

Property custodians with excellent track records were singled out for recognition during Property Awareness Week in August.

In a ceremony held at the KSC Visitor Complex, Associate KSC Director Jim Jennings presented awards to custodians who had held the position for two years or more and had a loss rate of less than 1 percent. Individual organizations also were honored. The awardees were:

**NASA:** Thomas Anderson; Jerry Barnes; Diane Holden; Robert Howard; Joyce Matrazzo; Lee Maull; Margaret Rosenberry; and Michael Seay.

**United Space Alliance (USA):** Sharon Andruss; Robert Bird; Edward Calvert; Richard Dillon; Leonard Hager; Sharon Lee; Linda Lewis; William Matlack Jr.; Robert Murray; Vickie Neal; Duane Nishida; Stephen Prenger; Susan Ruiz; Veronica Taylor; Robert Thomas; Diana Townsend; Jim Townsend; Eddy Walters; Perry Whitehurst;

Edward Wolf; and Walt Young. **USBI:** Denise Chreist; Gary Griffin; and Myron Griffin.

**EG&G Florida:** Dorothy Doran; Barbara Gurr; Michael McDaniel; Marcella Miller; Pauline Palmer; Edward Ryan Jr.; Jose Valentin; and Loretta Woulard.

**Delaware North Park Services (DNPS),** Visitor Complex concessionaire: and Lori Fore; George Keesee.

**McDonnell Douglas Space and Defense Systems (now Boeing):** David Janley; Jim Hughes; Brian Lawson; Lana Paton; Jay Solomon; and Elaine Wallace.



KSC bone marrow donor registration drive co-organizers Dr. George Martin (left) and Jennifer Murray welcome Bone Marrow Donor Program Chairman Adm. Elmo Zumwalt to the kickoff breakfast held Sept. 10.

The following organizations were honored: The Engineering Development Directorate of NASA; Depot Operations, USA, Div. 4; Payload Projects, McDonnell Douglas; Engineering and Support Services, EG&G; Operations Support, USBI; Safety and Mission Assurance, USA, Div. 3; and the Exhibit Department, Delaware North.

# Joint NASA/Air Force tests could reduce hazardous wastes

A joint venture between NASA and the U.S. Air Force to develop a system to recover and convert unused rocket propellant oxidizer into a useable fertilizer product will be tested during the next few weeks.

In the past, the toxic nitrogen dioxide vapor which results from transferring the oxidizer (nitrogen tetroxide) from storage tanks into rockets or vice versa was captured in what are called scrubbers to prevent it from venting into the air. The resulting chemical reaction of the nitrogen dioxide and the sodium hydroxide produced a liquid which had to be disposed of as a hazardous material.

The new method being tested during the next few weeks will chemically convert the nitrogen dioxide into fertilizer for use at Cape Canaveral Air Station and KSC, resulting in an estimated savings of \$83,000 a year.

This new project is in compliance with Executive Orders on pollution and waste prevention. The effort could lead to reducing the waste byproducts and eliminating

the second largest hazardous waste stream at KSC and CCAS. It also would lower operational costs.

Because the tests are intended to find the optimum efficiency of the new scrubber, it is possible that an inadvertent release of nitrogen dioxide may occur. If this should happen, it would appear as a reddish cloud over the Cape Canaveral Air Station's fuel storage facility, and may be noticeable.

Strict weather criteria are being followed to insure any clouds that may form will quickly dissipate to a safe and harmless concentration and not drift near any populated areas around CCAS.

The tests will proceed only if wind speed and direction are acceptable to safety officials. Personnel will monitor air quality from boats stationed on a 4,000-foot safety perimeter on the Banana River during the tests to ensure the concentration of nitrogen dioxide does not exceed government-established limits. All other boating traffic will be kept out of this safety perimeter.

# Hispanic Heritage Month

National Aeronautics and Space Administration  
John F. Kennedy Space Center  
Kennedy Space Center, FL 32899



SEP 22 1997

TO: All KSC Civil Service Employees

FROM: AA/Director

SUBJECT: Observance of Hispanic Heritage Month from September 15, 1997 through October 15, 1997

The Kennedy Space Center will observe "Hispanic Heritage Month" from September 15 through October 15, 1997. The theme for this observance will be "Hispanic Excellence: Building Opportunities for Our Youth." During this time we reflect on the extensive contributions that Americans of Hispanic ancestry have put forth to enhance our Center, leaving a legacy for the benefit of all Americans. We demonstrate our commitment to this effort by providing developmental opportunities for everyone.

The Hispanic Employment Program Working Group will hold its 13th annual "Meet your Directors Luncheon" at the Launch Pad, KSC Visitor Complex on Tuesday, October 7, 1997 at 11:30 a.m. It will be my honor to serve as the keynote speaker for this event. The menu will consist of authentic Hispanic dishes.

Tickets for the luncheon will be available for purchase from September 22 through October 6, 1997, at \$8.00 each. They may be purchased from any member of the Hispanic Employment Program Working Group.

I encourage you to join in this observance and to participate in the program with your supervisor's approval.

  
 Roy D. Bridges, JSC

# New dive boats for SRB ships



SAFER and more efficient dive boats for the solid rocket booster retrieval ships are made watertight by United Space Alliance employees Jim Harrington and Jim Dyett in preparation for a sea test. Unlike their predecessors, the boats can be hoisted fully loaded over the side of the ships, thanks to the single-point, U.S. Coast Guard-approved lifting system that releases as soon as the boat hits the water. Previously, equipment would have to be handed down to the divers, a challenge in rough seas as well as especially calm waters, when the height from the deck to the boat is greater. The old boats will remain on board as rescue boats.

## STS-94 visit



STS-94 PAYLOAD Commander Janice Voss signs autographs in the KSC Training Auditorium. Voss and other members of the crew returned to KSC to thank employees for their support and quick turnaround of the Space Shuttle Columbia for its reflight mission in July.



## Engineering co-ops return to KSC

For the first time in a number of years, there are once again engineering co-operative students at the space center.

They are (from left):

- Scott Bitikofer, a Mechanical Engineering student at the University of Central Florida;
- Daisy Correa, an Industrial and Systems Engineering major

at Florida International University;

Jeanne Cloud, an Aerospace Engineering major from the University of Minnesota; and

Christopher Morgan, a Mechanical Engineering student at the University of New Mexico.

## Diversified, experienced crew ready to fly on Mission STS-86

The eight astronauts assigned to Space Shuttle Mission STS-86 represent a diversity of experience from a veteran Russian spaceflyer to a French Air Force general.



At press time, the crew was at KSC making final preparations for their launch aboard Atlantis at 10:34 p.m., Sept. 25. Shown at right, they are (in front, from left): Mission Specialists Vladimir Titov, David Wolf and Wendy Lawrence; and standing, from left, Pilot Michael Bloomfield, Mission Specialist Scott Parazynski, Commander James Wetherbee and Mission Specialist Jean-Loup Chretien.

Wetherbee will be flying his fourth Shuttle flight. Bloomfield,

a rookie space traveler, is a distinguished graduate of the U.S. Air Force Test Pilot School Class 92A.

There are two medical doctors among the crew, David Wolf, who will transfer to Mir during STS-86, and Parazynski. Lawrence is a U.S. Naval Academy graduate who has made more than 800 shipboard landings. Chretien is a fighter-pilot with more than 6,000 hours of flying time. He has flown in space once before, spending seven days on Mir in 1982.

During the 10-day flight, Parazynski and Titov will perform a spacewalk, and three and a half tons of supplies and equipment will be exchanged between Atlantis and Mir.



**TOO TALL, JUST RIGHT AND TOO SHORT** — Both Scott Parazynski (left) and Wendy Lawrence (right) have been assigned at some point to fly to Mir, only to be bumped by height restrictions. While at KSC for Terminal Countdown Demonstration Test (TCDDT) training, Parazynski's flight suit had a label of "Too Tall" while Lawrence's said "Too Short." In the middle is David Wolf, formerly Lawrence's backup and now her replacement as the next U.S. astronaut who will complete an extended stay on the Russian space station Mir.



John F. Kennedy Space Center

## Spaceport News

The Spaceport News is an official publication of the Kennedy Space Center and is published on alternate Fridays by the Public Affairs Office in the interest of KSC civil service and contractor employees.

Contributions are welcome and should be submitted two weeks before publication to the Media Services Branch, AB-A.

- Managing editor. . . . . Bruce Buckingham
- Editor. . . . . Paula Shawa
- Editorial support provided by Sherikon Space Systems Inc. Writers Group.
- Photographic support provided primarily by The Bionetics Corp. and Photographer George Shelton, also of Bionetics.

USGPO: 532-112/20056