April 19, 2002 Vol. 41, No. 8

Spaceport News

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

http://www-pao.ksc.nasa.gov/kscpao/snews/snewstoc.htm John F. Kennedy Space Center

Take heed, lightning season coming

Florida is the thunderstorm capital of the United States, and lightning is the most underrated weather hazard.

It's a dangerous combination, especially for residents of Central Florida.

Florida leads the nation both in lightning deaths and lightning injuries. No other state even comes close.

And most electrical discharges occur in Central Florida, known as "Lightning Alley," from Tampa to Titusville.

"The main lightning season starts in May, peaks in July and August, and ends in September," said William Roeder, chief staff meteorologist with the 45th Weather Squadron. "But lightning can be a hazard anytime of the year."

For example, a man in Indian River County, just south of Brevard County, was injured by lightning April 3.

Many lightning injuries, which can lead to life-long debilitations, are not recognized initially and go unreported, pointed out John Madura, head of Kennedy Space Center's Weather Office.

"The statistics on lightning injuries and fatalities vastly under-represent the true danger," Madura said. "Researchers have learned that many lightning-strike 'close calls' actually cause neurological injuries that the victim may never attribute to the strike. The victim may have only experienced a slight shock or twinge at the time."

Lightning is dramatic and deadly, so take proper safety precautions to protect those you love.

The National Weather Service and the National Oceanographic Association, along with the nation's lightning safety experts, are sponsoring the second annual national 'Lightning Safety Awareness Week' from April 28 through May 4. To learn more, visit the Web site **www.lightningsafety.noaa.gov**.

Each day of the 'Lightning Safety Awareness Week' focuses on a specific aspect of lightning. The motto of this year's event is "Lightning Kills. Play It Safe!"

Monday: General lightning safety. Lightning is the No. 1 weather killer in Florida and inflicts life-long debilitating injuries on many more.

(See LIGHTNING, Page 6)

> *"Researchers have learned that many lightning-strike 'close calls' actually cause neurological injuries that the victim may never attribute to the strike. The victim may have only experienced a slight shock or twinge at the time."*
>
> **JOHN MADURA**
> KSC WEATHER OFFICE

Inside

Go Atlantis!

Space Shuttle Atlantis hurtles into the clear blue sky as it lifts off on mission STS-110. Liftoff was at 4:44:19 p.m. EDT. Launch occurred with only 11 seconds left in the window after dropouts in a backup launch processing system were encountered and then quickly resolved.

Recognizing Our People

NASA reaches out at NSBE event

Black engineers sought for KSC, other space centers

Representatives of all NASA centers, pictured above, attended the National Society of Black Engineers 28th Annual National Convention held in Orlando March 27-31. NASA representatives were in attendance recruiting for intern, co-op and full time permanent positions unique to each NASA center.

More than 11,000 attended the National Society of Black Engineers (NSBE) 28th Annual National Convention held at the Orange County Convention Center in Orlando March 27-31.

The opening session set the convention theme, which was "Integrating Technology and Tradition."

The Orange County Convention Center was elaborately decorated with visions of the pyramids and the sphinx, as attendees traveled back in time to ancient Egypt, the land of engineers and scientists.

The guest speaker for the convention's opening session was the Rev. Al Sharpton. In his speech, he reminded the audience that while they have made great strides in education, they all have an obligation to give back and support their communities.

NSBE strived to integrate technology and tradition by combining experience, history and cutting-edge trends in technology.

The convention's mission was to increase the number of culturally responsible black engineers who excel academically, succeed professionally and effect the community positively.

Through the convention's many workshops and activities, participants gained knowledge, exposure and opportunities to take back and integrate with family values and community tradition.

NASA's participation in the NSBE Career Fair was sponsored by Code E, NASA Headquarter's Office of Equal Opportunity Program with Kennedy Space Center as the lead center.

Representatives from all NASA centers, including Jet Propulsion Laboratory, were in attendance recruiting for intern, co-op and full time permanent positions unique to each NASA center.

> *"The NSBE Convention was a very innovative, motivating, and educationally enhanced experience that gave us a strong sense of pride in our culture and engineering profession."*
>
> **ERIK DENSON**
> KSC NASA EVENT COORDINATOR

Erik Denson of KSC's Spaceport Engineering and Technology Directorate, who is also an NSBE member, coordinated NASA's support of this event.

"The NSBE Convention was a very innovative, motivating, and educationally enhanced experience that gave us a strong sense of pride in our culture and engineering profession," Denson said.

KSC Deputy Center Director James Jennings and Equal Employment Opportunity Director Kenny Aguilar were two of the many NASA officials who attended.

More than 315 other corporate, government and university sponsors participated in the career fair.

NSBE is the premier technical organization for African-American students and professionals.

Member loyalty, commitment and participation are the cornerstone of its success.

With more than 15,000 collegiate students, professional and pre-college members, NSBE provides unparalleled access to top engineering talent.

The National Society of Black Engineers emerged from the needs of African-American men and women in the fields of engineering to have a place to come together to share their unique experiences.

The Black Society of Engineers was founded on the campus of Purdue University in 1971.

In 1974, the name was changed and in 1975 the National Society of Black Engineers was born, joining like-minded organizations to address and offer solutions for engineers of color nationwide.

NSBE has grown from a campus of Purdue University to an international organization that addresses and offers solutions to all engineers of color.

Issues such as the "digital divide," funding for scholarships, education, development of geological resources, economic and social/political reform are all areas NSBE's engineers are addressing through their disciplines.

Next year, the event will be held in Anaheim, Calif. Dryden Flight Research Center will be the lead center for the event.

NASA plans to conduct workshops and support next year's convention.

Rick Abramson to receive Debus Award

Rick Abramson, president and chief operating officer of Delaware North Parks Services of Spaceport, Inc., will be honored as this year's winner of the Dr. Kurt H. Debus Award from the National Space Club Florida Committee.

The award will be presented May 17 at a formal dinner hosted at the Debus Conference Center, which is located at the Kennedy Space Center Visitor Complex.

The event will begin with a reception at 6:30 p.m., followed by dinner at 7:30 p.m.

Former astronaut Gene Cernan – a veteran of four spaceflights that included command of Apollo 17, the most recent lunar landing mission – will be the featured speaker at the black tie-optional dinner ceremony.

First given in 1990, the award was created to recognize significant achievements and contributions made in Florida to the American aerospace effort.

It is named for Kennedy Space Center's first director, Dr. Kurt Debus.

Abramson is being recognized for his outstanding personal and professional efforts in supporting the U.S. space program by helping to educate and inspire the millions of guests who visit the Kennedy Space Center each year.

As this year's chairman of the National Space Club Florida Committee, upon his nomination, Abramson did not participate in the Steering Committee's selection process for the Debus Award.

The general public is welcome to attend the award banquet. Tickets are $50 for club members and $60 for non-members. Corporate tables are available for $500.

Reservations may be made by contacting Sandy Andre at (321) 749-8291 or going online to submit a form at the Web site **http://www.nationalspaceclubflorida.org**.

The National Space Club is a non-profit corporation composed of representatives of industry, government, educational institutions and private individuals who share a commitment to increasing public awareness of America's aerospace programs.

Rick Abramson

JBOSC earns "Star" rating

Space Gateway Support and JBOSC team members have been awarded the highest safety program award from the Occupational Safety and Health Administration (OSHA), the "VPP Star."

NASA, United Space Alliance and The Boeing Co. are in the process of obtaining their Star ratings.

SGS President Mike Butchko said he was pleased with the VPP Team effort and success.

"This is a very proud moment in the history of our company," he said. "We are not only a safe company as known by our employees, but now OSHA and the nation are aware of SGS and the JBOSC team members' accomplishment."

SGS and the JBOSC team submitted a 481-page safety process document was submitted to OSHA for review. OSHA auditors reviewed all safety procedures and performed employees interviews, testing their knowledge.

SGS received word of the award March 22.

Awards

Certificates of Appreciation

Tim Fletcher, IDI; Betty Kegley, AE; Dan Mangieri, BA; Stacie Grega, BA; Penny Chambers, CC; Cathy Gieseler, CC; Brian Smith, JP; Vicki Miletello, JP; MSgt. Kyle Lee, 45SW; Richard Kowalchik, SGS; John Bridges, SGS; Michael Squire, PH; Steven Czaban, PH; William Patrick, PH; Stephen Livermore, PH; Jean Flowers, PH; Kathleen Milon, PH; Edwin Cortes, PH; Amy Gilfriche, PH; Wayne McClellan, PH; Kevin Smith, PH; David Floyd, DNX; Gregory Grzempa, USA; John Shadrick, USA; Waymon Rake, USA; Henry May, USA; Catherine Parker, QA-A; Dan Rembert, DYN; Michael Deliz, TA; Renee Debing, TA; Janet Mayers, TA; Tommy Purer, UB; Sharolee Huet, UB; Ricardo Rodriguez, UB; Rita Dal Santo, UB; Robert Franco, Jr., UB; David Olsen, UB; Wayne Ranow, UB; Maxine Daniels, Boeing; Martha Vreeland, VA; Darrell Foster, VA; Lisa Haber, VA; Lawrence Mauk, XA; Cristina Guidi, XA; Ned Voska, YA; Janice Justice, YA; Alan Littlefield, YA; Dorothy Davis, YA; Julee Garrett, USA; Bruce Hardman, YA; John Robinson, USA; Charlie Novak, USA; Gregory Melton,YA

QAZAR Award winners

Seven NASA and contractor employees of Kennedy Space Center were honored this quarter with the Quality And Safety Achievement Recognition (QASAR) Award.

The QASAR recognizes individuals who have displayed exemplary performance in contributing products and services and a safe environment and processes for NASA. The award is sponsored by NASA Headquarters' Office of Safety and Mission Assurance.

The director of KSC's Safety, Health and Independent Assessment Directorate makes the final selection. The honorees:

Craig Bradley of Space Gateway Support (SGS) was selected for his performance in promoting and fostering a safe working and operating environment for all personnel.

Phil Chestnut, Federal Data Corp., was selected for outstanding support of safety programs on the JBOSC contract.

John Kiriazes, NASA, was selected for outstanding leadership and dedication in resolution of the Moron, Spain, Tactical Air Navigation ground station bearing error.

Bill Muddle, Boeing/Rocketdyne, was selected for his outstanding leadership in developing a proactive Risk Management Tool that allows engineers to assess and mitigate risk on operations performed on the Space Shuttle Main Engine (SSME).

Jim Sardonia, 45th Weather Squadron, was selected for his dedication leading to a successful launch campaign in Kodiak, Alaska.

Dan Sweety, Boeing/Rocketdyne, was selected for his leadership in implementing a state-of-the-art process evaluation program to accurately monitor and measure the day-to-day processing of SSMEs.

Jim Young, NASA, selected for his exceptional performance contributing to a near 100 percent first-time quality acceptance rate at the NASA Shuttle Logistics Depot in Cape Canaveral.

Four employees were honored as the KSC QASAR Best of the Best for 2001. The honorees:

Roger Lawrence, SGS, for outstanding leadership for ensuring the replacement of oil-filled load break switches in the VAB, which were a significant fire and explosion risk to the Shuttle fleet.

Larry Maggie, NASA, for extraordinary initiative in discovering an Orbiter Vehicle anomaly that could have caused injury to the Flight Crew and flight hardware.

William Roeder, 45th Weather Squadron for outstanding contributions in improving lightning safety and weather support at KSC.

David Wiedemuth, NASA, for significant contributions in diverting a potential oxygen hazard on the Station Airlock Assembly.

INSIDE Pads A

Launch Pads 39A and 39B can be seen for miles. Second only to the massive Vehicle Assembly Building, they are signature features of the Kennedy Space Center landscape.

To far-off observers, the virtually identical 325-foot pads often seem to be simple steel frameworks that support and protect the Space Shuttle before launch; the pads, however, are two of the most complicated structures at KSC.

The massive Rotating Service Structure and the Fixed Service Structure are each pad's basic frameworks and most visible elements. But each pad, including propellant storage and other facilities at its octagonal perimeter, features more than 100 separate mechanical, pneumatic, hydraulic and electronic systems.

Each pad requires continual maintenance, all the way from the lightning mast at its tip to the catacombs under its base.

The pads also require complicated configuring and thorough testing prior to launch.

After launch, the pad teams, who proudly call themselves "pad rats," perform turnaround operations and repair damage caused by the immense forces of the rocket propulsion launch.

A number of operations to maintain, configure and test the pads' systems require the use of hazardous fuels and other materials.

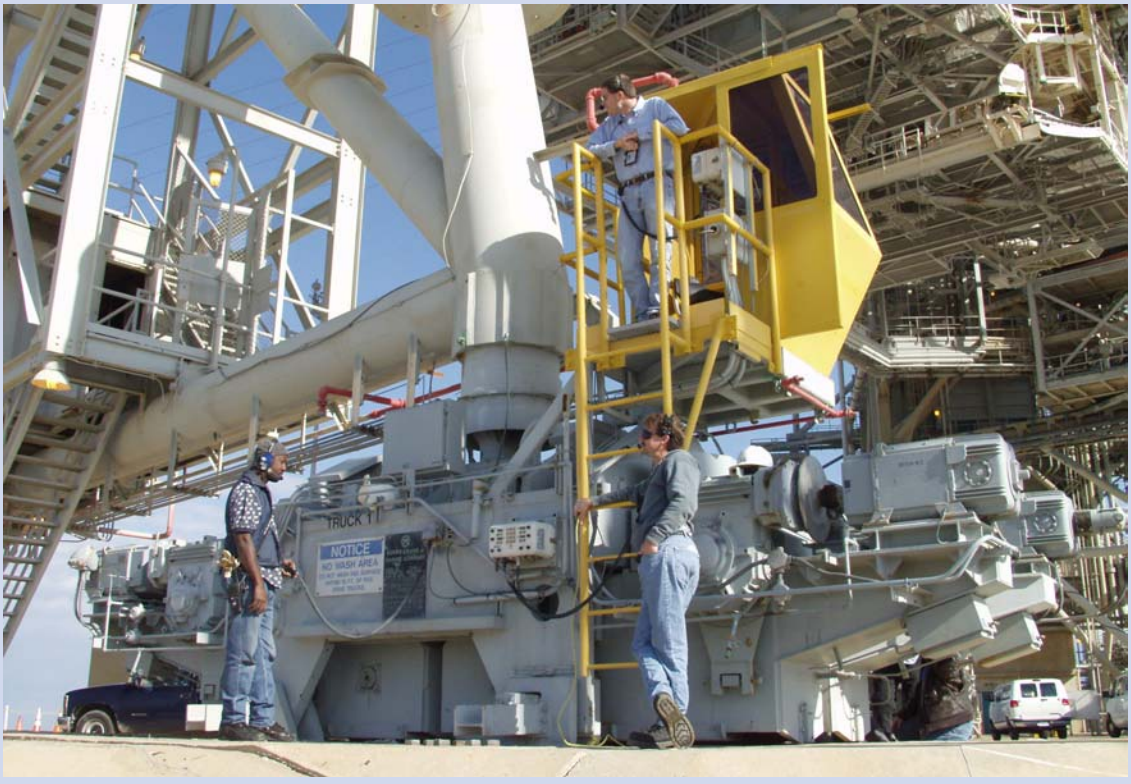
The pads are managed by United Space Alliance.

"There is a tremendous sense of accomplishment in safely launching these amazing vehicles," said Mike Orr, USA pad manager. "We work in a very challenging environment and we perform numerous hazardous operations, but safety is always our first priority."

The pads have served as the site of all Space Shuttle launches and 17 Saturn V or Saturn 1B manned and unmanned launches in Apollo, Skylab and Apollo-Soyuz Test Project programs.

Although the magnificent ocean views from the pads are awe inspiring, the corrosive sea air and blazing sun – in addition to launch forces – continue to weather the structures year after year.

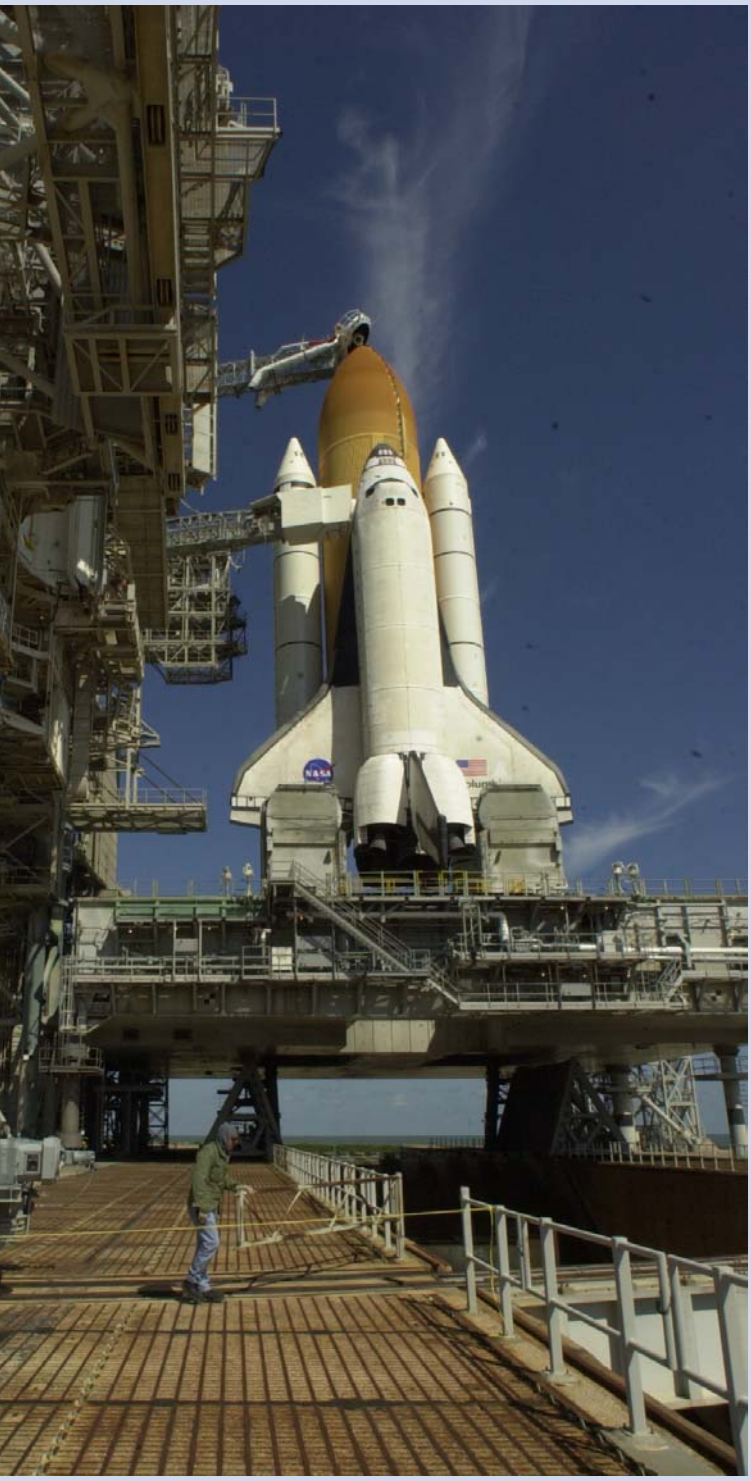
"The pads were not built to be used decade after decade, so it's quite a job for USA and the other contractors to stay on top all the maintenance needed," said Steve Bullock, NASA pad manager. "But the structures still safely and successfully do their jobs."



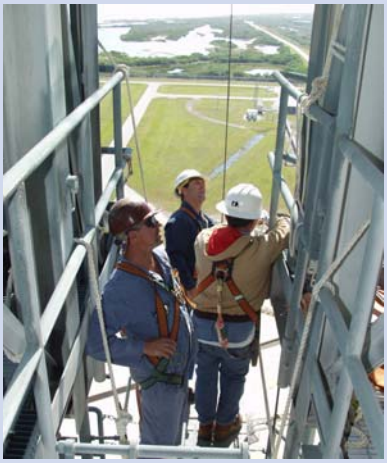
Alonzo Guinyard, Nathan McGowan and Ed Griffin of United Space Alliance help support an upcouple test of the Rotating Service Structure at Pad B.

United Space Alliance workers
Shuttle Columbia is prepared f

A and B



support the move of the Rotating Service Structure at Pad A as Space
or launch.



At left, Rick Mako, Joe Rosenbaum and Paul Dinicola modify a bracket for the External Tank vent arm. Below, Alan Baleyko cleans off rust and oxidation from the structure of Pad B during preparation for the STS-110 Mission launch of Atlantis.

Above from left, engineers Kevin Ahrens of USA, Steve Stout of Dynacs and Allan Brush of USA discuss a new flow meter being tested at Pad B.

Above, Bill Deaver, lead, checks an element in the ECS at pad A. Technician Dave Kline, at left, works at the console of the Environmental Control System (ECS) at Pad A.

Jerry Lovelace, at left, checks a light in an escape tunnel under Pad B. Lovelace is lead for the pad's Environmental Control System. The system is adjacent to the pad's "rubber room" and escape tunnel. Those heritage features were designed for emergency use by Apollo astronauts and pad crew.

Suzanne Pitts, right, helps clean Pad B in preparation for Endeavour being rolled out to the pad for the STS-110 launch. Before each rollout, the pad is carefully cleaned of debris.

Lightning facts

- Lightning often strikes the same place repeatedly, especially if it's a tall, pointy, isolated object. The Empire State Building has been used as a lightning laboratory since it is hit nearly 25 times a year.
- Lightning often strikes more than three miles from the thunderstorm, far outside the rain or even thunderstorm cloud. "Bolts from the blue," though infrequent, can strike 10 to 15 miles from the thunderstorm.
- Most cars are reasonably safe from lightning. But it's the metal roof and metal sides that are protective, not the rubber tires. Convertibles, motorcycles, bicycles, open-shelled outdoor recreational vehicles, and cars with plastic or fiberglass shells offer no lightning protection.
- The human body doesn't store electricity. It is perfectly safe to touch lightning victims to give them first aid.
- Being underneath trees is the third leading activity for lightning casualties in Florida. And just being inside a house isn't failsafe. You must avoid any conducting path leading outside, such as corded telephones, electrical appliances, wires, TV cables, plumbing (including plastic pipes with water in them), metal doors or window frames. Don't stand near a window. Staying in an inside room is best.
- Sports is the activity with the fastest rising rate of lightning casualties. No game is worth death or lifelong severe injury. All people associated with sports should have a lightning safety plan.
- Height, pointy shape, and isolation are the dominant factors controlling where a lightning bolt will strike. The presence of metal makes virtually no difference on where lightning strikes. Mountains are made of stone, but receive many strikes each year.
- But while metal doesn't attract lightning, touching or being near long metal objects (fences, railings, bleachers, vehicles) is still unsafe when thunderstorms are nearby. If lightning does happen to hit it, the metal can conduct the electricity a long distance (even more than 100 yards) and still electrocute a person.
- As an absolute last resort, use the "lightning crouch" rather than lying down if you are trapped outside during a storm. Put your feet together, squat low, tuck your head, and cover your ears. This offers a bare minimum of protection, so plan to avoid lightning threats instead.

LIGHTNING ...

(Continued from Page 3)

No place outside is safe near a thunderstorm.

The 45th Space Wing and KSC have outstanding lightning safety procedures. While on base, follow local procedures immediately, when 45th Weather Squadron issues a Phase-1 or Phase-2 lightning condition.

A Phase-1 lightning condition means 45th Weather Squadron is forecasting lightning to occur within 5 nautical miles in 30 minutes for the 13 points of operational interest on KSC, Cape Canaveral Air Force Station, Patrick AFB, and elsewhere. Five nautical miles is about 6 normal statute miles.

A Phase-2 lightning condition means lightning is imminent or occurring within 5 nautical miles of the point(s). Notice how a 5-nautical-mile safety buffer distance is used. When it comes to lightning safety, distance is your friend.

Off-base, use the "30-30 Rule." Count the time between seeing the lightning and hearing its thunder. If it is 30 seconds or less, go to the safest location possible.

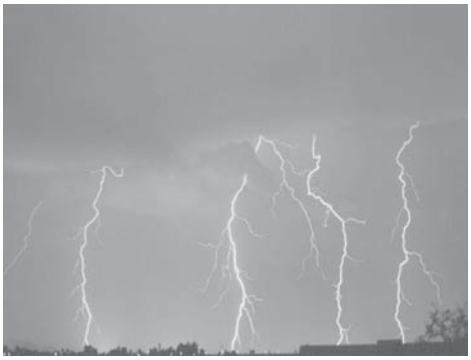
Wait 30 minutes or more after hearing the last thunder before going back outside.

The safest place from lightning available to most people is a large, fully enclosed, and substantially constructed building, such as a typical house or office building. Substantially constructed means it has wiring and plumbing.

Once inside, stay off the corded telephone, away from electrical appliances, away from plumbing, and away from windows or doorways to the outside.

The second safest place from lightning is a vehicle with a solid metal roof and solid metal sides. Put your windows up, put your hands in your lap, and lean away from the doors.

Tuesday: Lightning science. Lightning is a



huge electric spark neutralizing electric charge generated and separated in a thunderstorm.

Seventy percent of lightning doesn't strike the ground. Lightning doesn't "choose" what it will strike until it is about 30 yards away.

The average distance between lightning flashes is over 3 miles.

Wednesday: Outdoor lightning safety. As noted before: No place outdoors is safe near a thunderstorm.

When outside, always use the "30-30 Rule" described earlier.

Avoid the following locations and activities because your life depends upon it. Elevated locations or open areas. This includes sports fields, including golf courses. Water-related activities: swimming, boating, and fishing.

Don't go under trees to keep dry during thunderstorms. Lightning that strikes trees can also strike people standing under them. Or trees can explode from lightning super heating the water and sap inside them. Trees are also dangerous since the lightning often dissipates outward along the surface of the ground. Trees are also a preferred area for upward streamers.

Nearby tall isolated pointy objects, such as people, can cause upward streamers (30-yard tall vertical sparks) to form where they are standing. Get out of open-shelled outdoor construction and farm equipment, such as bulldozers and tractors.

Thursday: Indoor lightning safety: The safest place from lightning is inside a large, fully enclosed, substantially constructed building. When inside, stay off corded telephone.

The telephone is the No. 1 cause of indoor lightning casualties. Cordless phones are okay, as long as you are away from electrical appliances. Stay away from electrical appliances. Stay away from plumbing: Don't shower, bathe, or use the toilet when lighting is nearby.

Don't watch lightning through windows and open doorways.

Friday: Medicine and lightning. Only 10 percent of people struck by lightning are killed. All lightning deaths are from cardiac arrest and stopped breathing. The recommended first aid is CPR or mouth-to-mouth resuscitation.

Ninety percent of those hit by lightning survive. But many survivors suffer life-long debilitating injury. Most injuries are neurological and are often difficult to diagnose.

Typical long-term symptoms include memory deficit, sleep disturbance, chronic pain, dizziness, chronic fatigue and attention deficit. The intensity of these symptoms is often so severe that the lightning survivor cannot earn a living or maintain relationships – bright, productive, active lives ruined in an instant.

Symptoms can be delayed up to months after the lightning strike. The Lightning Strike Electric And Shock Survivors International is the main support group.

For daily weather forecasts and hazardous weather outlooks for the spaceport, visit the 45th Weather Squadron Web site at **https://www.patrick.af.mil/45og/45ws/index.htm**. For local weather forecasts outside of 45 SW and KSC, see **www.srh.noaa.gov/mlb**. For lightning safety and other weather safety briefings, call 45 WS at 494-6807.

Energy & Environmental Awareness

Variety of activities planned for April 22-24

Kennedy Space Center is "Balancing Technology & Nature" from April 22-24 during Environmental and Energy Awareness Week (EEAW).

"The 2002 Energy and Environmental Awareness Week will show the Center workforce the diversity of the Environmental Office and what the Center does to promote good stewardship of our fragile environment, " said John Ryan, chair of Environmental & Energy Awareness Week.

On April 22 – Earth Day – David Struhs, secretary of the Florida Department of Environmental Protection, will begin the week with an educational presentation at the opening and awards ceremony. At the event, which takes place at the Training Auditorium at 10 a.m., Struhs will discuss initiatives to keep Florida "healthy," including the Governor's energy budget priorities.

EEAW will feature various demonstrations, presentations and field trips available for employees to learn about everything from storm water runoff pollution and indoor air quality to Florida's threatened scrub jay birds.

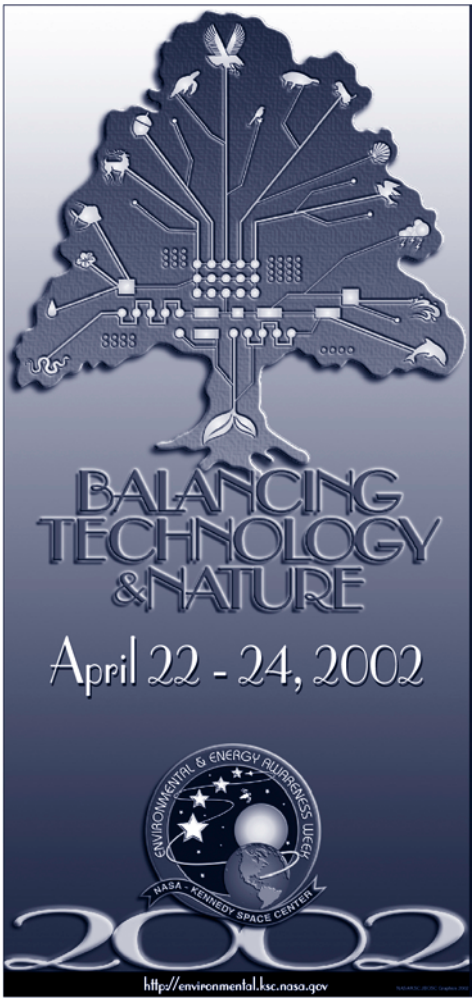
Participants also will have the opportunity to see the latest environment-friendly automobile technology. The alternative fueled vehicles such as a CNG Honda Civic will be on display Tuesday and Wednesday.

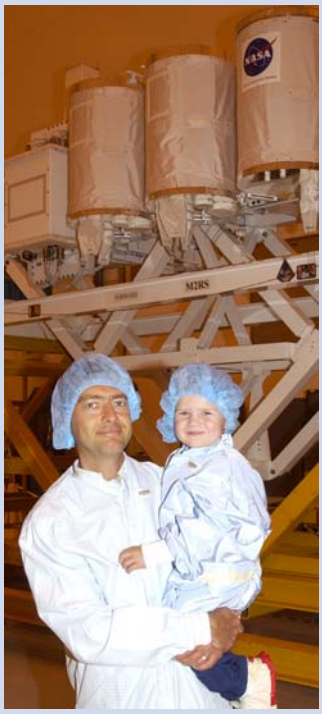
Activities April 23 will take place in front of the Headquarters Building, while the VAB's parking lot E will be home to the April 24 events on Wednesday.

Visit **http://environmental.ksc.nasa.gov/eeaw/eeaw2002/index.htm** for EEAW details including an events schedule, historical information on Earth Day, and much more.

How to avoid littering

- Always dispose of your trash in a proper receptacle. Make sure trash cans have a secure lid and don't put out loose trash.
- Never throw anything from your vehicle windows. Cigarette butts take up to 12 years to decompose and are fire hazards.
- Always clean up your site after a picnic or other outdoor activity.
- Secure your load if you carry loose materials in a truck bed on the Spaceport. Fatalities have been recorded in Florida as a result of debris flying out of beds.
- Florida Statute prohibits littering and allows for fines up to $50. Members of the military and DOD civilians can be reprimanded for litter violations. Carry a litterbag in your vehicle and use it!





Like father, like son

Mike Wright, Goddard Space Flight Center integration and test manager for the FREESTAR "Hitchhiker" payload, is pictured with his 4-year-old son, Alexander, in the Multi-Payload Processing Facility. Alex visited KSC to view the Space Experiments Module canister where his school's tomato seed experiment is housed. The St. John the Baptist Preschool (New Freedom, Pa.) experiment will fly with FREESTAR on STS-107, which is currently scheduled to launch July 19. KSC Future Payload Manager Virginia Whitehead said that, to her knowledge, Alexander is the youngest researcher ever to have visited KSC.

39th Space Congress to be held April 30-May 3

The 39th Space Congress will be held April 30 through May 3 at the Radisson Resort in Cape Canaveral.

The general theme of the Congress is "Beginning a New Era: Initiatives in Space."

The congress exhibit hall will open April 30 and be open to conference participants and the general public.

Major events include the opening session on April 30, followed by three days of paper and panel sessions that will explore all of the issues facing the space industry in the early part of the new millennium.

Activities for students and educators include a science fair in conjunction with the exhibit hall, a meet-the-astronauts opportunity on May 2 and a student education day on May 3. The congress will conclude with a golf tournament on May 3.

Sponsored by the Canaveral Council of Technical Societies, Space Congress is organized in cooperation with NASA, the department of Defense, industry and academia. Since CCTS's first symposium in 1962, the Congress has provided for a gathering of the international aerospace community to discuss the status and future of space activities around the world.

For further information or on-line registration, visit the Space Congress web site at **http://www.SpaceCongress.org.**

40 years ago: 1st international satellite

Ariel 1 launch paved the way for other cooperative efforts

Forming worldwide partnerships has been a way of life for space pioneers long before the development of the International Space Station.

Forty years ago, the United States and the United Kingdom joined forces, and that collaboration resulted in the launch of the Ariel-1 satellite on the Delta-9 rocket April 26, 1962.

Ariel-1, also known as UK-1, was the first launch of an international satellite. The satellite, which departed from Cape Canaveral Air Force Station's launch pad 17A, carried six instruments developed and provided by university scientists from the U.K.

"The Delta launch vehicle, a reliable means at reasonable cost – even cheap as Delta manager Bill Schindler used to say – was now available to place scientific instruments into space far above the earth," said Don Sheppard, an aerospace engineer from Goddard Space Flight Center (GSFC) who supported and coordinated preparation of the satellite and integration with the launch vehicle.

Ariel-1 was constructed at GSFC as a platform, power system, and data relay for the instruments. The tools measured the intensity and energy spectrum of X-rays from more than 20 solar flares, attained the first look at cosmic rays, and calculated the cosmic rays' effect on the electron density and ion distribution in the ionosphere.

The satellite was used for several months until some of the instruments were weakened by radiation from a high altitude nuclear test.

However, Ariel-1 returned data intermittently until late 1964.

"In astrophysics and astronomy today, the magnificent performance of the Hubble telescope, as well as the shuttle astronauts, and results from other specialized satellites have shown us things we never dreamed of back in the old days," said Sheppard, who participated in 200 satellite launches for space science, planetary exploration, communications, and weather studies until his retirement in 1982. "A strong person could pick up Ariel-1 and carry it around, but it did its job and it was a beginning – a first. It was wonderful to have a job where just about everything you did related to something that had never been done before.

"This is still true in many respects today at Kennedy Space Center, and every worker should take pride in making history like we did in the old days. It keeps you dedicated."

Remembering Our Heritage

The first international satellite, Ariel-1, launched on a Delta-9 rocket April 26, 1962, from Cape Canaveral Air Force Station.

FSEC wins SLI grant

The Florida Solar Energy Center (FSEC), a research institute of the University of Central Florida, has been awarded a hydrogen research grant of $5.425 million from NASA Glenn Research Center.

This hydrogen research program was developed to support NASA's Space Launch Initiative (SLI) and Kennedy Space Center's Spaceport of the Future plans. The grant is an 18-month effort co-managed by NASA's Glenn Research Center and Kennedy Space Center. Research will be conducted by the Solar Energy Center and other state universities.

This research program teams Florida's university researchers with NASA Glenn, the nation's premier space research facility and NASA KSC, the nation's premier space launch facility – a powerful partnership. FESC has long been recognized for its excellence in hydrogen research.

John F. Kennedy Space Center

Spaceport News

Spaceport News is an official publication of the Kennedy Space Center and is published on alternate Fridays by External Relations and Business Development 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, XAE-1. E-mail submissions can be sent to Katharine.Hagood-1@ksc.nasa.gov

Managing editor. . . . . Bruce Buckingham
Editor. . . . . Kathy Hagood

Editorial support provided by InDyne Inc. Writers Group.
NASA at KSC is located on the Internet at *http://www.ksc.nasa.gov*

USGPO: 733-133/60006