

# Spaceport News

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John F. Kennedy Space Center

## STS-97 to power up Space Station



The STS-97 crew leaves the O&C Building on their way to Launch Pad 39B for a simulated launch countdown. Commander Brent Jett, right, leads the way with Pilot Mike Bloomfield behind him. Taking up the rear are, left, Mission Specialists Carlos Noriega, Joe Tanner and, right, Marc Garneau, who is with the Canadian Space Agency.

Powering up the enormous orbiting International Space Station (ISS) will be the primary objective of the five-member crew aboard STS-97, which is scheduled to launch Nov. 30 at 10:05 p.m. EST.

Two solar arrays will be carried aboard the P6 Integrated Truss Segment and will be the first part of a system that ultimately will deliver 60 times more power to the ISS research facilities than was possible on Russia's space station Mir.

The P6 Truss Segment, containing the solar arrays and the batteries, will be temporarily installed to the Unity connecting module by the Z1 Truss recently launched aboard STS-92.

Each 108.6-foot-long solar array wing will extend outward at right angles and be connected to the Station's 310-foot-long truss.

Altogether, the solar arrays will cover an area about the size of an acre, and when fully extended, will span about 240 feet, the largest deployable structure ever built.

An array consists of two solar cell "blankets," one on either side of a telescoping mast that extends and retracts to form the solar array wing. The mast turns on a gimbal, a device to level the arrays and keep it facing the sun. There are a total of four pairs of wings, each with two arrays measuring 112 feet long by 39 feet wide, and along with its assemblies are called a "photo-voltaic module."

The most powerful solar arrays ever to orbit Earth will capture the sun's elusive energy and begin the process of converting it into power for the Station.

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The arrays will supply 105 kilowatts – enough to light a town – and will connect the labs, living quarters, payloads and systems equipment.

To complete this daunting task, Mission Specialists Carlos Noriega and Joseph Tanner will perform two spacewalks to install the solar array connections.

The crew will also install batteries to provide power when the Space Station is in Earth's shadow, about one-third of every orbit, to compensate for the time the Space Station will spend in darkness.

The batteries will store energy gathered by the solar arrays during the sunlit portion of time and will supply the energy to power the Station.

**(See STS-97, Page 6)**

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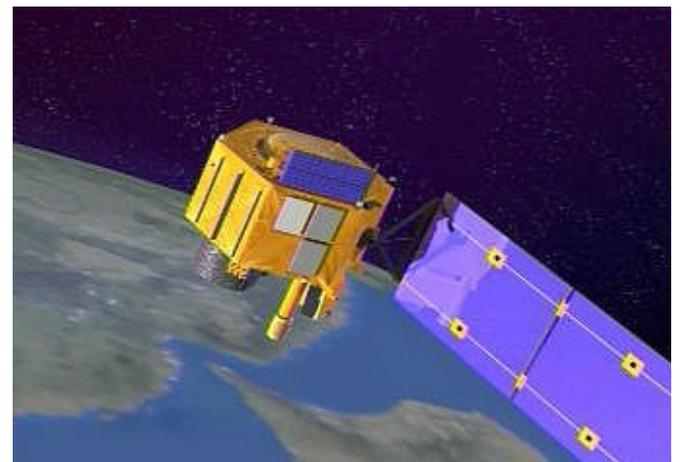
## EO-1/SAC-C launch set for Nov. 18

NASA will launch the Earth Observing (EO-1) satellite and SAC-C, an international cooperative mission between NASA and the Argentine Commission on Space Activities, on Nov. 18 from the Vandenberg Air Force Base, Calif., at 1:24 p.m. EST.

In 1996, NASA started the New Millennium Program, designed to identify, develop and flight validate key instrument and spacecraft technologies that can enable new or more cost-effective approaches to conducting science missions in the 21st century.

The first of three New Millennium Program Earth-orbiting missions is EO-1, an advanced land-imaging mission that will demonstrate new instruments and spacecraft systems.

EO-1 will validate technologies contributing



An artist's conception of the Earth Observing satellite on orbit. EO-1's primary focus is to develop and test a set of advanced technology land-imaging instruments.

**(See ELV, Page 6)**

## Emergency Plan signed



Kennedy Space Center Director Roy Bridges, front right, and U.S. Air Force 45<sup>th</sup> Space Wing Commander Brig. Gen. Donald Pettit, front left, sign the Consolidated Comprehensive Emergency Management Plan (CCEMP) on Nov. 8. The CCEMP establishes uniform policy guidelines for the effective mitigation of, preparation for, response to and recovery from a variety of emergency situations at the Cape Canaveral Spaceport.

## Helium pipeline



At the commissioning of a new high-pressure helium pipeline at Kennedy Space Center, participants cut the lines to helium-filled balloons. From left, they are KSC Director Roy Bridges; Michael Butchko, president, SGS; Pierre Dufour, president and CEO, Air Liquide America Corporation; David Herst, director, Delta IV Launch Sites; Pamela Gillespie, executive administrator, office of Congressman Dave Weldon; and Col. Samuel Dick, representative of the 45th Space Wing. The nine-mile-long buried pipeline will service launch needs at the new Delta IV Complex 37 at Cape Canaveral Air Force Station. It will also serve as a backup helium resource for Shuttle launches. Nearly one launch's worth of helium will be available in the pipeline to support a Shuttle pad in an emergency. The line originates at the Helium Facility on KSC and terminates in a meter station at the perimeter of the Delta IV launch pad.

# CFC exceeds goal

This year's Combined Federal Campaign, the annual time for federal employees to reach out and help those in need around Brevard County and the world, ended on a high note.

Kennedy Space Center federal employees generously contributed in excess of \$260,000, far exceeding the assigned dollar goal of \$220,000.

When briefed on the generosity of NASA employees, KSC Deputy Center Director Jim Jennings, stated he was, "extremely pleased and grateful for the outpouring of support."

The entire senior staff applauded the outstanding efforts of the workforce. Frank Ramsey, United Way of Brevard County Campaign Coordinator, summed up the campaign in two words, "Great! Fantastic!"

Launa Maier, KSC campaign chairperson, said: "Employee giving was phenomenal this year! We beat our dollar goal and exceeded all expecta-



tions, with a final tally of more than \$260,000.

"KSC employees demonstrated once again, that we are those who are Caring For Our Community!"

"The campaign cabinet, unit coordinators and key solicitors worked extremely hard in making quality contacts, and the employees responded, as always. The results speak for themselves. Everyone should be proud of the part they played."

This year's CFC victory celebration picnic will be combined with the KSC Holiday Celebration to be held on Dec. 13, at KARS Park 1. See future issues for more details.

## E&O ribbon cutting



Gathered for the ribbon-cutting ceremony for Kennedy Space Center's E&O Building at Cape Canaveral Air Force Station are, from left, Steve Francois, deputy manager, ELV and Payload Carrier Programs; Mike Benik, director, ELV Launch Services; Roy Bridges, KSC director; Bobby Bruckner, manager, ELV and Payload Carrier Programs; and James Schofield, senior manager of the Boeing ELV Program Support Office. Home for NASA's unmanned missions since 1964, the building has been renovated to house the Expendable Launch Vehicle Program. The program transitioned to the KSC in October 1998. Renovations to the building were begun in August 1999 to correct aging infrastructure problems and to make the building handicapped accessible. The ELV Launch Services Directorate moved back to a newly renovated E&O on Oct. 14, 2000.

# Computer donation benefits schools

School children in Pike County, Ala., and Memphis, Tenn., are getting more computers in their classrooms thanks to a recent distribution of 690 Pentium I computer systems from the NASA KSC Property Disposal Office.

The unusually large number of computers became available for donation because of computer changeouts made by United Space Alliance (USA) and ODIN.

They were donated to the schools through the property office as part of the federal Computers for Learning program. The major distribution brought the number of computers donated by the office during Fiscal Year 2000 to 1,501.

The office expects to donate even more computers to schools during FY 2001 because USA is retiring 2,000 more computers.

"We typically are able to give away about 20 to 40 computers at a time, so a large of donation like this is uncommon," said Pauletta McGinnis, property disposal officer. "Both school systems had significant needs and were delighted to be able to get so many computers."

Her office seeks to donate computers to schools that are in "empowerment zones"— zones determined to be hardship areas — as a first priority, and then schools with more than five children per

computer. A number of Brevard County schools have benefited from donations in the past.

Through research, McGinnis learned that the Pike County and Memphis City schools, both in empowerment zones, were hurting for more computers. In some cases, the schools only had one computer per classroom.

"I can't tell you how much we appreciate these computers," said Marvin Jackson, technical support coordinator for Pike County. "With this donation, we'll be able to boost the number of computers in each classroom to two or three. Our students, like all students, greatly need access to computers so they'll be able to build the skills they will need in their lives and careers."

The only requirement besides need for the schools was being able to provide for transportation of the computers. FedEx agreed to donate transportation for the 340 computers for Memphis City Schools and Yellow Transit provided transportation at a reduced rate for the 250 computers for Pike County.

The disposal office coordinated the distribution with the Space Gateway Support excess facility where the computers were stored. The facility is more formally known as the Reutilization Recycling and



Space Gateway Support workers, above, load Computers for Learning from the NASA Property Disposal Office onto a truck. Pike County school children, at left, work with a computer donated through the program.



Marketing Facility at Ransom Road. SGS staff loaded the computers on the transportation trucks.

"This was a team effort with our contractors. It takes partnership to make this program work," McGinnis said. "We're so glad that we were able to assist the school systems."

The Computers for Learning program also allows for the

donation of printers, modems, routers, servers, telecommunications equipment and research equipment. Schools have been required to re-register for the program since January 2000.

For more information about the federal Computers for Learning program, visit the Web site [www.computers.fed.gov](http://www.computers.fed.gov).

## Days of Caring



KSC NASA employees along with some newly made friends from Publix Supermarket on Garden Street in Titusville had the pleasure of visiting with some 30 seniors from the Cuyler Park Recreation facility in Mims for Days of Caring. The group played bingo and winners were awarded with various launch mission stickers, pins and lithographs brought by the NASA employees. The volunteers, above, served lunch to the seniors. Many smiles and thank yous were exchanged. NASA employees who participated were Denise Coleman, Delores Abraham and Pat Christian of the External Relations and Business Development Directorate; Dan Lewis from the Procurement Directorate; and Tim Lewis of the Space Station Directorate.

# Opening our gates to the co



Children have a hands-on experience with a historic capsule from the early space program .



A family enjoys getting an astronaut's autograph.



A security officer describes his job to a student.



More than 43,000 Brevard County residents as well as Kennedy Space Center and Cape Canaveral Air Force Station employees entered the gates Nov. 4 for a fun-filled day of space education. The joint Community Appreciation Day was a phenomenal success.

The event provided KSC and CCAFS the opportunity to share an up close look inside the space program's vehicles and the one-of-a-kind facilities that make the KSC skyline so unique.

"I would like to thank all of the employees that made this event so

successful," said KSC Director Roy Bridges. "Community Appreciation Day is a perfect time to share our combined goals and vision for the future of our space program here at KSC as well as remember the rich moments of our past that made history."

The highlights of the day included a drive-by tour of Launch Pad 39B with a close-up view of Space Shuttle Endeavour, and a behind-the-scenes look from the International Space Station Center viewing window to watch as actual Station elements are being processed for flight.



Children I

# Community



Cars line up, above, to pass through a guard station at Kennedy Space Center, at left, during the Community Open House. Thousands of Brevard County residents took advantage of the open house invitation and entered the gates for a day of education and up-close looks at America's Spaceport.



A group takes a glimpse into the Vehicle Assembly Building.



Learn about the power of a firehose.



A spaceport employee describes the use of a robot.

## Return of Discovery



The Shuttle Carrier Aircraft, with Discovery attached to its back, gently touches down on the runway at Kennedy Space Center's Shuttle Landing Facility on Nov. 3. The SCA returned Discovery to KSC after the orbiter's California landing at Edwards Air Force Base at the end of mission STS-92. Discovery was demated from the SCA via the mate/demate device at the SLF and transported to the Orbiter Processing Facility bay 1 where it is undergoing preparations for its next launch, STS-102, scheduled for February 2001.

## STS-97 ...

*(Continued from Page 1)*

This mission, STS-97, will have the challenge of catching up to and docking with an inhabited International Space Station traveling more than 17,000 miles per hour.

Three crew members, launched earlier from Baikonur Cosmodrome in Kazakhstan on a Russian Soyuz rocket, will greet the visitors of STS-97 and welcome them as guests.

Bill Shepard, Sergei Krikalev and Yuri Gidzenko make up the Station's first crew. They have begun a five-month stay marking the beginning of continuous habitation of the International Space Station.



## P6 truss

During a ceremonial key exchange Nov. 7 at Kennedy Space Center, the P6 truss segment was transferred from the International Space Station ground operations to the NASA shuttle integration team. Pictured from left to right, are Brent Jett, STS-97 Commander; Bill Dowdell, mission manager; Mark Sorensen, outboard truss cargo element manager for Boeing; and John Elbon, Boeing ISS director of ground operations at KSC.

## ELV ...

*(Continued from Page 1)*

to the reduction in cost of follow-on Landsat missions. EO-1's primary focus is to develop and test a set of advanced technology land-imaging instruments.

However, many other key instruments and technologies are part of the mission and will have

wide-ranging applications to future land-imaging missions in particular and future satellites in general.

EO-1 will be inserted into an orbit flying in formation with the Landsat 7 satellite taking a series of the same images. EO-1 will be launched on a Delta 7320. After deployment from the third stage of the Delta, EO-1 will fly in a 705-km circular, Sun-synchronous orbit at a 98.7-

degree inclination. This orbit allows EO-1 to follow behind and match within one minute the Landsat 7 orbit and collect identical images for later comparison on the ground.

With EO-1 is the SAC-C spacecraft, an international mission to study the structure and dynamics of the Earth's atmosphere, ionosphere and geomagnetic field. SAC-C also will seek to measure

space radiation in the environment and its influence on advanced electronic components and determine the migration route of the Franca whale.

Another objective of the payload is to verify autonomous methods of attitude and orbit determination. The mission is a collaboration of the United States, Argentina, Brazil, Denmark, France and Italy.

# Habitat management benefits waterfowl

Weatherwise, seasons are less defined in Florida than other states. However, there are other seasonal impacts on the Florida environment, such as wildlife.

Many species of birds flee the cold of the north for a warmer Southern climate. An especially inviting winter "resort" for waterfowl is the Merritt Island National Wildlife Refuge, which just happens to surround Kennedy Space Center.

Beginning in October, sharp-eyed employees will notice larger flocks of herons, ducks and others criss-crossing the sky or swimming and feeding in the nearby waters.

Large numbers of migratory ducks winter in the Sunshine State, particularly ring-necked ducks, scaup, teal, wood ducks, and wigeon. The refuge provides wintering areas for 23 species of migratory waterfowl.

## Year-round habitat

The refuge is also a year-round habitat for more than 331 species of birds, including great blue herons, great egrets, wood storks, cormorants, brown pelicans and other species of marsh and shore birds.

In addition, three species, the mottled duck (Florida mallard), wood duck and fulvous whistling duck, live in the state year round. Three species of ducks regularly nest during spring and summer.

The attractive nature of the refuge, however, brings a new set of problems. As human impact on the environment has increased, negative impacts on waterfowl populations also have increased.

The Florida Fish and Wildlife Conservation Commission's (FWC) Waterfowl Management Section (WMS), a part of the Bureau of Wildlife Resources, is charged with ensuring the continued well-being of these popular birds.

Waterfowl management activities fall into two categories: population monitoring and habitat management. Biologists conduct aerial surveys every January in cooperation with the U.S. Fish and Wildlife Service to assess the distribution of wintering ducks within the state.



Habitat management of ducks such as these at the Merritt Island Wildlife Refuge keeps populations healthy.

In March, an annual survey of mottled ducks is conducted.

Habitat management provides the greatest quantity and highest quality of habitat possible to support Florida's waterfowl and other wetland wildlife.

Management activities of the Merritt Island National Wildlife Refuge include:

- Management of water levels within the refuge's 76 impoundments for migratory birds, wading birds, shorebirds, and other native species of plants and wildlife.
- The use of prescribed fire to maintain fire dependent/fire influenced communities.
- Chemical and mechanical control of exotic plants.
- Thinning of pine stands to improve bald eagle nesting habitat.
- Public education and outreach to help instill conservation ethics.

## Population control

Another part of wildlife management is population control through hunting. The waterfowl hunting season in Florida this year extends from Nov. 18, 2000, to Jan. 16, 2001. Regulations, which have typically included restricted hours and bag limits, have been changed for the 2000/2001 season.

In the early 90s, waterfowl populations declined and the Refuge cut the number of days open to hunting from five to three days a week. But overcrowding of hunters persisted. In recent years, altercations between hunting parties who set up too close and instances of hunters being hit by shot from neighboring hunt parties have become more common.

For the past two years the refuge has solicited comments from hunters on ways to improve the program as well as reviewed other successful waterfowl programs.

"Based on this, we have come to the conclusion that one of the most effective ways to improving the quality of the hunt is to reintroduce hunt quotas," says Refuge Manager Ron Hight. "In the past two years we have seen a high concentration of hunters in certain areas which can create competitive problems and injury and hunters getting angry."

This year, the refuge is limiting the number of hunters in a given area on a given date. Also, the time has been changed when hunters can enter the hunt areas.

"The aim of the new regulations is to provide the safest and highest quality hunter experience possible while protecting waterfowl population on Merritt Island NWR," says

Hight. "By implementing several changes now, we hope to maintain Merritt Island's place as the premier waterfowl area in Florida."

## Quota permits

Quota permits will be required in two hunt areas that typically have the worst overcrowding problems.

The daily quotas will be required from the beginning of the regular waterfowl season in Nov. 18 through Dec. 31. After the new year, hunting pressure declines and the quota permits will be dropped from Jan. 1 through the remainder of the season, Jan. 18.

The quota permit will be issued to a party of one to four hunters through a drawing and the permit will be good for a block of one or more days. On weekends, for example, a party with a quota permit can hunt both Saturday and Sunday. Around holidays, the permit will be issued for Wednesday and Thanksgiving or a three-day holiday weekend.

The time hunters can enter the Refuge has been moved from 2 a.m. to 4 a.m. As competition for prime hunting spots increase, hunters have to get out earlier and earlier to claim their favorite spot. Over the last several years, hunters have been arriving at the legal time only

# REFUGE ...

(Continued from Page 7)

to find other hunters already there.

This has caused tempers to flair and altercations to arise. The new time will force hunters to arrive closer together.

The final change is making hunter safety training a requirement in all areas. Hunter safety training has been a requirement since the early '70s in all but one hunt area.

"For almost 30 years the refuge has provided an area where hunters who had not taken the training could go. Now in our effort to improve hunter safety, as well as hunter ethics, the Refuge will requiring hunter safety training in all areas," says refuge Ranger Dorn Whitmore.

This follows a statewide trend to increase hunter safety training. State regulations require all hunters born since June 1975 to enroll in a hunter safety course before going afield, and many public hunting areas are requiring this training of all hunters as well.

These new regulations will go into effect during the 2000/2001 hunting season. For further information, hunters may contact Dorn Whitmore at (321) 861-0667.

The following Web sites also offer information about Florida's waterfowl and the 2000/2001 waterfowl hunting regulations:

- <http://www.state.fl.us/fwc/hunting/mig-bird-00-01.html#Waterfowl>
- <http://wld.fwc.state.fl.us/duck/What's%20New/What's%20New.htm>



The Florida Fish and Wildlife Conservation Commission's Waterfowl Management Section, a part of the Bureau of Wildlife Resources, is charged with ensuring the continued well-being of these ducks at the Merritt Island Wildlife Refuge.



### Hunter Education Requirement

A person born on or after June 1, 1975, may not be issued a license to take or attempt to take wild animal life in this state with the use of a firearm, gun (including a muzzle-loading gun), bow or crossbow without first having successfully completed a hunter safety course.

A valid hunter safety certification card must be presented prior to issuing a license which includes a hunting privilege (excluding lifetime licenses) for anyone who meets the above

requirement.

Individuals exempted from purchasing a hunting license but born on or after June 1, 1975, are exempted from the hunter safety requirement.

Lifetime license holders born on or after June 1, 1975, whose licenses do not indicate on its face that a hunter safety course has been completed, must have in their possession the hunter safety certification card while taking or attempting to take wild animal life.

## November employees



The NASA November Employees of the Month from left to right are John Calvert, Dave Shelton, Greg Horvath, Melanie Chan, Sudhir Mehta, Lisa Morales and Pamela Steel, Not shown: Gerard Martin.



John F. Kennedy Space Center

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