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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

Fortieth Anniversary
Pioneering the Future

An imprint in time



The footprints left by the Apollo 11 astronauts in the moon's Sea of Tranquility may well be more permanent than many man-made structures here on Earth.

Barring a chance meteorite impact, these impressions in the lunar soil will probably last for millions of years.

As we celebrate the 30th anniversary of the launch and landing of Apollo 11, *Spaceport News* dedicates this issue to the many men and women whose dreams and dedication to break new ground broke the mold for a new generation of space-faring pioneers.

Read the story on pages 3-6.

Breaking barriers in space: Collins is first female Shuttle commander

Thirty years to the day that Astronaut Michael Collins was orbiting the moon, another space-faring Collins will break new ground in space. United States Air Force Colonel Eileen Collins (no relation to Michael) will launch as the first female commander of a Space Shuttle when Columbia lifts off from KSC's Launch Pad 39B on STS-93.

At press time, the launch was scheduled for July 20, the same date that Apollo 11 astronauts Neil Armstrong and Edwin "Buzz" Aldrin set foot on the moon.

"Dreams do come true," Eileen said, when the first lady of the United States, Hillary Rodham Clinton, announced her promotion to Shuttle commander at the White House on March 5, 1998.

Collins, who already held the distinction of being the first female Space Shuttle pilot, will command Columbia on a mission to deploy an advanced telescope to peer into the deepest reaches of outer space. It will be her third space shuttle mission.



Colonel Eileen Collins has logged more than 5,000 flight hours in 30 different types of aircraft, and she has logged more than 419 hours in space. She is the first female commander of a Space Shuttle on mission STS-93, scheduled for launch July 20.

"When her mission launches ... the next generation of girls and boys will be able to look to the heavens and think, 'There's nothing I can't do,'" Mrs. Clinton said.

Harkening memories of America's first trip to the moon, the first lady said NASA's first female Shuttle commander will take "one big step forward for women and one giant leap for humanity."

Donned in her blue NASA flight suit and smiling broadly throughout the ceremony, Collins said she hoped her historic mission would capture the imagination of America's youth.

"When I was a child, I dreamed about space," Collins, a 42-year-old Air Force colonel, said. "I admired pilots, astronauts, and I've admired explorers of all kinds. It was only a dream of mine that I would someday be one of them."

Also in attendance at the Collins promotion ceremony was Sally Ride, the first American woman in space.

"All kids need role models," Ride told reporters. "To be a commander of the Space Shuttle,

(See Collins, Page 2)



Then Pilot Eileen Collins walks along KSC's Shuttle Landing Facility prior to the STS-84 mission in May 1997. STS-84 was NASA's sixth Shuttle mission to rendezvous and dock with the Russian Space Station Mir. In completing the nine-day mission, she traveled 3.8 million miles in 145 orbits of the Earth, logging a total of 221 hours and 20 minutes in space.

A new Challenger license plate is available. The plate has been redesigned and is available for purchase now! Funds from purchase of the license plate assist with space and technology education programs that keep the dream of space exploration alive. **See story, page 8.**

Collins ...

(Continued from Page 1)

you need to have a background in space and science. That's a message that will come through loud and clear in this, and I think it's something that will help encourage the kids."

In his remarks praising Collins, President William Clinton said that she embodies the "bold, restless pioneering spirit that" enabled the U.S. space program to achieve its greatest successes.

"I call on all young girls across America — and their parents — to take inspiration from Colonel Collins' achievement," President Clinton said. "Let's remember that at a time when very few girls were taking the hardest math and science courses, Colonel Collins was taking them and mastering them."

The early years

Collins grew up in a family with two brothers, a sister and "two very supportive parents." Her parents, Jim and Rose Collins, describe her as "a very ordinary person, a down-to-earth individual. She's very thoughtful; nobody handed her anything. Everything she is today, she's earned."

She graduated from Elmira Free Academy, Elmira, N.Y., in 1974. About high school she said, "I began reading voraciously about famous pilots — from Amelia Earhart to Women Airforce Service Pilots who played an important role in WWII. Their stories inspired me."

Collins put herself through community college and paid for flying lessons by working fulltime in a variety of jobs. She learned to fly when she was only 19.

She received an associate in science degree in mathematics/science from Corning Community College in 1976 and then a bachelor of arts degree in mathematics and economics from Syracuse University in 1978.

With good grades, flying experience and a letter of recommendation from her ROTC supervisor, she became one of the first women to go straight from college into Air Force pilot training.

"That was by far the biggest break of my life: getting into pilot training," she recalled. This is the point where Eileen set her goals on staying competitive for becoming an astronaut.





Above, inside an M-113 armored personnel carrier at the launch pad, the STS-93 crew take part in emergency egress training under the watchful eyes of Capt. George Hoggard (center), trainer with the KSC Fire Department. From left are Mission Specialist Michel Tognini of France, Commander Eileen Collins, Hoggard, Mission Specialist Steven Hawley, Pilot Jeffrey Ashby, and Mission Specialist Catherine Coleman. At left, Collins arrives at KSC's Shuttle Landing Facility in a TC-38 airplane for Terminal Countdown Demonstration Test activities June 22-24. The primary mission of STS-93 is the release of the Chandra X-ray Observatory, which will allow scientists around the world to obtain unprecedented X-ray images in space to help understand the structure of the universe.

A math instructor at the Air Force Academy, she was also a test pilot at Edwards Air Force base, flying 26 different aircraft in a single year. Collins graduated in 1979 from Air Force undergraduate pilot training at Vance Air Force Base, Okla., where she was a T-38 instructor pilot until 1982.

From 1983 to 1985, she was a C-141 aircraft commander and instructor pilot at Travis Air Force Base, Calif.

She spent the following year as a student with the Air Force Institute of Technology.

From 1986 to 1989, she was assigned to the U.S. Air Force Academy in Colorado, where she was an assistant professor in mathematics and a T-41 instructor pilot.

She also earned a master's degree in operations research from Stanford University in 1986 and a master's degree in space systems management from Webster University, which she earned in 1989.

She was selected by NASA for the astronaut program while attending the Air Force Test Pilot School at Edwards AFB, Calif., where she graduated in 1990.

A veteran of two space flights, Collins has logged more than 419 hours in space. She served as pilot on STS-63 (Feb. 2-11, 1995) and STS-84 (May 15-24, 1997).

Collins is well aware of the pioneering nature of her work: "I want to do well because I know that I'm representing other women, other pilots, military pilots as well as civilian pilots who are hoping to come here to NASA and be pilots themselves for the Space Shuttle."

She has flown more than 5,000 hours in more than 30 type of aircraft. On STS-93, Collins will command a five-member crew: Pilot Jeffrey Ashby and Mission Specialists Steven Hawley, Catherine Coleman and Michel Tognini.

"I'm just so excited about this opportunity that I have to command a Space Shuttle flight. ... Since I was a child I've dreamed about space. I've admired pilots, astronauts, and I've admired explorers of all kinds. And it was only a dream of mine that I would someday be one of them and have these kinds of opportunities."

— Commander Eileen Collins, speaking at the White House

SPACEPORT NEWS

Vol. 8, No. 15 Kennedy Space Center, Florida July 23, 1969

LIFTOFF FROM KSC FLAWLESS

U. S. Lands Men on Moon

On July 16, 1969, three Americans lifted off from Kennedy Space Center's Launch Complex 39A on a mission to set foot on the moon. This special insert of *Spaceport News* is dedicated to the many men and women whose dreams and dedication pioneered the way for America to make that historic "giant leap" for all mankind. The event's imprint in history and its influence on the future of space travel will never be forgotten, as man finally broke new ground and his Earthly bounds to land on another celestial body. From the men who set foot on the moon to the mission managers and module makers, Apollo 11 will forever impact spacefaring generations who dare to make their own dreams come true.

Remembering Apollo 11



The 363-foot Apollo 11 Saturn V space vehicle lifted off with Astronauts Neil Armstrong, Michael Collins and Edwin Aldrin Jr., at 9:32 a.m. EDT July 16, 1969, from KSC's Launch Complex 39A. The Saturn V was America's most powerful staged rocket, exhibiting 7.75 million pounds of thrust at liftoff.

the men, the module, the mission: the moon

"I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth... In a very real sense, it will not be one man going to the moon — it will be an entire nation. For all of us must work together to put him there."

On May 25, 1961, then President John F. Kennedy delivered these words before the United States Congress, which was at that time locked in a confrontation with the former Soviet Union in Cuba, in Berlin and in space.

When Kennedy laid this goal before Congress, the spacecraft that would carry man to the moon existed only as a theoretical concept tentatively named Apollo.

The powerful rocket necessary to launch the spacecraft with sufficient velocity to escape Earth's gravity was only a few lines on an engineer's scratch pad.

The vast support, checkout and launch facilities of the Earthbound base did not yet exist. A moonport had yet to be designed and built.

The construction story itself at then Cape Kennedy is monumental, since the building of the Apollo launch facilities was the largest project of its time.

The program was the most extensive ever undertaken by any nation. During its peak in 1966, more than 20,000 companies and 350,000 people throughout the country participated directly in it.

Launch Complex 39 facilities at KSC were planned and built specifically for the Apollo

(See Apollo 11, Page 4)

Apollo 11 ...

(Continued from Page 4)

program.

The Vehicle Assembly Building (VAB), which covers eight acres, was constructed expressly to house the 363-foot-high Saturn V rocket.

Spacecraft components were taken to the Manned Spacecraft Operations Building at KSC for preliminary checkout.

Because of the complexity involved in the checkout of the Apollo/Saturn V configuration, launch teams used extensive automation — one of the major differences in check-out used in Apollo compared to the procedures used in the earlier Mercury and Gemini programs.

Another major change was the Launch Control Center (LCC), a four-story structure that was a radical departure at the time from the dome-shaped blockhouses at other launch sites. Computers, data display equipment and digital data techniques were used throughout the automatic checkout from the time the launch vehicle was erected in the VAB through liftoff. Spacecraft checkout was controlled from separate rooms in the Manned Spacecraft Operations Building.

Complex 39 also introduced the mobile concept of launch operations, a departure from the fixed launch pad techniques used previously. The fixed method called for assembly, checkout and launch of a rocket at one site — the launch pad. In addition to tying up the pad, this method also often left the flight equipment exposed to the outside





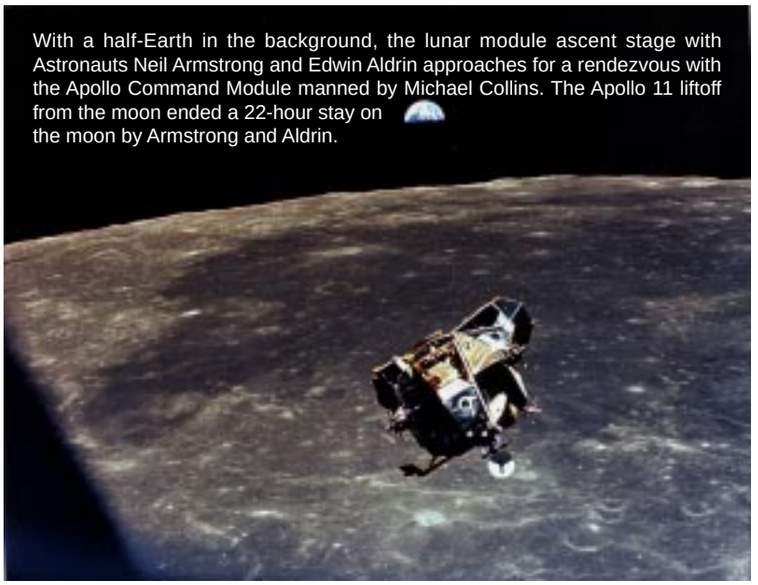




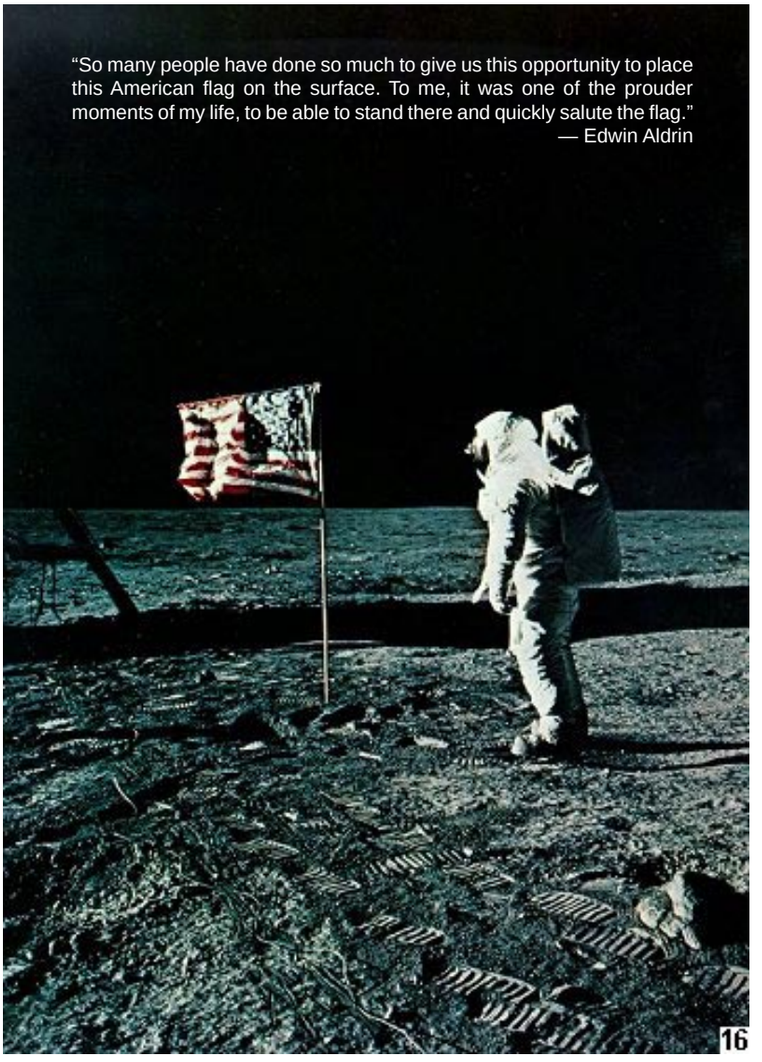




From top right, clockwise, Neil Armstrong and Edwin “Buzz” Aldrin (both seen in the lunar module) were the first two men ever to set foot on the moon. Then former President Lyndon Johnson and then Vice President Spiro Agnew viewed the liftoff of Apollo 11 at Cape Kennedy’s VIP viewing site. Members of the launch team at Cape Kennedy rise from their consoles in the Launch Control Center to watch the launch. Astronaut Michael Collins is seen inside an Apollo Command Module mockup practicing procedures with the Apollo docking mechanism. The moon was photographed from the Apollo 11 spacecraft 10,000 nautical miles away during the craft’s journey homeward.



With a half-Earth in the background, the lunar module ascent stage with Astronauts Neil Armstrong and Edwin Aldrin approaches for a rendezvous with the Apollo Command Module manned by Michael Collins. The Apollo 11 liftoff from the moon ended a 22-hour stay on the moon by Armstrong and Aldrin.



"So many people have done so much to give us this opportunity to place this American flag on the surface. To me, it was one of the prouder moments of my life, to be able to stand there and quickly salute the flag."
— Edwin Aldrin

influences of weather for extended periods.

Using the mobile concept, the space vehicle was thoroughly checked in an enclosed building before moving it to the launch pad for final preparations.

This afforded greater protection, a more systematic checkout process using computer techniques and a higher launch rate for the future by minimizing pad time.

Major Complex 39 facilities during Apollo 11 included the VAB, where the Saturn V rocket was assembled and prepared; the Launch Control Center, where the launch team conducted the preliminary checkout and final countdown; the mobile launcher, upon which the rocket stages were erected for checkout and launch; the mobile service structure, that provided external access to the space vehicle at the pad; the crawler-transporter, which carried the space vehicle and mobile launcher, as well as the mobile service structure to the pad; the crawlerway over which the space vehicle traveled from the VAB to the launch pad; and the launch pad itself.

Clearing the way

The splashdown of the Apollo 10 spacecraft on May 26, 1969, cleared the way for the first formal attempt at a manned lunar landing.

Six days before, the Apollo 11 launch vehicle and spacecraft crawled from the VAB and trundled at 0.9 miles per hour to Pad 39A.

The Apollo 11 crew, all of whom had already flown in space during Gemini, had been intensively training as a team for many months.



A successful countdown test ending on July 3 proved the readiness of machines, systems and launch team. The next launch window (established by lighting conditions at the landing site on Mare Tranquillitatis) opened at 9:32 a.m. EDT on July 16, 1969.

On that day, nearly a million people crowded the Florida highways, byways and beaches to watch man's departure from the Earth to walk on the moon. Twenty thousand guests looked on from special vantage points.

Thirty-five hundred representatives of the news media from most of the Western countries and much of the eastern hemisphere

(See Moon, Page 6)

Apollo 11 flight controllers and senior management celebrated the successful conclusion of the lunar landing mission in the Mission Operations Control Room in Houston, Texas.



Neil Armstrong took this picture of Edwin Aldrin (above left) walking on the moon. This is one of the few photographs on the lunar surface showing Aldrin, who carried the camera on the moon. At right is the plaque that the astronauts left on the moon. It states: "Here men from planet Earth first set foot upon the moon. July 1969 A.D. We came in peace for all mankind." It was attached to the ladder on the landing gear strut on the descent stage of the lunar module. The plaque was covered with a thin sheet of stainless steel during flight.



Moon ...

(Continued from Page 5)

(118 from Japan alone) were there to record the mission in newsprint for readers and to describe the scene for television and radio audiences, who numbered as many as one billion people.

A date with destiny

The voyage began on July 16, when a Saturn V rocket launched into Earth orbit from Cape Kennedy. After one and a half orbits of the Earth, the third stage refired to send Apollo 11 on its outward journey to the moon.



The Earth rising over the moon's horizon was photographed from the Apollo 11 spacecraft.



Clancey Hatleberg with the U.S. Navy disinfected Apollo 11 Astronauts Armstrong, Collins and Aldrin in the life raft during recovery operations. The space pilots donned biological isolation garments in their spacecraft. Below, a ticker tape parade was held on Sept. 15, 1970, to honor the astronaut heros.

Shortly afterward, the command/service module, called Columbia, separated from the Saturn third stage, turned around and connected nose to nose with the lunar module, named Eagle, which had been stored in the third stage. With Eagle attached to its nose, Columbia drew away from the third stage and continued toward the moon.

Four days later, on July 20 at 4:18 p.m. EDT, the Lunar Module touched down on the moon at Tranquility Base, and Armstrong reported: “The Eagle Has Landed.” At 10:56 p.m., Armstrong, descending from Eagle’s ladder and touching one foot to the Moon's surface, announced his now famous words: “That’s one small step for a man, one giant leap for mankind.”

Aldrin joined Armstrong, and before a live television camera that they set up on the surface, they performed their assigned tasks.

Below, then President Richard Nixon (right) welcomed the Apollo 11 astronauts back to Earth aboard the U.S.S. Hornet on July 24, 1969. Already confined to the Mobile Quarantine Facility are (left to right) Neil Armstrong, Michael Collins and Edwin “Buzz” Aldrin.





Their dramatic venture ended at 1:54 p.m. on July 21 when Armstrong and Aldrin lifted off from the moon on a tower of flame. They rejoined Eagle to Columbia, in which Collins had waited for them, in lunar orbit. They returned to Columbia and cast Eagle adrift.

They reached Earth’s vicinity at a speed of about 25,000 mph, threading their way into its atmosphere to avoid burning up or bouncing back into space. With parachutes billowing, they landed in the Pacific Ocean southwest of Hawaii at 12:51 p.m. EDT, July 24.

In their own words

At a press conference after their return to Earth, the three astronauts were able to express their view of the mission and its significance.

“I think it a technical triumph for this country. ... not just purely technical, but also a triumph for the nation’s overall determination, will, economy, attention to detail, and a thousand and one other factors that went into it,” said Collins.

Adrin agreed: “I believe that from the early space flights, we demonstrated a potential to carry out this type of a mission... I think this demonstrated that we were on the right track when we took this commitment to go to the moon.”

Armstrong added: “I just see it as beginning, not just this flight, but in this program which has really been a very short piece of human history — an instant in history — the entire program. It’s a beginning of a new age.”

Space Celebration 1999 a thundering success

NASA, Boeing and Jet Propulsion Laboratory representatives helped enthusiastic guests at Disney's Epcot Center launch about 300 model rockets during Space Celebration 1999 activities June 11-15.

Pegasus Integration Engineer David Sollberger, Expendable Launch Vehicles, designed, built and operated a Wire-Guided Rocket Tower, where Epcot Park guests could launch a model rocket. The tower stood 39-feet-high and had four guide wires on which the rockets were launched.

Park guests participated in the launch countdowns, and volunteers could push the "big red button" to ignite the rocket motors.

Sollberger also organized a Model Rocket Construction Zone, where guests could build model rockets and then take their free rockets home. Sollberger worked with 26 students from Cocoa Beach Junior/Senior High School who helped guests build the rockets.



David Sollberger performed launch countdowns and model rocket launches (above) during Space Celebration 1999. Below, Epcot Park guests were able to push the launch button for rockets on vertical wires. Some international guests had never seen a model rocket launch because they are not legal in some countries.



"Children were particularly excited about helping with the launch countdown and being able to push the launch button," noted David Sollberger, who designed, built and operated the Wire-Guided Rocket Tower and Model Rocket Construction Zone during Space Celebration 1999 at Walt Disney World's Epcot Center from June 11-15.The rocket tower stood 39 feet high and had four guide wires on which the rockets launched.



July employees of the month



July employees of the month are, left to right, Amanda Mitskevich, ELV and Payload Carriers Program; Taya Hall, Logistics Operations; Patricia Lynn, Biomedical Office; Linda Maust, Installation Operations; Jan Corbin, Space Station Hardware Integration; Stephanie Stilson, Space Station and Shuttle Payloads; Calvert Staubus, Safety and Mission Assurance; and Emilio Valencia, Checkout and Launch Control System. Not shown are Tracy Lee Crittenden, Office of the Chief Counsel; Karon Buchner, Office of the Chief Financial Officer; John Calvert, Joint Performance Management Office; Alan Littlefield, Engineering Development; and Becky Thompson, Shuttle Processing.

Federally Employed Women's Space Coast chapter presented awards and installed officers

The Space Coast chapter of Federally Employed Women, Inc. held its annual installation and awards banquet on June 7, and Vickie Hall was installed as president for 1999-2000.

Other officers installed were President Elect Ann Piepenbrink; Vice President Aneta Ott; Secretary Jane Eitel and Treasurer Karin Biega.

Also, three special awards were given. Marvin Jones, KSC director of Installation Operations, received the Distinguished Service Award. Aneta Ott, NASA, received the Member of the Year Award, and James Jennings, KSC deputy director of Business Operations, received the President's Award.

Seven scholarships, totaling $5,000, were awarded to local students honoring their outstanding academic and civic achievements.

Those receiving scholarships were: Stacy Lynn St. Clair, Taya Renee Hall, Kelly Jo Markowski, Kathryn Louise Quick, Tamara Nicole Campbell, Malekia Marie Chandler, and Ashley Elizabeth Sherman.

Thirteen Space Coast chapter past presidents attended the banquet and were recognized. Mae Morris, the 1972–1973 president, was the guest speaker.



Lighting a FUSE

NASA's Far Ultraviolet Spectroscopic Explorer (FUSE) satellite was launched aboard a Boeing Delta II rocket 11:44 a.m. EDT on June 24 from Launch Pad 17A, Cape Canaveral Air Station. FUSE was developed to investigate the origin and evolution of the lightest elements in the universe — hydrogen and deuterium.

LC-39 Emergency Power Plant ribbon cutting held July 1

Kennedy Space Center recently activated the newly upgraded Emergency Power Plant at the C-5 substation.

To commemorate this important milestone, KSC hosted a ribbon cutting ceremony July 1.

The Emergency Power Plant, which supports all critical Space Shuttle operations in the LC-39 area, was modernized by doubling its generation capacity to 10 megawatts — improving reliability and enabling NASA to participate in Florida Power & Light's (FPL's) load control program.

This program entitles NASA to receive a lower billing rate for electrical power consumed in the LC-39 area. The lower rate will result in an estimated annual savings of $770,000.

KSC contracted FPL for the design and installation services. Financing in the amount of $6.84 million was provided through a third-party funding agreement, which will be repaid using the annual savings.



KSC executives cut the ribbon of the newly upgraded Launch Complex 39 (LC-39) Emergency Power Plant at the C-5 substation on July 1. The plant, which supports all critical Shuttle operations in the LC-39 area, doubled its generation capacity.

Challenger license plate redesigned

After a 12-year orbit around Florida tag offices, the Challenger license plate recently underwent a major redesign. The newly designed plate was relaunched into the Florida market at a public unveiling held June 24 at KSC's Center for Space Education.

The plates went on sale June 25 around the state, with proceeds benefitting space and technology education programs in Florida.



The revised plate features the Challenger orbiter circling the Earth.Designer Dean Graves explained that the orbiter is situated on the left side of the plate, facing upward and to the right to symbolize the forward momentum in the pursuit of space education.

The Challenger license plate was created by the Florida legislature in 1987 in remembrance of the Challenger crew. The original plate featured the liftoff of the mission. To date, more than 655,000 Challenger license plates have been sold in the state of Florida.

Proceeds from plate sales are divided equally between the Astronauts Memorial Foundation (AMF) and the Technological Research and Development Authority (TRDA). The AMF maintains two memorials: the Space Mirror and the Center for Space Education. The TRDA sponsors programs that enhance education, space research and economic development in Florida.

John F. Kennedy Space Center

Spaceport News

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