Spaceport News

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Kennedy celebrates 50 years of success

By Kay Grinter
Spaceport News

Fifty years after NASA's establishment of the spaceport that would launch men to the moon and probes to investigate the far reaches of our solar system, Kennedy Space Center is in a state of transition to include commercial utilization and deep space exploration.

At Launch Complex 39, no rockets fill the processing bays. No countdowns echo through the launch pads.

Change is on the way.

The Greek philosopher Heraclitus proposed that change is central to the cosmos, that an ongoing process of change is the universal constant.

And although change is exciting, it can be hard.

"Hard" is a way of life, though, embraced by every director, engineer, technician and support staff member employed at Kennedy. The drive to tackle any challenge on the horizon was implanted in the center's collective psyche 50 years ago by the president for whom the center is named.

"We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard," President John F. Kennedy told an audience at Rice University in Houston on Sept. 12, 1962, just weeks after the center's founding on July 1 and five days before nine new astronauts were named to join the original seven Mercury astronauts in training for projects Gemini and Apollo.

Those goals, Kennedy felt, "will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too."

NASA file

Throughout the past 50 years, NASA's Kennedy Space Center has carried on America's legacy of processing, testing and launching a wide array of rockets and spacecraft to distant planets and other destinations in space. Launch vehicles, from left, include the Atlas V, the space shuttle, the Delta, the Titan, Apollo's Saturn V, Gemini's Atlas-Agena and Mercury's Redstone. In the foreground are human destinations the center helped NASA reach, including Earth's orbit and the International Space Station. At the top right is NASA's newest spacecraft, the Orion multi-purpose crew vehicle, which will help humans explore deeper into space than ever before.

Change was the guiding principle of NASA's decision-makers as Kennedy's facilities and operations took shape.

Kennedy's first center director, Dr. Kurt Debus, explained, "Five years ago, when we were first developing the concept for what is now known as Launch Complex 39, consideration was given to designing it as a fixed facility limited to the needs of the then-known Apollo Program," at the American Astronautical Society's 13th annual meeting on the "Commercial Utilization of Space" in 1967.

"It was apparent, however, that with the sums of money involved, it would be desirable to interpolate known trends and provide a facility of the future as well," Debus said. "Upon advisement, both Congressional and NASA leaders agreed, and it (Kennedy Space Center) was developed as a national resource to meet the needs of known as well as potential requirements where it was economically feasible to do so. The result was the mobile launch concept."

Debus' successor, Lee Scherer, took over Kennedy's helm in 1974 as NASA's focus turned to international cooperation in the Apollo/Soyuz Test Project.

When asked what he thought about President Kennedy's decision to send astronauts to the moon during an interview for a NASA history project in 2002, Scherer said: "At first, I thought it was crazy, and then I realized he was a lot smarter than I was. I think that was terrific in that it started the whole space business for our country.

"He was right when he said we're going not because it's easy but because it's hard, and it resulted in the development of things that we would never have dreamed of if we hadn't. And it's scary to look back and say we wouldn't have done this or that or the other if the public wasn't fully behind it at that time."

Kennedy, from its infancy was designed with the capability to support the hard transition to commercial utilization and deep space exploration at its core.

Join the *Spaceport News* team as we recall the changes we have undergone during the past five decades and the preparations under way to face the future head-on and accomplish "the other things" on NASA's to-do list.

INSIDE . . .

Commitment to excellence the foundation of Kennedy Space Center's 50th anniversary

Director's Note
Bob Cabana

As NASA's Kennedy Space Center celebrates its 50th anniversary, I want to thank each and every one of you for your hard work and dedication to our center, our agency and our country. Your commitment to excellence and safety, teamwork and integrity, continually give us reason to be proud.

In 50 years, less than a lifetime, Americans first pioneered paths into orbit, then made confident strides onto the surface of another world and sent instrument-laden machines into the perilous reaches of space beyond the solar system. All those voyages began here, made possible in large measure by the professionalism, determination and boldness of the Kennedy team.

Together, we've weathered some challenging times and charted through some significant transitions. Through it all, you have remained focused and diligent.

I'm extremely proud to be part of this amazing team.

This is a major anniversary for us, and a celebration of our abilities, but it really is just the starting point for a vibrant future.

I invite you to take a look through this special edition of "Spaceport News," which commemorates the accomplishments of this great center.

Keep Charging,

Bob

BACKGROUND: The mobile launcher stands at Launch Pad 39B at NASA Kennedy Space Center in Florida on Nov. 28, 2011.

July 1, 1962
NASA officially activates the Launch Operations Center at the seaside spaceport.

Aug. 2, 1963
First pile for Vehicle Assembly Building driven into bedrock. VAB is completed in 1966.

Nov. 29, 1963
The Launch Operations Center is renamed the John F. Kennedy Space Center.

Early 1964
Construction starts on what is now known as the Operations and Checkout Building.

March 23,1965
Gus Grissom and John Young make the first launch of the Gemini Program.

Dreams became a reality in the 1960s

By Cheryl Mansfield
Spaceport News

"First, 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 the Earth."

That proclamation by President John F. Kennedy before a joint session of Congress on May 25, 1961, set the stage for an astounding time in our nation's emerging space program. The goal -- fueled by competition with the Soviet Union dubbed the "space race" -- took what was to become Kennedy Space Center from a testing ground for new rockets to a center successful at launching humans to the moon. Neil Armstrong's "one small step" on the lunar surface in 1969 achieved a goal that sounded like science fiction just a few years earlier.

As the decade dawned in 1960, gas cost 31 cents per gallon, the No. 1 song of the year was the instrumental "Theme from a Summer Place" by Percy Faith, and the two-year-old space agency was launching rockets along the east coast of Florida. Project Mercury already was under way, having launched the first American, Alan Shepard, on a suborbital flight May 5, 1961 -- just a few weeks before the president's bold proclamation. On Feb. 20, 1962, John Glenn lifted off from Launch Complex 14 aboard an Atlas rocket to become the first American to orbit Earth. America had a new set of heroes -- the Mercury 7 astronauts.

During these early days, the Launch Operations Directorate in Florida, under the leadership of Dr. Kurt H. Debus, was an arm of the Marshall Space Flight Center in Alabama. On July 1, 1962, the launch facility was given full center status as the Launch Operations Center with Debus as its first director.

Throughout the course of two years, Project Mercury had six successful launches of solo astronauts aboard Redstone and Atlas rockets. Following closely behind were Project Gemini's 10 missions, with crews of two, aboard Atlas and Titan launch vehicles. The first crew flew aboard Gemini 3 on March 23, 1965, lifting off on a Titan rocket from Launch Complex 19. The Gemini missions established their own astounding set of firsts, introducing pioneering spacewalks and spacecraft dockings -- revolutionary new feats as astronauts were quickly learning to live and work, and even troubleshoot, in space.

During this time, the infrastructure of the Launch Operations Center took shape as preparations for the lunar missions continued, but the name of the center changed after a tragic turn of events. On Nov. 29, 1963, just five days after the assassination of the president who set the moon as NASA's goal, the center was renamed the John F. Kennedy Space Center in his honor.

NASA file/1962

President John F. Kennedy is welcomed by a color guard after arriving at the Cape Canaveral Missile Test Annex Skid Strip on Sept. 11, 1962, as Center Director Kurt Debus looks on.

NASA file/1962

Inside Mercury Mission Control launch controllers perform a Mercury-Atlas 8 prelaunch simulation Sept. 10, 1962.

While Mercury and Gemini launches lifted off from pads on Cape Canaveral, NASA was building its own moon launch facility, Launch Complex 39, to support the mighty Saturn V rocket. The gigantic Vehicle Assembly Building began to take shape in 1962 and was completed in 1965. Launch pads A and B were constructed, with a crawlerway to serve as the highway between the VAB and the pads. A crawler-transporter was built to carry the towering moonbound rockets along the gravel path.

Further south, the Manned Spacecraft Operations Building, now known as the Operations and Checkout Building, was constructed in 1964 in what became known as the Industrial Area. Kennedy's Headquarters and Central Instrumentation Facility were built nearby to house the growing workforce at the center.

With the last Gemini mission in 1966, the stage was set for the final march to the moon.

BACKGROUND: Construction progress of the Vehicle Assembly Building on Aug. 11, 1965.

August 1965
Construction of the first stretch of the crawlerway, from the VAB to Launch Pad 39A is completed.

Jan. 27, 1966
The first of three mobile launchers is moved into the Vehicle Assembly Building.

May 25, 1966
The first Apollo/ Saturn V, a facilities test model, is rolled out of the Vehicle Assembly Building.

Jan. 27, 1967
The three-man crew for the first manned Apollo spaceflight perish in an accident.

Nov. 9, 1967
Launch Pad 39A is used for the first time to launch the first Saturn V on Apollo 4.

Mankind took giant leap by decade's end

By Cheryl Mansfield
Spaceport News

NASA file/1969

Apollo 11 Commander Neil Armstrong leads astronauts Michael Collins and Edwin "Buzz" Aldrin Jr., from the then Manned Spacecraft Operations Building to the transfer van for the 8-mile trip to Launch Pad 39A on July 16, 1969.

President Kennedy said Americans should land on the moon before the end of the decade, and although he didn't live to see that proclamation fulfilled, the Apollo Program rapidly took shape. A bigger, more powerful rocket was needed to deliver astronauts beyond Earth orbit and propel them toward the moon, as well as two separate spacecraft -- a command service module and a lunar lander -- to accomplish the task of reaching the surface. Both crew and spacecraft were coming together for the first flight when tragedy struck the bustling moonport.

On Jan. 27, 1967, the three astronauts set to fly the first Apollo mission the following month -- Gus Grissom, Ed White and Roger Chaffee -- lost their lives in a flash fire that swept through their command module during a launch pad test at Complex 34. The exhaustive investigation of the fire and extensive reworking of the Apollo command module postponed launches of astronauts until NASA officials cleared the module for flight. In the spring of 1967, the flight originally scheduled for Grissom, White and Chaffee was officially designated Apollo 1 for the history books. The first test of the powerful Saturn V without a crew on board was Apollo 4 on Nov. 9, 1967. Center Director Kurt Debus described its liftoff at the time: "The release is very slow and the rise along the umbilical tower is very slow. It takes a total of 19 seconds, which at that moment appeared to be minutes as it takes off," he said, "and as this rocket lifts off, the majestic way in which it performs is very impressive, more impressive than anything I have ever seen."

NASA file/1969

Kennedy Space Center workers in the Launch Control Center Firing Room 1 watch Apollo 11 lift off on July 16, 1969.

The flight proved the huge new Saturn rocket had the power to perform and that the team at Kennedy was up to the task of successfully launching such a rocket.

The maiden voyage of an Apollo crew came on Oct. 11, 1968, as Wally Schirra, Donn Eisele and Walt Cunningham lifted off from Launch Complex 34 aboard a Saturn-IB for the Apollo 7 Earth orbital mission.

Just two months later, the Apollo 8 astronauts flew the first lunar orbital mission after launching from Launch Pad 39A aboard a Saturn V on Dec. 21, 1968.

During that historic mission, Americans sat spellbound on Christmas Eve watching a live broadcast by the astronauts orbiting the moon, as they presented amazing, never-before-seen images like "Earthrise" over the lunar surface.

The lunar orbital missions of Apollo 8 and 10 demonstrated that it was possible to reach the moon and return, but it was up to the Apollo 11 crew to prove that they could not only get there, but also land on the moon and return home. At Kennedy, three astronauts -- Neil Armstrong, Michael Collins and Buzz Aldrin -- along with the Kennedy launch team, prepared for a test like no humans had ever faced before.

The Apollo 11 launch from pad 39A came on July 16, 1969. The eight-day mission took the crew on a 935,000-mile journey to another world. On July 20, an estimated 530 million people watched the televised image and heard Armstrong's words as he became the first human to set foot on the moon, fulfilling President Kennedy's challenge.

By decade's end, the Apollo Program had completed two successful moon landings, and Kennedy Space Center was the launch capital of the world.

Against a backdrop of the decade's national tragedies and social changes, the exciting achievements in space gave Americans collective pride.

BACKGROUND: Apollo 11's Saturn V rocket sits on Launch Pad 39A on July 2, 1969.

Oct. 11, 1968
Apollo 7, the first crewed launch in the Apollo Program, is a "101 percent successful" mission.

July 16, 1969
Apollo 11 launches, delivering the first astronauts to the moon in the Eagle lunar module.

Dec. 19, 1972
The Apollo 17 crew is picked up by the USS Ticonderoga as the lunar missions end.

May 1973
Skylab, the first U.S. space station, launches aboard an uncrewed Saturn V rocket.

May 29, 1973
Florida Gov. Reuben Askew restores the name of Cape Canaveral from Cape Kennedy.

Handshake foretold of cooperation to come

By Steven Siceloff
Spaceport News

Kennedy Space Center spent the 1970s bridging the achievements of the 1960s and the expectations of the 1980s. The center emerged from the decade as a place of adaptation and innovation.

The 10-year span saw Kennedy help NASA reach farther into space than ever before. The center launched men to the moon five times, rescued a crew during an emergency, sent America's first space station into orbit and then lofted a pair of spacecraft on a rare journey to see the four outer planets up close.

Even the missions that fell in between those stand as civilization-defining scientific milestones. The twin Viking landers, for example, set down softly on the Martian surface and beamed back the first analysis of the rust-colored soil that gives the Red Planet its nickname.

There also was the Apollo-Soyuz flight in 1975 that saw American astronauts and Russian cosmonauts shake hands in space for the first time, a preview of the relationship that now sustains the International Space Station.

"Certainly in the manned program, it's the transition era between this kind of radical, exciting, somewhat crazy moon program of the '60s and this very stable, very useful shuttle program of the '80s," said Roger Launius, curator at the Smithsonian's National Air and Space Museum and NASA's former chief historian.

NASA file/1979

Space shuttle Columbia arrives at the Orbiter Processing Facility for the first time on March 25, 1979. The Apollo mobile launcher can be seen in the background at right.

The chances of NASA accomplishing such milestones looked distant when the decade began. A year after the first moon landing, the center saw its first mass employee layoff as Apollo's end was scheduled. Although the program's scale was diminished, Kennedy workers still had a few Apollo missions to launch, including Apollo 13. Kennedy's team worked closely with NASA's other spaceflight centers through one difficulty after another to get the three astronauts back to Earth safely.

The layoffs continued through the return of Apollo 17 in December 1972, the last mission to carry astronauts to the lunar surface.

Having landed on the moon six times, NASA set its sights on Earth orbit with the Skylab program in 1973.

The Kennedy launch team sent the final Apollo spacecraft into orbit in 1975, timing the liftoff perfectly to allow a docking with a Soyuz capsule launched from the Soviet Union. The successful flight marked the last time an American astronaut would fly into space during the decade.

Some of the greatest achievements of the 1970s belonged to the most sophisticated machines of the day: robotic probes with computer brains, cameras and instruments that would return a scientist's delight of information about distant worlds.

"There was this transformation in planetary science that forced Kennedy to do payload processing it had never done before," Launius said. "It was critical to Viking. If they allowed any biological material on the spacecraft, they were going to get a false reading and fundamentally Viking was about biological experiments."

Pioneer and Voyager spacecraft rode powerful boosters from the coast of Florida to start journeys that would not end until they crossed outside the solar system.

"It was a golden age of planetary science and Kennedy was the jumping-off place to make it happen," Launius said.

Following the wind down of the early 1970s, Kennedy's momentum started ramping up anew toward the end of the decade when the infrastructure for the space shuttle fleet took shape and saw some testing.

Columbia, the first shuttle intended to fly in space, would provide one of Kennedy's final milestones of the '70s when it arrived atop a modified 747 Shuttle Carrier Aircraft to begin what would be a groundbreaking but arduous time of preparations for its first flight. Although that mission would not begin until 1981, its successes were built on the agency's achievements throughout the decade before.

"The whole idea of processing the shuttle, nobody had any idea what that was about until the 1970s," Launius said. "Somebody had to put in a process whereby you take an orbiter and you prepare it for flight and you do all the checkouts and you stack it and you take it out and launch it, and all that is done at Kennedy and can be done nowhere else."

NASA file/1976

This aerial shows the Vehicle Assembly Building, sporting the American Bicentennial logo, and the Bicentennial Exhibit domes.

BACKGROUND: The Shuttle Landing Facility under construction Dec. 24, 1974.

April 1, 1974
Ground is broken to begin the construction of the Shuttle Landing Facility runway.

July 15, 1975
Joint Russian/U.S. missions begin with launch of the Apollo-Soyuz Test Project.

March 24, 1979
The first space shuttle orbiter, Columbia, arrives at Kennedy Space Center.

April 12, 1981
The space shuttle becomes the world's first reusable spacecraft.

Feb. 11, 1984
The space shuttle returns from orbit to the Shuttle Landing Facility for the first time.

Spaceflight takes on wings in the 1980s

By Anna Heiney
Spaceport News

During the 1980s, Kennedy Space Center made a critical shift in focus. Instead of moving relatively quickly from one human spaceflight program to another, as in the fast-paced 1960s and 1970s, the spaceport's workforce and facilities now were geared toward preparing and launching a revolutionary new spacecraft that would further advance our capabilities in orbit: the space shuttle.

Kennedy was tasked with the vital role of maintaining the "processing flow" -- refurbishing and preparing each vehicle between flights, launching it safely, ensuring the safety of orbiter and crew after landing, and returning it to Kennedy's orbiter processing facilities to begin the process again. During this decade, the Kennedy team launched 32 flights of the space shuttle, then known as the Space Transportation System (STS).

Commander John Young and Pilot Bob Crippen flew aboard Columbia on the Space Shuttle Program's first mission, STS-1.

"Before we did STS-1, there had been some, I guess, things going on in the (United) States that -- the morale of the United States, I don't think, was very high," recalled Crippen, who later served as director of Kennedy.

NASA file/1981

Space shuttle Columbia sits on Launch Pad 39A on March 5, 1981, before its maiden flight on STS-1.

"It was truly a morale booster for the United States, and I was pleasantly surprised to find that it was welcomed by what I would call our allies abroad. So it was obvious that it was a big deal," Crippen said.

As 1980 began, work already was well under way readying Columbia for the STS-1 mission, still months away. But at the same time, teams at Cape Canaveral Air Force Station were preparing for the spaceport's first NASA launch of the decade. The Solar Maximum Mission, or "SolarMax," was lofted into space by a Delta rocket Feb. 14, 1980, embarking on a flight to study our sun during the peak of the solar cycle.

The first launch of the space shuttle on April 12, 1981, became an iconic moment for NASA and for the nation. Columbia's launch plume was a welcome sight to the Kennedy workforce who had labored for years to reach this point. Liftoff came after a precise, on-schedule countdown.

"Everything was going good. The weather was looking good. About one minute to go, I turned to John. I said, 'I think we might really do it,' and about that time, my heart rate started to go up," Crippen said. "And sure enough, the count came on down, and the main engines started. The solid rockets went off, and away we went."

Columbia stayed aloft for two days as Crippen and Young kept busy verifying the spacecraft's systems. The final test came April 14 when the orbiter and crew completed the program's first deorbit burn, decelerated out of orbit and glided to a landing, kicking up dust as its main landing gear made contact with the dry lake bed at Edwards Air Force Base in California.

The flight's success garnered worldwide attention, even intersecting with early-1980s pop culture. Canadian rock band Rush was so inspired by Columbia's first launch, the group recounted the experience in "Countdown," the closing track on the trio's "Signals" album.

MTV kicked off its first broadcast at 12:01 a.m. Aug. 1, 1981, with footage of Columbia's countdown and liftoff, the Apollo 11 launch, then the landing on the moon as an astronaut saluted the MTV flag and a voice-over announced, "Ladies and gentlemen: rock and roll."

The "firsts" ticked by one after another as the Space Shuttle Program progressed. The STS-2 mission marked the first reuse of a space vehicle, as Columbia made its sec-

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NASA file/1981

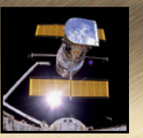
Astronauts Bob Crippen, left, and John Young board the emergency pad escape system known as the "slidewire" on Jan. 6, 1981.

BACKGROUND: Space shuttle Columbia's lift and mate to the external fuel tank in the Vehicle Assembly Building on Nov. 25, 1980.

Dec. 5, 1986
Construction of the Payload Hazardous Servicing Facility is completed.

Jan. 28, 1986
Shuttle Challenger and its seven-member crew perish 73 seconds after launch.

Sept. 29, 1988
Space shuttle flights resume after an investigation into the Challenger accident.



April 24, 1990
STS-31 mission features the deployment of the Hubble Space Telescope.

March 1991
Construction begins of the Space Station Processing Facility in the Industrial Area.

Decade set stage for space station

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ond flight. Sally Ride became the first American woman in space when she flew aboard Challenger in 1983; the next mission was the first to launch and land at night, and included the first African-American astronaut, Guion "Guy" Bluford. Challenger was the first orbiter to come home for landing, touching down on Kennedy's Shuttle Landing Facility in 1984 to conclude the STS-41B mission.

Another major "first" took place on the very next flight, STS-41C, when the crew of Challenger successfully captured, repaired and redeployed the SolarMax spacecraft, prolonging its life in orbit.

NASA developed the Tracking and Data Relay Satellite system in order to provide reliable communications for the space shuttle and other spacecraft in low Earth orbit. Today, a total of nine TDRS satellites have been placed in orbit, including six deployed during space shuttle missions and three carried aloft aboard Atlas IIA rockets.

Kennedy kept pace as shuttle missions flew with increasing frequency, from only two flights in 1981 to nine in 1985.

Then, the nation received a sharp reminder that spaceflight is never routine.

Jan. 28, 1986, dawned bitterly cold. Temperatures hovered just a few degrees above freezing as space shuttle Challenger and its seven astronauts lifted off on the STS-51L mission. The flight ended just 73 seconds later when an O-ring in the right solid rocket booster failed, causing a fireball that led to the loss of the vehicle and crew: Commander Francis Scobee, Pilot Michael Smith, Mission Specialists Judith Resnik, Ellison Onizuka and Ronald McNair, and Payload Specialists Gregory Jarvis and Sharon Christa McAuliffe, a teacher.

The Kennedy family grieved along with the nation. With a new center director, Forrest S. McCartney, at the helm, the workforce focused its efforts on preparing space shuttle Discovery for the next mission, STS-26. Brevard County roads were packed with spectators on Sept. 29, 1988, as Discovery lifted off on the first flight after the Challenger accident, returning the space shuttle to flight after a two-and-a-half-year gap.

NASA file/1969

The STS-1 space shuttle team celebrates a successful liftoff of Columbia from Launch Pad 39A a few seconds past 7 a.m. on April 12, 1981.

NASA file/1982

Space shuttle Challenger makes a surrealistic impression as it moves through the fog on its way down the 3.5-mile crawlerway en route to Launch Pad 39A on Nov. 30, 1982.

"It was a privilege and honor to have been a part of the Kennedy Space Center team during the Return to Flight activities following the Challenger accident," McCartney said. "The KSC shuttle workforce was a world class group of professionals that made their mark on spaceflight history. I will always be grateful to them for letting me join their team."

The space shuttle paved the way for scientific research across a wide variety of disciplines, including biology and materials science. The reusable Spacelab research module, Spacelab pallet or Spacelab Multipurpose Experiment Support Structure flew in the payload bay to further expand the vehicle's capacity for in-orbit science.

Kennedy closed out the 1980s as busy as ever, with five shuttle missions launched in 1989. On two of those flights, Atlantis deployed spacecraft that made a lasting impact on our understanding of our planetary neighbors: the Magellan spacecraft to Venus and the Galileo probe to Jupiter.

President Ronald Reagan set the stage for the future of U.S. human spaceflight in his State of the Union address on Jan. 25, 1984, when he challenged NASA to develop an international, permanently crewed space station.

"A space station will permit quantum leaps in our research in science, communications, and in metals and lifesaving medicines which could be manufactured only in space," Reagan said. "We want our friends to help us meet these challenges and share in their benefits. NASA will invite other countries to participate so we can strengthen peace, build prosperity, and expand freedom for all who share our goals."

The experiences and triumphs achieved at Kennedy during the 1980s helped put the agency on course to make Reagan's vision a reality in the decades to come.

BACKGROUND: A Delta rocket launches Feb. 14, 1980, with the Solar Maximum Mission spacecraft.

April 11, 1991
STS-37 mission features the deployment of the Compton Gamma Ray Observatory.

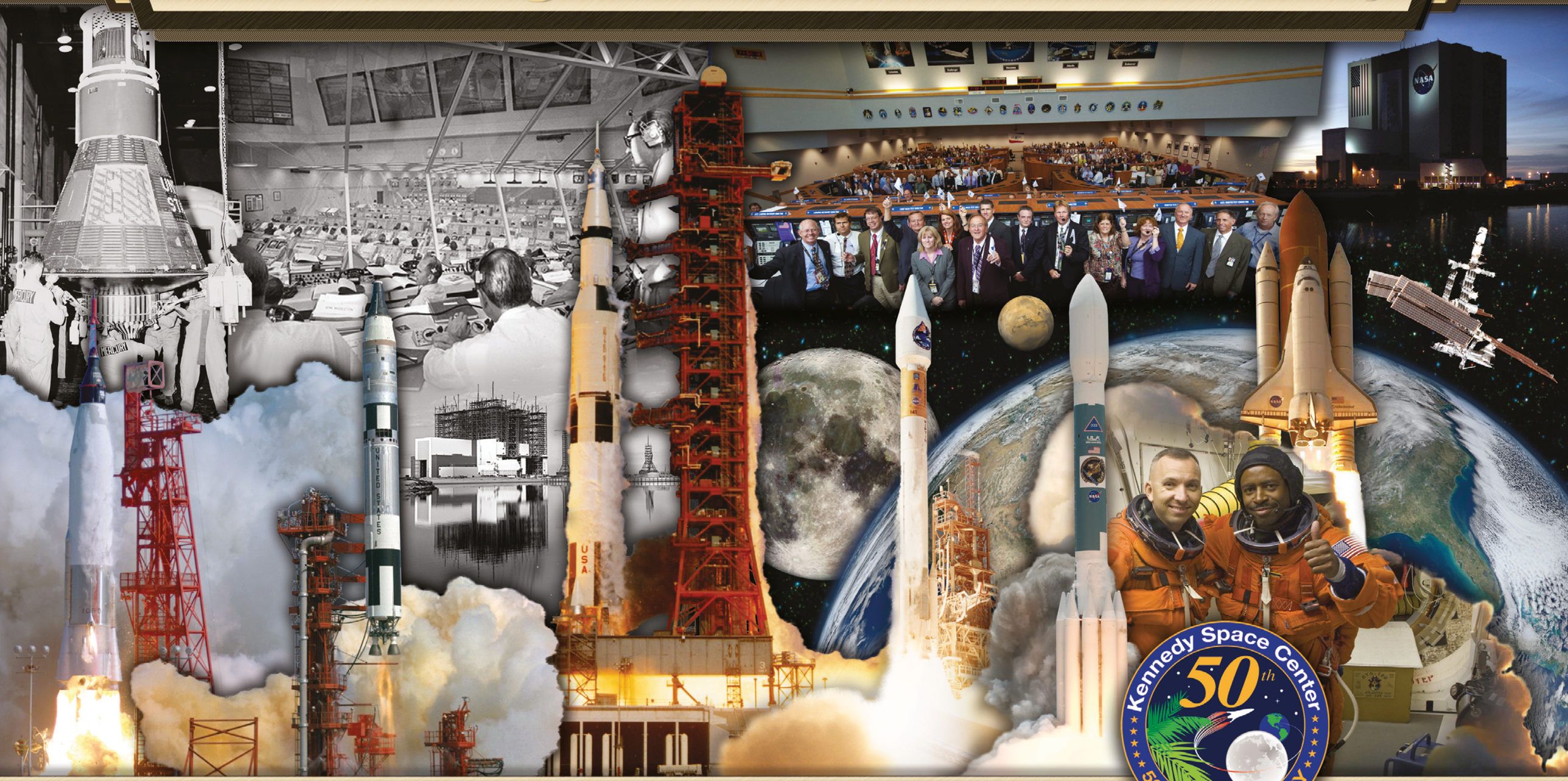
Sept. 3, 1991
The repurposed OMRF officially opens as the Orbiter Processing Facility-3.

Sept. 22, 1993
Shuttle Discovery is the first orbiter to land at night at Kennedy Space Center.

June 23, 1994
The Space Station Processing Facility, a 457-square-foot facility, officially opens.

June 29, 1995
Space shuttle Atlantis docks with Space Station Mir about 218 nautical miles above Earth.

Celebrating KSC's 50th Anniversary



1990s had international flair up there

By Stephanie Covey
Spaceport News

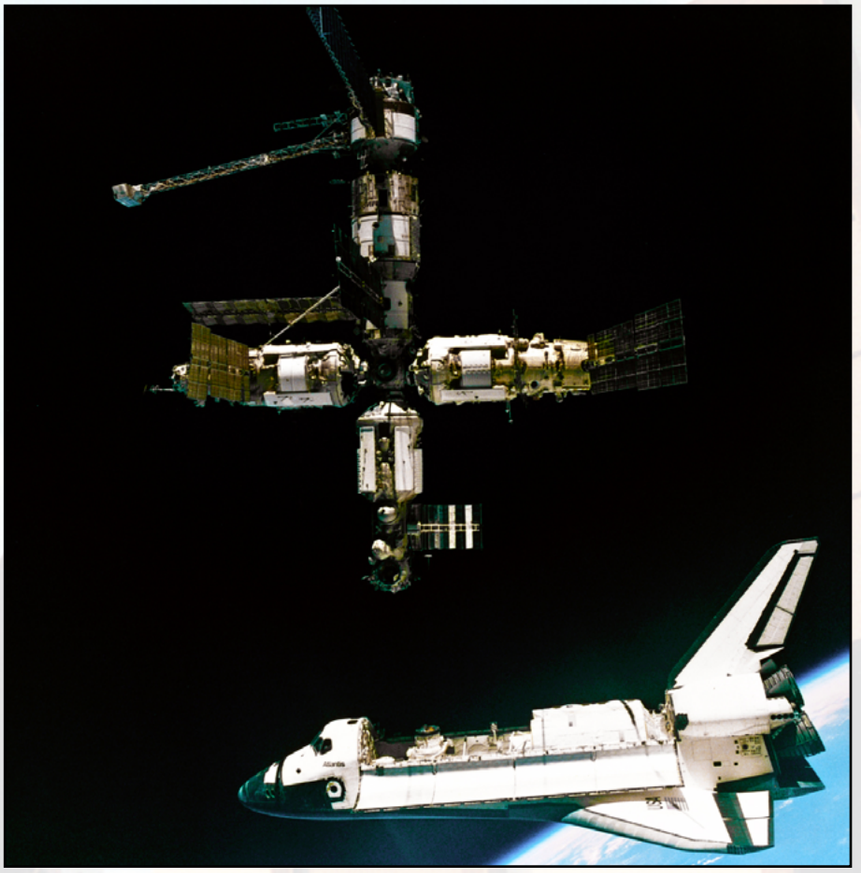
In the 1990s, the number of space shuttle missions doubled that of the '80s, enabling everyday wonder, rather than rare scientific study.

The shuttle program was in full-swing and proved to be Earth's bridge to space, serving the U.S., Russia and our other international partners.

Throughout the '90s, the agency enhanced our knowledge of the world around us through the first three of four Great Observatories, proved that man could handle long-duration spaceflight through the Shuttle-Mir Program, began to assemble the International Space Station (ISS) and launched additional planetary missions, allowing us to explore further.

"During the mid-shuttle program, we had a well-oiled machine with a clearly defined mission, and it was our job to keep it flying safely," said Jay Honeycutt, Kennedy center director from January 1995 to March 1997. "When people look back at that time, I hope they see an era of high performance in a challenging environment, safely executed by a motivated workforce who really enjoyed doing what they were doing."

NASA's first Great Observatory, the Hubble Space Telescope, was processed at Kennedy and launched April 24, 1990, aboard shuttle Discovery. Hubble has been attributed with expanding our understanding of star birth and death, and has transitioned black holes from scientific theory to fact. Since Hubble launched, it has gone through numerous maintenance and servicing missions, including the replacement of its optic lens.



NASA file/1995

Shuttle Atlantis departs the Russian space station Mir on July 4, 1995. This image was taken during the STS-71 mission by cosmonauts aboard their Soyuz transport vehicle.

The Compton Gamma Ray Observatory, a 17-ton satellite, was the heaviest payload to have flown in space at the time of its launch April 5, 1991, aboard shuttle Atlantis. This mission collected data on high-radiation sources called gamma rays, characterized by their extremely high energies.

The third was the Chandra X-ray Observatory, launched into a high Earth orbit aboard shuttle Columbia on July 23, 1999. Chandra was designed to study black holes, supernovas and dark matter in greater detail than previously possible to increase our understanding of the origin, evolution and destiny of the universe.

It wasn't until the '90s that the shuttle was used for the primary mission for which it was designed, the assembly and outfitting of a space station.

The construction of Kennedy's Space Station Processing Facility (SSPF) began in April 1991. One of the special attributes of the SSPF was the ability to perform multi-element integrated testing, saving the agency billions of dollars that would have been spent transporting hardware.

On June 17, 1992, U.S. President George H.W. Bush and Russian President Boris Yeltsin signed an agreement allowing the U.S. to use the Russian space station, Mir, to enhance our knowledge of long-duration missions. The agreement, which became known as the Shuttle-Mir Program, was later expanded to include 10 shuttle flights to Mir with extended stays on the station by U.S. astronauts.

In fall 1994, the Russian-built Mir-2 Docking Module was the first flight hardware to be processed through the SSPF.

During the three-year program, the shuttle docked with Mir nine times. It was a good precursor to the assembly of the ISS because it introduced NASA astronauts to living and working in space on long-duration missions.

The first U.S.-built piece of hardware to be

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NASA file/1999

Shuttle Columbia's payload bay doors close around the Chandra X-ray Observatory at Launch Pad 39B on July 17, 1999.

BACKGROUND: Space shuttle Discovery rolls out of the Vehicle Assembly Building for the STS-60 mission Jan. 10, 1994.

December 1996
The Apollo/Saturn V Center opens with a huge Saturn V moon rocket inside.

June 23, 1997
Unity arrives and becomes the first piece of station hardware to be processed for flight.

Oct. 24, 1997
The expendable launch vehicle Launch Services Program makes Kennedy its home.

August 1998
The NASA insignia is painted on the VAB in celebration of NASA's 40th anniversary.

Oct./Nov. 1998
John Glenn, then 77, becomes oldest astronaut to travel to space during the STS-95 mission.

Solar system piqued our interest

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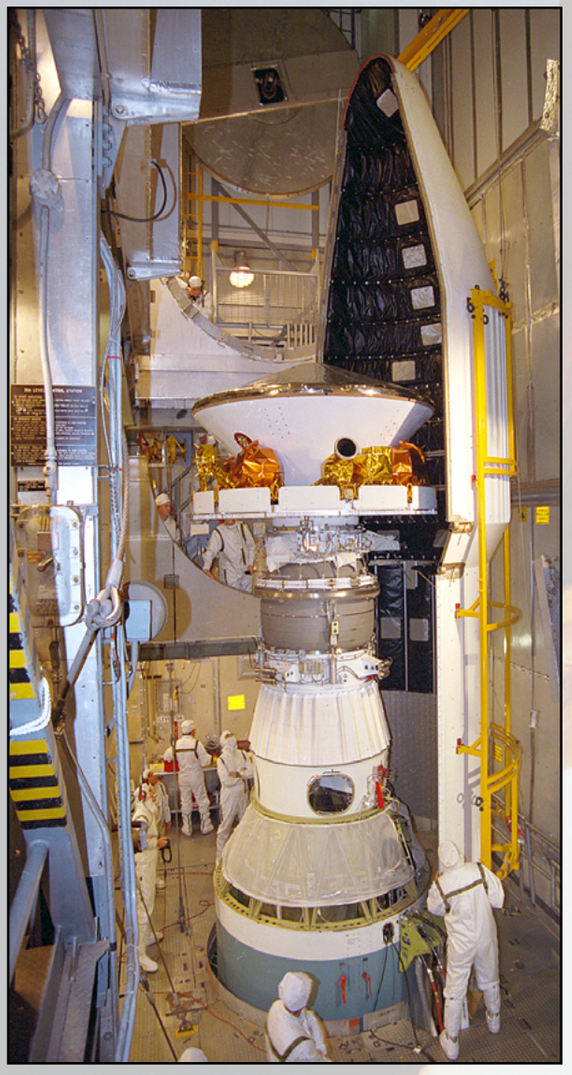
processed through the facility was the Unity module in June 1997. Since then, all payloads sent to the station aboard the space shuttle were processed in the SSPF.

By the end of the '90s, a Russian Proton rocket and two shuttle missions assembled the core of the ISS and outfitted it with necessary supplies. The first ISS assembly mission began Nov. 20, 1998, with the launch of the Zarya control module atop a Russian rocket. Zarya provided the station battery power and fuel storage. The launch of shuttle Endeavour followed Dec. 4 to deliver the Unity node. The STS-88 crew captured Zarya and mated it with Unity, and a new station emerged.



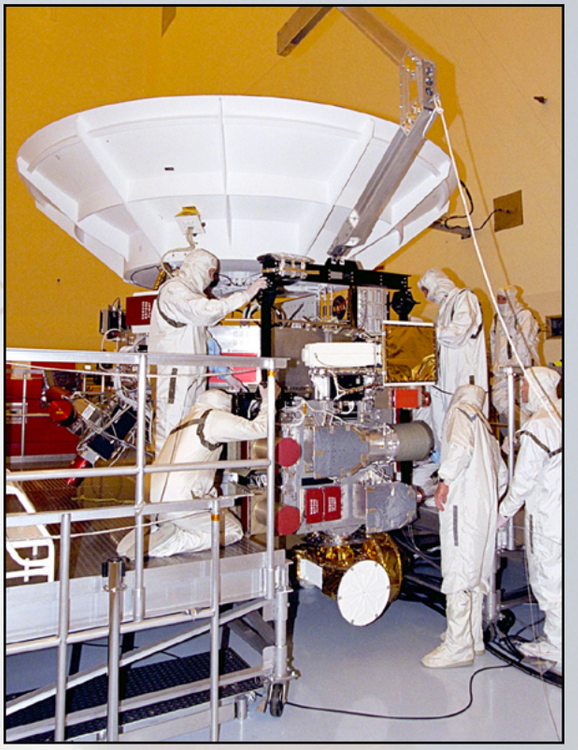
NASA file/1996

Workers at Launch Complex 17B on Cape Canaveral Air Station, Fla., get one final look Nov. 20, 1996, at the Mars Pathfinder before it is sealed inside a protective payload fairing for flight.

Shuttle Discovery launched May 27, 1999, with the STS-96 crew to deliver and outfit the fledgling station with the logistics and supplies necessary to give the international research laboratory a strong beginning.

Although the Space Shuttle Program and the ISS were the primary focus of human spaceflight at Kennedy, two important planetary missions were launched on expendable launch vehicles from neighboring Cape Canaveral Air Force Station. The Mars Pathfinder with the Sojourner micro-rover launched Dec. 2, 1996, arriving on the Martian surface July 4, 1997. Sojourner, the first rover to explore the surface of the Red Planet, lasted 12 times its life expectancy of seven days and returned 550 images of the surrounding area.

Cassini, a joint venture between NASA, the European Space Agency (ESA) and the Italian Space Agency, advanced our knowledge of Saturn, its rings, moons and magnetic environment. Cassini launched Oct. 15, 1997, on a seven-year journey to the ringed planet. One of the primary targets was Titan, Saturn's largest moon. A probe provided by ESA descended to Titan's surface to directly sample the atmosphere and provide the first view of its surface.



NASA file/1997

Employees work on the Titan Cassini Remote Sensing Platform installation in Kennedy's Payload Hazardous Servicing Facility on May 22, 1997.

The Launch Services Program (LSP), originally known as Unmanned Launch Operations and then Expendable Launch Vehicle (ELV) Operations, became an official program at Kennedy in October 1998. LSP took the separate and distinct work of three NASA centers and combined it under one cohesive organization that serves the agency by procuring, managing and launching awe-inspiring scientific missions.

The '90s were a very dynamic time at Kennedy. Three center directors saw Kennedy through numerous programs of national and international importance. Though the Kennedy team had a variety of missions and focuses, one theme was constant: Each of the center directors proudly proclaims that Kennedy had and still has the best team around.

"Despite the challenging environment, the Kennedy team delivered excellent results," said Roy Bridges, Kennedy center director from March 1997 to August 2003. "We successfully built the ISS, prepared and launched the shuttle on many amazing missions, had an excellent track record with ELV launches, and ramped up our concept of spaceport and range technology development."

BACKGROUND: Space shuttle Atlantis launches on the STS-43 mission Aug. 2, 1991.

Dec. 4, 1998
The first mission dedicated to the assembly of the International Space Station launches.

May 29, 1999
Shuttle Discovery becomes first orbiter to dock with the International Space Station.

July 23, 1999
Eileen Collins becomes the first female shuttle commander on the STS-93 mission.

July 23, 1999
The STS-93 mission features the deployment of the Chandra X-ray Observatory.

Feb. 8, 2001
The groundbreaking takes place for what is known as the Space Life Sciences Laboratory.

Station elements came together in 2000s

By Linda Herridge
Spaceport News

Building on the accomplishments of the previous decade, Kennedy Space Center entered the 2000s with some challenging goals to achieve. Not the least of these was processing and launching NASA's space shuttles and completing construction of the International Space Station, as well as managing the agency's Launch Service Program and its many Earth-observing, scientific and interplanetary missions.

During this decade, Kennedy processed and launched 33 successful space shuttle missions, most of these to the space station, and oversaw a record-setting 53 expendable launch vehicle missions.

Roy D. Bridges, center director from 1997 to 2003, said despite the challenging environment, the Kennedy team delivered excellent results.

In October 2000, the STS-92 mission on Discovery marked the 100th space shuttle mission and also included the 100th spacewalk for the U.S. space program.

The arrival of the first crew, Expedition 1, to the International Space Station on Nov. 2, 2000, aboard a Soyuz rocket, marked the beginning of an uninterrupted human presence on the orbiting laboratory. A month later, the very first set of solar arrays, the P6 truss, was delivered aboard Endeavour on the STS-97 mission and immediately increased the station's capabilities.

NASA file/2000

Billows of smoke and steam surround space shuttle Discovery as it lifts off Oct. 11, 2000, from Launch Pad 39A on STS-92, the 100th launch in the history of the Space Shuttle Program.

NASA file/2003

The Spitzer Space Telescope, formerly the Space Infrared Telescope Facility, is lifted for installation of the fairing at Launch Complex 17B, Cape Canaveral Air Force Station, Fla., on April 10, 2003.

What followed was more than 10 years of U.S. and international partner element processing in Kennedy's Space Station Processing Facility (SSPF) and delivery to the station aboard space shuttles.

Russell Romanella was a director of ISS and Payload Processing in the 2000s.

"It was an amazing time with the SSPF high bay so full of elements that we had to start using the high bay of the Operations and Checkout Building as overflow," Romanella said. "During these years, we saw the bay fill up and empty out at least three different times.

"What was most memorable about this time, especially in 2007 and 2008, was the wave of international participation. It wasn't unusual to have 100 international partners here on any given day."

Space shuttles delivered to the station the Destiny Lab, the Quest airlock, the Tranquility node, the cupola, the station's robotic arm and mobile base system, and all of the starboard and port truss segments and solar arrays. Also, the Japan Aerospace Exploration Agency's Kibo Laboratory and the European Space Agency's Columbus module were processed in the SSPF and carried to the station aboard space shuttles.

The first of three multipurpose logistics modules (MPLMs) built by the Italian Space Agency, Leonardo, was processed and delivered to the station in February 2001 aboard Atlantis on the STS-98 mission.

NASA's Spitzer Telescope was launched aboard a Delta II rocket on Aug. 25, 2003, from Cape Canaveral Air Force Station (CCAFS) in Florida. Spitzer is the largest infrared telescope ever launched into space and the last of four missions in NASA's Great Observatories Program.

Tragedy struck the Space Shuttle Program for the second time when Columbia and its seven-member crew were lost during re-entry on Feb. 1, 2003, on the STS-107 mission. Lost were Commander Rick Husband; Pilot William "Willie" McCool; Mission Specialists Kalpana Chawla, Laurel Clark and David Brown; Payload Specialist Ilan

See **2000s**, Page 13

BACKGROUND: The International Space Station as viewed by the STS-132 crew aboard space shuttle Atlantis.

March 5, 2001
Two ferried shuttles return to Kennedy Space Center on the same day.

Feb. 1, 2003
Space Shuttle Columbia and its seven-member crew are lost over east Texas.

June/July 2003
NASA launches a pair of Mars rovers called Opportunity and Spirit, from Cape Canaveral.

July 26, 2005
The STS-114 mission returns the shuttle to active duty with docking to the space station.

Aug. 12, 2005
NASA's Mars Reconnaissance Orbiter launches in search of water on the Red Planet.

Space Shuttle Program winds down

From **2000s**, Page 12

Ramon, of Israel; and Payload Commander Michael Anderson.

Kennedy helped the agency investigate and determine the cause and made upgrades to the shuttle and external fuel tank so that shuttle launches could resume.

They did so July 26, 2005, when Discovery launched with a seven-member crew on Return to Flight mission STS-114 to the space station. The payload included the MPLM Raffaello, the Orbiter Boom Sensor System (OBSS), and tile and Reinforced carbon-carbon (RCC) sample materials.

Jim Kennedy was center director from August 2003 to January 2007. He said the center and the agency were focused on seeing the space shuttle safety return to flight.

"While this was a great challenge, fraught with problems, the fact that we shared mutual objectives with common goals made it a very doable task," Kennedy said. "It is a credit to the fine men and women of Kennedy Space Center."

During a spacewalk, mission specialists demonstrated inspection and repair techniques using the samples. Prior to docking to the station, the crew used the

NASA file/2003

NASA launches its second Mars Exploration Rover, Opportunity, aboard a Delta II expendable launch vehicle July 7, 2003.

OBSS to inspect and take pictures of the shuttle tiles and RCC panels for analysis back on Earth.

"What was significant during this decade was the ability of the shuttle processing team to work across the program to overcome adversity, including resolution of various ground umbilical hydrogen leaks, external fuel tank stringer crack repairs, engine cutoff sensor resolution, and safely returning to flight following the Columbia tragedy," said Ground Processing Director Pete Nickolenko.

In 2004, prior to Return to Flight, then President George W. Bush announced the Space Shuttle Program would end in 2010 and the nation's Vision for Space Exploration would be the next step in U.S. space exploration. A new program, Constellation, would include the Ares I and Ares V launch vehicles and Orion crew exploration vehicle (CEV).

NASA's Hubble Space Telescope underwent a fourth servicing mission in March 2002, during Columbia's STS-109 mission, and then a fifth and final servicing mission in May 2009 during Atlantis' STS-125 mission. All of the new components were processed through Kennedy.

"The last mission was a phenomenal success," said Bob Cabana, Kennedy center director since 2008. "No robots could have done what the astronauts did to upgrade Hubble during the STS-125 mission."

In November 2008, the Launch Services Program celebrated its 10-year anniversary at Kennedy, with 55 successful missions under its belt.

Among the most celebrated missions was the Mars Phoenix Lander, which launched Aug. 4, 2007, on a Delta II rocket from Launch Complex 17A at CCAFS. It descended to Mars on May 25, 2008.

Another of NASA's planetary missions sent two exploration rovers, Spirit and Opportunity, on their travels to Mars, atop Delta II rockets, from CCAFS, June 10, 2003, and July 7, 2003, respectively. Both rovers descended through the Martian atmosphere in January 2004 and began sending back images of the planet's surface.

Chuck Dovale, deputy director of LSP, has spent all but two of his 30-year career in the program.

"The Mars landers still capture the imagination like no other. It's been extremely gratifying to witness the evolution from Sojourner to Spirit and Opportunity and now to Curiosity," Dovale said. "To have a hand in processing and launching them on their quests has been a career highlight for me and I'm sure for everyone in LSP."

Another LSP mission was a pair of spacecraft called Lunar Reconnaissance Orbiter (LRO) and Lunar Crater Observation and Sensing Satellite (LCROSS). They launched atop an Atlas V rocket from CCAFS on June 18, 2009. It was the first mission back to the moon in 10 years.

"My hope is that LSP remains an integral part of the agency's plan to build and launch one-of-a-kind scientific spacecraft to help us increase our knowledge about the world and the galaxy in which we live," Dovale said.

Bill Parsons, who was center director from January 2007 to October 2008, said he would like to see Kennedy processing flight hardware and launching multiple vehicles in the future.

On Oct. 28, 2009, the Ares I-X rocket soared into the sky from Launch Pad 39B on its first flight test. The program was subsequently canceled in 2010, allowing NASA to work with commercial companies for transport to low Earth orbit.

The rocket's first stage separated from the simulated upper stage, and then slowly splashed down in the Atlantic Ocean for recovery.

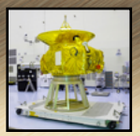
As the Space Shuttle Program's end drew near, the center faced challenging times with the beginning of workforce reductions and a repurposing of facilities and infrastructure to support NASA's Space Launch System and a variety of commercial launch vehicles into the next decade.

"We are a leader in space exploration," Cabana said. "We want to maintain our leadership in the world."

NASA file/2009

On April 29, 2009, technicians in the Payload Hazardous Servicing Facility at Kennedy Space Center help with the installation of the Science Instrument Command and Data Handling Unit, which was installed on NASA's Hubble Space Telescope during the STS-125 mission.

BACKGROUND: An Atlas V rocket stands ready for launch with NASA's Mars Science Laboratory on Nov. 26, 2011.



Jan. 19, 2006 New Horizons launches to study Pluto, the last unvisited planet in the solar system.

July 4, 2006 STS-121 mission provides first shuttle launch to take place on Independence Day.

June 8, 2007 STS-117 mission marks the first liftoff from Launch Pad 39A in more than four years.

Nov. 14, 2008 STS-126 carries the most supplies and equipment ever to International Space Station.

Nov. 26, 2008 NASA's Mars Science Laboratory, including the car-sized rover Curiosity, lifts off.

Solving today's challenges . . .

By Rebecca Regan
Spaceport News

NASA's Kennedy Space Center is transitioning from doing things that are extraordinary to doing extraordinary things regularly.

In 2010, President Barack Obama set the agency on a course to provide new avenues into space for its astronauts without giving up on ambitious desires to explore the reaches of the solar system. From today's robotic probes to Mars and Jupiter to the future's heavy launchers designed to take humanity to deep space, the spaceport at Kennedy is gearing up for a remarkable future.

At the time, NASA Administrator Charlie Bolden said, "We have been given a new path in space that will enable our country to develop greater capabilities, transforming the state of the art in aerospace technologies. We will continue to maintain and expand vital partnerships around the world. It will help us retool for the industries and jobs of the future that will be vital for long-term economic growth and national security."

The center faced some challenges early in the decade with the cancelation of NASA's Constellation Program, which saw a successful flight test of Ares I-X a year earlier. The work on Constellation was not lost, though, and as programs such as the Space Launch System (SLS), Orion Multi-Purpose Crew Vehicle (MPCV) and Ground Systems Development and Operations (GSDO) emerged, there became new uses for its hardware, data and workforce.

"Change brings with it opportunity," said Center Director Bob Cabana. "We don't back away from something just because it's hard. We decide what needs to get done and we go make it happen."

One by one, the Kennedy team methodically processed and launched the space shuttles on their final journeys: Discovery on STS-133, a flawless flight to outfit the International Space Station residents with a new module for research; Endeavour on STS-134, a complex mission to deliver to the station, the Alpha-Magnetic Spectrometer which relays cosmic particle data to Earth; and Atlantis on STS-135, the final chapter of the space shuttle's 30-year era, delivered a stockpile of supplies and parts to the station.

A team of shuttle workers currently is ensuring that the shuttles and other artifacts are safely prepared for their new homes and the lessons learned through the program's history are gathered for future generations.

"This truly is a team that can take on any challenge and make it happen," Cabana said. "I can't say enough about their professionalism and dedication during these transitional times."

In order to make the space station the research hub it was intended to be, the group that supported its assembly here on the ground began to redefine its focus.

"We reorganized in order to better support the full utilization of the ISS and to increase our fundamental research," said Bill Dowdell, deputy director of the International Space Station Ground Processing and Research Project Office. "As an orbiting laboratory, the ISS provides a microgravity test bed to conduct innovative science. Plus, as a human-tended low Earth orbit outpost, critical systems required for humans to explore into deep space can be validated in the relative safety of the station, close to home."

During the next 10 years, researchers expect a wealth of research to return from the space station, resulting in new vaccines, medicines and a number of commercial applications that are currently unanticipated.

A realignment of Kennedy's other core programs also was in order to support the agency's new direction. The center's Engineering and Technology directorates merged to provide a matrix of services to a multitude of programs and partners, from research and technology development to design, development and implementation of hardware and software.

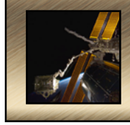
Meanwhile, the Center Planning and Development Office took significant steps to grow strategic new partnerships and position the spaceport to become a multiuser space launch complex. The office's potential partnerships span from clean energy and research tenants to new uses for the pads in Kennedy's Launch Complex 39.

Some of those new uses could come from partners of NASA's Commercial Crew Program, which was established at Kennedy in 2011 to accelerate the development of astronaut transportation capabilities to and from low Earth orbit, and is the center's first opportunity to manage a human spaceflight program for NASA.

One facility already seeing a steady flow of traffic is the Shuttle Landing Facility (SLF) runway, where the performance, suspension and aerodynamic characteristics of aircraft and cars are being tested by commercial entities. This year, the relatively flat, grassy area north of the runway will become a rock- and crater-filled planetary scape for NASA's Morpheus lander to negotiate through, simulating what a spacecraft might encounter while landing on another terrestrial surface.

GSDO currently is refurbishing Kennedy's launch pads, Launch Control Center and Vehicle Assembly Building. It also is modifying and strengthening the new mobile launcher and old crawler-transporters to support the new heavy-lift rocket, SLS,

BACKGROUND: Space shuttle Atlantis lands after the STS-135 mission, marking the end of NASA's Space Shuttle Program.



March 15, 2009
Space shuttle Discovery delivers the final set of solar array wings to space station.

April 17, 2009
Shuttles Atlantis and Endeavour stand poised on both launch pads for the final time.

April 17, 2009
Shuttles Atlantis and Endeavour stand poised on both launch pads for the final time.

June 18, 2009
NASA's LRO/LCROSS mission aboard an Atlas V is NASA's first lunar launch in 10 years.

Nov. 19, 2009
NASA and Florida Power & Light commission a one-megawatt solar power facility.

. . . for tomorrow's future

and Orion spacecraft, which will expand human presence beyond low Earth orbit and enable new missions of exploration across the solar system.

"We're taking the agency's launch and processing capabilities to the next level," said Pepper Phillips, program manager of GSDO. "By building on five decades of experience and planning to support future rockets and spacecraft, Kennedy will be the bedrock to launching NASA's exploration goals for decades to come."

In 2011, the Propellants North Administration and Maintenance Facility opened its doors with the highest rating in green building standards -- Leadership in Energy and Environmental Design Platinum rating. Propellants North is a "net-zero" facility, which means it generates more energy on a yearly basis than it requires to operate.

One directorate that has remained constant for nearly 15 years is NASA's Launch Services Program (LSP). The LSP team successfully managed and launched complex scientific and robotic missions to Jupiter, the moon and Mars in this decade. It sent a mission to study oceans and another to study the sun. "The Launch Services Program will be bustling for the foreseeable future," said Chuck Dovale, LSP's deputy director. "We're already preparing for missions that will continue to expand our knowledge of our home planet and beyond."

Kennedy's Education Directorate continues to find new ways to inspire a new generation of pioneers through innovative programs, such as the Lunabotics Mining Competition, which gives college students the opportunity to design and develop excavators much like they would if they were designing a machine bound for another planet.

"It's these kinds of programs that are helping our future engineers and scientists develop ideas and solutions which could be used in the not-too-distant future," said Hortense Diggs, chief of Kennedy's Education Programs Division.

Kennedy's Engineering and Technology Directorate also is digging in the dirt for future missions. NASA's Regolith and Environment Science and Oxygen and Lunar Volatile Extraction, or RESOLVE, has been tested several times across the globe in Hilo, Hawaii, where the soil resembles the lunar surface.

Perhaps the most significant milestone in this decade occurred on May 22, 2012, Space Exploration Technologies, better known as SpaceX, launched from Cape Canaveral Air Force Station on a resupply mission to the International Space Station. Three days later, the company's Dragon capsule became the first privately launched spacecraft to berth with the station, validating the agency's decision to rely on commercial partners to re-supply the orbiting outpost.

Dragon also is being outfitted with life support systems and a launch abort system that could make it ready to transport astronaut crews for CCP around the middle of the decade. Six other aerospace companies also are maturing launch vehicle and spacecraft designs under Commercial Crew Development Round 2 (CCDev2) activities, including Alliant Techsystems Inc. (ATK), Boeing, Blue Origin, Excalibur Almaz Inc., Sierra Nevada Corp. (SNC) and United Launch Alliance (ULA).

"There is a real need to have some redundancy in our capability up and down to the International Space Station and the Commercial Crew Program is going to provide that redundancy," said Ed Mango, CCP manager. "The next time you see an American rocket lifting off with NASA astronauts on board will most likely be through this program."

The resounding theme of this decade and of the coming decades is that Kennedy, even at 50 years old, still is in its infancy and its list of extraordinary accomplishments will only continue to grow as it transitions into the world's most affordable, sustainable and premier launch site of the future.

"I know we will face significant challenges in the years ahead," Cabana said, "but we have faced them before, and we will rise above them as we have in the past."

BACKGROUND: Kennedy Space Center celebrates 50 years and looks forward to uncovering new discoveries with government and commercial launches.

Oct. 28, 2009
NASA's Ares I-X rocket lifts off Launch Pad 39B for a six-minute flight test.

July 2011
Shuttle Atlantis completes the final mission of the Space Shuttle Program, STS-135.

Oct. 21, 2011
The Boeing Co.'s CST-100 spacecraft is unveiled at a ceremony in OPF-3.

April 17, 2012
Shuttle Discovery is ferried to Washington, D.C., en route to the Smithsonian.

May 2012
SpaceX becomes the first privately owned company to deliver supplies to the space station.

Long-time workers share memories, thoughts about spaceport's future

Rodney Olson
Payloads Consultant
The Boeing Company
50 years at KSC


Olson with John Glenn

The past . . .

I watched the Vehicle Assembly Building go up and that was one great project to witness . . . Of course, working on the Apollo launches was great, too. But the most dramatic point in my life was supporting John Glenn's first launch in 1962 and then meeting him and supporting him the second time he went up in 1998. He was so endearing and so intense in what he did . . . to me, the most memorable person in all of NASA's human spaceflight programs.

The future . . .

My generation was extremely dedicated and achieved what they set out to do. I hope this generation will continue to do what they set out to do with the same intensity and desire that my generation possessed. There are a lot of challenges to overcome . . . so keep pressing on because there are many new horizons to explore.

Roy Tharpe
President
Space Gateway Support
49 years at KSC


Tharpe

The past . . .

Most people don't realize the magnitude of what we accomplished . . . 10 launches in 20 months for Gemini, processing three Saturn Vs in flow at one time for Apollo. We worked day and night, creating a great team with lifelong friendships and a work ethic that carried through to the shuttle program and beyond.

The future . . .

We are always in transition and folks need to embrace that and realize that transition brings opportunities since programs come and go. KSC will always process, test and launch something. That's what we do. Embrace the transitions and carry forth the traditional processes that have made KSC great. Fifty years ago we were known as the Launch Operations Center before the Apollo and shuttle programs and 50 years from now we'll still be a launch operations center, but will we be ready for greatness again? I think we will!

Helen Allen
NASA Secretary
Communications
Infrastructure Services Division
47 years at KSC


Allen

The past . . .

A significant change from my past years was when women were able to begin wearing slacks to work. When I started at KSC, women had to dress up and were not allowed to wear slacks except occasionally if they had the opportunity to go to the launch pad.

The future . . .

Remember to always work as a team and a lot can be accomplished.

George Looschen
Delta Avionics Systems Engineer
Analex Corp.
50 years at KSC


Looschen

The past . . .

During my time at KSC, the most significant change was the flexibility of the center to accommodate the ability to launch all of the unique U.S. space missions. In my time, there were all of the manned missions, as well as all of the unmanned scientific missions going on at the same time. In the past five decades, NASA's programs not only advanced the progress for an orderly exploration of the universe, it made advancements to the private sector's use of space spinoffs.

The future . . .

Every day at KSC, I have been able to witness and participate in the leading edge of technology. From my very first launch to the last one I will participate in, it gives me the same sense of excitement -- Awesome!

Herbert Rice
NASA Aerospace Engineer
Ground Systems
Development and Operations
44 years at KSC


Rice

The past . . .

When I started working at KSC, I was part of the networks group. At that time, we only had a small number of computers . . . and networks consisted of thousands of relays and DC analog signals. But I would say the biggest change was when we transitioned from a purely technical center without financial constraints during Apollo to operating within budgetary constraints . . . that was a right angle change.

The future . . .

The important thing to remember is to remain flexible. Outside forces are constantly changing and the only way we survive is to change along with them. Apply the lessons you've learned from the past, but always look at new requirements with a fresh perspective.

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John F. Kennedy Space Center

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