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Spaceport News

John F. Kennedy Space Center - America's gateway to the universe

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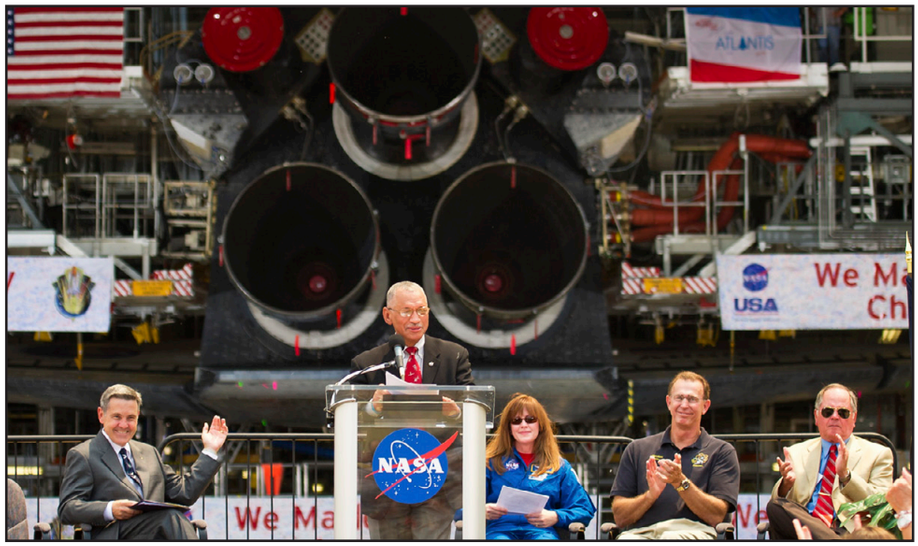
Atlantis to call Kennedy home

By Rebecca Regan
Spaceport News

With the help of shuttle Atlantis, the Kennedy Space Center Visitor Complex will share NASA's remarkable feat of voyaging out beyond the reaches of Earth's gravity in the world's first reusable spacecraft.

"Not only will the workers who sent it into space so many times have a chance to still see it," NASA Administrator Charlie Bolden said to cheers and applause while standing in front of Atlantis outside Kennedy's Orbiter Processing Facility-1, "the millions of visitors who come here every year to learn more about space and to be a part of the excitement of exploration will be able to see what is still a great rarity -- an actual flown space vehicle."



CLICK ON PHOTO *NASA/Bill Ingalls*

NASA Administrator Charlie Bolden announces April 12 that shuttle Atlantis will remain at Kennedy Space Center on permanent exhibition at the visitor complex. Seated on stage, from left, are Kennedy Center Director Bob Cabana, astronaut Janet Kavandi, United Space Alliance's Endeavour Flow Manager Mike Parrish and STS-1 Pilot and former Kennedy Center Director Bob Crippen. To view a video of the announcement and Atlantis' conceptual display design, click on the photo.

After hearing the news, Kennedy Center Director Bob Cabana said to Bolden, "Thank you so much for trusting us with the care of Atlantis. I promise you, we'll take good care of her."

On the day that NASA celebrated the 30th anniversary of the first space shuttle launch -- Columbia's STS-1 mission on April 12, 1981 -- the space agency and its design partners received the "go" they've been hoping for with the announcement that a shuttle will join rockets, capsules and artifacts from the Mercury, Gemini and Apollo eras.

"This is like a really, really big artifact that will really bring the legacy of what Kennedy has meant to people locally and around the world," said Bill Moore, chief operating officer of the visitor complex. "I think it ties in just absolutely perfectly to what the history of the visitor complex means.

Called a super-charged, space shuttle-themed science center, the plan is to make Atlantis the focal point of a brand new 65,000-square-foot facility in the heart of the complex's Space Shuttle Plaza, which is visible from State Road 405 as guests and workers approach the space center. Inside, interactive exhibits would engage, entertain and inspire even the world's most tech-savvy audience. And while these

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30 years of shuttle launches

By Kay Grinter
Reference Librarian

When Columbia lifted off on the first space shuttle mission at 7 a.m. EST April 12, 1981, cosmonaut Yuri Gagarin's momentous flight on the same date in 1961 already was "space history."

During the 20 years after Vostok I carried the first human into space to orbit the Earth, NASA's Mercury, Gemini, Apollo and Skylab programs were taken from their conception, to the drawing board, through their paces and to their successful conclusions.

The space shuttle was the next logical step, the space transportation system of the future.

As NASA's first winged human spaceship, the shuttle was designed to carry large crews and heavy payloads into orbit.

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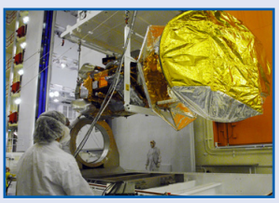
Inside this issue . . .

Aquarius gets ready



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The agency's largest crew throughout the preceding 20 years had been three. Only two astronauts made up the shuttle crew on its first test flight: veteran spacefarer John Young and first-time flyer Robert "Bob" Crippen.

The decision to put Young in the commander's seat was an easy one. He was a veteran of four missions piloting three types of spacecraft and had the seasoned skill and confidence to handle Columbia on its maiden flight. "If you want to go into space for the first time on a new vehicle that's never been flown, you want to go with a pro," Crippen said.

Crippen's mastery of Columbia's sophisticated computer systems earned Young's appreciation, as well. "I was really lucky to have Bob Crippen with me because he knew all the software end to end," Young said.

Crippen grew up a member of the same generation as Gagarin, just three and a half years younger. Though living a world apart, they each enlisted in their respective countries' military programs and both developed the right stuff. Crippen was selected to join NASA's astronaut corps in 1969, the year following Gagarin's death in the crash of a MiG 15 training jet he was piloting.

Chosen as a member of the support crew for the Apollo-Soyuz Project, Crippen had the opportunity to travel to Russia and served as a capcom for the mission. "I found out . . . a pilot's a pilot the world over. We got along very well. Still (have) some friends that we interact with there."

The STS-1 crew spent two days in space putting Columbia through its paces. In the few spare moments the astronauts weren't busy, Young and Crippen delighted in the unique freedom and spectacular views that flying in orbit offers.

While Columbia featured the latest in rocket technology, spending a couple of days within the sparsely outfitted crew cabin did require the pair to "rough it."

"Living inside the shuttle at the time was a little like camping out," Crippen said. Turning in for the night meant sleeping in the cockpit seats.

Other aspects of the flight were probably a little more back to basics than Young and Crippen would have preferred. "The potty -- or the waste management facility -- went belly up on the second day," Crippen recalled, "but John and I dealt with it."

Columbia's first test flight concluded on a dry lake bed in the Mojave Desert at Edwards Air Force Base in California at 1:21 p.m. EST April 14 before a crowd that included 20,000 VIPs and about 250,000 spectators who had camped out all night to watch Columbia glide to a stop. It was NASA's first land-based end of space mission.

"The 1970s had been a pretty low point for America," Crippen recalled. "We'd had the Vietnam War, and the assassinations of Martin Luther King Jr. and Robert Kennedy were still strong in our memory. More recently, 52 Americans had spent 444 days as hostages in Iran. And just two weeks before we lifted off, John Hinckley Jr. shot President (Ronald) Reagan. The country was looking for something to be proud of, and I think the shuttle gave them that."

The space shuttle had given the country something to celebrate.

Inspection of the shuttle's exterior following landing revealed 48 thermal protection system tiles missing and another 148 damaged, a problem corrected on subsequent missions by the suppression at the launch pad of the sound waves created by the solid rocket boosters.

During the next 30 years, the five shuttles -- Columbia, Challenger, Discovery, Atlantis, and Endeavour -- carried 362 people into orbit from 15 countries, traveling more than 530 million miles in the process.

Although a symbol of American pride, the space shuttle also is a well-recognized ambassador to the world of American willingness to engage in mutually beneficial cooperation in the exploration of the universe around Earth. At the time the space shuttle retires later this year, there will have been 135 shuttle missions, typically made up of international teams of six, seven or even eight members.

NASA could not be reaching for new heights and developing the next generation of capabilities without the technological breakthroughs of the shuttle and the many lessons learned that will carry forward.

NASA/Kim Shiflett

"Cake Boss" Buddy Valastro shows off his space shuttle tribute cake to the Kennedy Space Center work force and guests at the Space Shuttle Program's 30th anniversary celebration at the Kennedy Space Center Visitor Complex on April 12.

CLICK ON PHOTO NASA file/1981

Thirty years ago this week, a new era in spaceflight began, when on April 12, 1981, space shuttle Columbia launched on the program's first mission. To view the launch, click on the photo.

CLICK ON PHOTO NASA file/1981

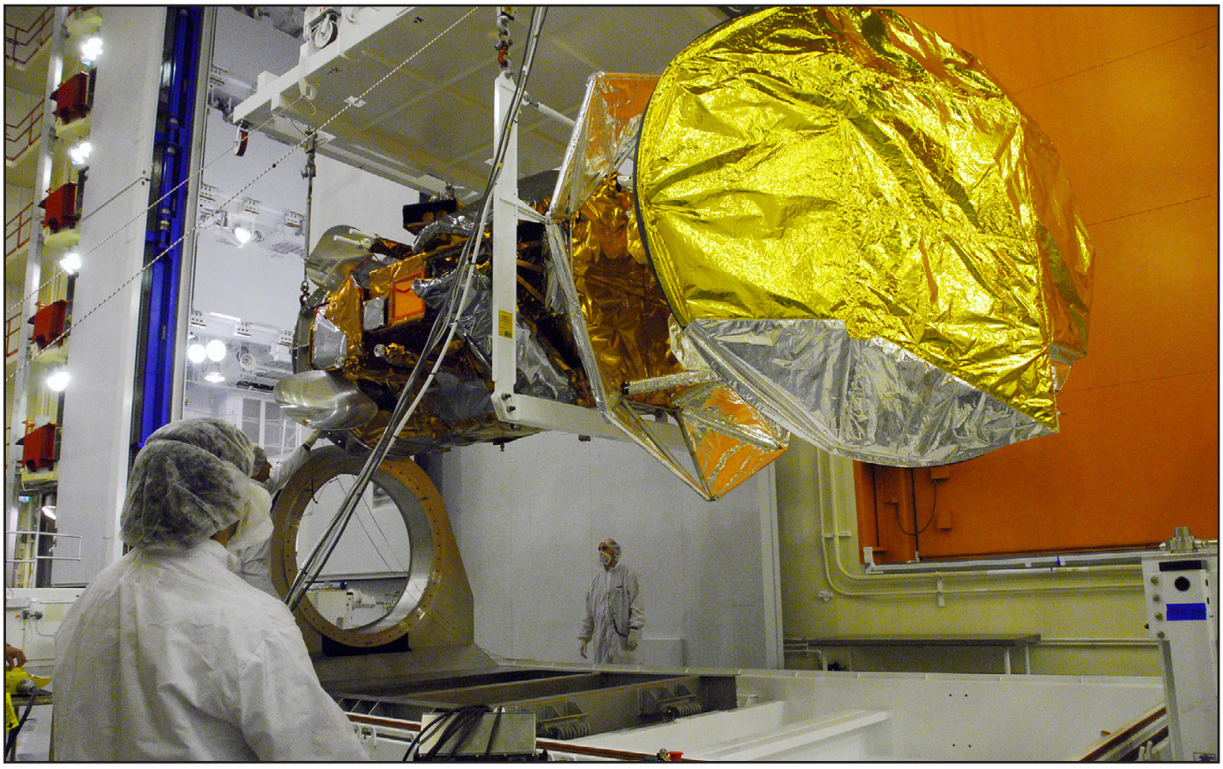
The STS-1 space shuttle team celebrates a successful liftoff of space shuttle Columbia from Kennedy Space Center's Launch Pad 39A. To view footage of the STS-1 mission, click on the photo.

CLICK ON PHOTO NASA file/1981

Shuttle Columbia became NASA's first spacecraft to end a mission on land on April 14, 1981, at Edwards Air Force Base, Calif. To watch a video narrated by William Shatner about the Space Shuttle Program, click on the photo.

Salt-seeking Aquarius/SAC-D mission a global endeavor

By Linda Herridge
Spaceport News



CLICK ON PHOTO *NASA/Randy Beaudoin, VAFB*

Technicians monitor the lifting of the Aquarius/SAC-D spacecraft from its stand by an overhead crane to cell 3 at the Spaceport Systems International payload processing facility at Vandenberg Air Force Base in California on April 2. Following final tests, the spacecraft will be integrated to a United Launch Alliance Delta II rocket in preparation for the targeted June launch. Aquarius, the NASA-built primary instrument on the SAC-D spacecraft, will map global changes in salinity at the ocean's surface. The three-year mission will provide new insights into how variations in ocean surface salinity relate to these fundamental climate processes. To learn more about the mission, click on the photo.

To say that NASA's cooperative Earth science project, the Aquarius/SAC-D (Satelite de Aplicaciones Cientificas) observatory, is the product of collaboration between several countries would be an understatement. The agency's Aquarius science instrument is the primary instrument on the SAC-D service platform, which was built by Argentina's space agency, Comisión Nacional de Actividades Espaciales (CONAE).

But other participating countries include Brazil, France, Italy and Canada, along with personnel from NASA Headquarters, Langley Research Center in Hampton, Va., the Jet Propulsion Laboratory (JPL) in Pasadena, Calif., Goddard Space Flight Center in Greenbelt, Md., and the Launch Services Program (LSP) managed by Kennedy Space Center.

The primary mission of Aquarius/SAC-D is to provide scientists with long-term, global-scale salinity data critical to the understanding of Earth's water cycle, ocean circulation and climate.

The Aquarius instrument will be able to detect changes in salinity as small as 0.2 parts per thousand, or equivalent to about a pinch of salt in one gallon of water.

Dr. Gary Lagerloef, with Earth & Space Research in Seattle, is Aquarius' principal investigator. He said the data collected by Aquarius will be used to make monthly maps of ocean surface salinity.

"These maps will allow scientists to resolve global salinity changes from month-to-month, season-to-season, and year-to-year," Lagerloef said. "They will ultimately provide this missing piece of the Earth's climate puzzle."

According to Armando Piloto, the mission integration manager with LSP, the Aquarius/SAC-D observatory was shipped from Sao Jose dos Campos, Brazil, on March 29, and arrived at Vandenberg Air Force Base, Calif., on March 30. Piloto said that although the SAC-D platform was designed, built and the instruments were integrated in Argentina, the observatory went through about nine months of environmental testing in Brazil.

"The LSP team actively supported several of the spacecraft tests, including vibration, acoustic, shock and fit check tests to ensure it was tested to the proper launch vehicle environments," Piloto said. "Now that the observatory is at the launch site, the LSP team is working on a daily basis with our international and JPL partners to ensure the spacecraft's launch site requirements are properly coordinated and implemented."

Besides Aquarius, several other instruments, including an optical camera, a thermal camera in collaboration with Canada, a microwave radiometer, and sensors developed by various Argentine institutions, the Italian Space Agency (Agenzia Spaziale Italiana) and the French Centre National D'Etudes Spatiales (CNES), are aboard the SAC-D service platform.

During its three-year baseline mission, Aquarius/SAC-D will fly about 408 miles above Earth in a sun-synchronous polar orbit that repeats every seven days, providing NASA's first global observations of ocean surface salinity.

Lagerloef said some instruments will operate continuously, while others will operate primarily over Argentina, with selective observations over other regions around the globe.

LSP Launch Site Integration Manager Mark Mertz, said Aquarius/SAC-D is being processed at Spaceport Systems International's Integrated Processing Facility by a team of about 25 to 30 workers from Kennedy, JPL, and Argentina. During the next several weeks, the spacecraft will go through a final systems checkout, leading up to integration activities that will begin May 12.

"We will be conducting an end-to-end test during which the spacecraft will be commanded from its mission operations center in Cordoba, Argentina," Mertz said. "That test is probably the most interesting of the activities."

Mertz said the spacecraft will sit atop a relatively interesting work platform called the Integration Dolly.

"This particular piece of mechanical ground support equipment allows the spacecraft to be placed in a horizontal or vertical orientation," Mertz said. "It also allows the spacecraft to rotate about its centerline if needed."

Piloto said the United Launch Alliance Delta II rocket currently is being checked out to ensure all systems are ready for launch.

The Aquarius/SAC-D observatory will be launched no earlier than June 9, at 10:20 a.m. EDT, from Vandenberg's Space Launch Complex 2W.

From **ATLANTIS**, Page 1

new exhibits will shimmer, Atlantis is expected to keep every bit of wear-and-tear it encountered on its 32 -- or 33 at the time of retirement -- journeys into space.

"We plan on adding to the Shuttle Launch Experience attraction and enhancing the storytelling with what will become a very, very large addition to this complex," said Luis Berrios, a NASA design specialist with the visitor complex's development team.

Berrios and his teammates envision the 100-ton shuttle looking as if it is soaring through space, with its landing gear raised and payload bay opened. Anchored at an angle, guests would get an up-close view of Atlantis' belly and the thousands of black heat shield tiles that allowed the shuttle to travel more than 115 million miles and through Earth's harsh atmosphere. The shuttle's robotic arm also could be deployed, reaching out to a satellite.

"We've completed an entire conceptual design," Moore said. "It's all drawn up and we've got a lot of agreements with folks at NASA about how we want to do this."

The display could reveal the way shuttle crews performed science and research experiments in the weightlessness of space and how the shuttle was the go-to vehicle for transporting International Space Station laboratories, modules and solar panels to low Earth orbit.

Designers also are looking to convey how the shuttle and its crew members deployed, retrieved and serviced satellites -- much like Atlantis did two years ago on the shuttle's final servicing mission to NASA's treasured Hubble Space Telescope.

CLICK ON PHOTO *Photo courtesy of Kennedy Space Center Visitor Complex*

An artist's conception shows shuttle Atlantis' thousands of heat shield tiles, which will help the Kennedy Space Center Visitor Complex share the story of NASA's Space Shuttle Program. For a retrospective video on Atlantis, click on the photo.

Berrios described one of his favorite milestones in shuttle history -- Bruce McCandless flying untethered for the first time with the manned maneuvering unit (MMU) to retrieve a pair of communications satellites in 1984 -- and what it would feel like to share that experience with generations to come.

"What must that have felt like for him? It must have been amazing," Berrios said.

Designers also want to paint a picture of just how many working parts it took to launch NASA's space shuttle fleet. There are many features that could be worked into the display to help guests appreciate the shuttle system as a whole, including the solid rocket boosters and giant external fuel tank.

Even structures saved during the deconstruction of Kennedy's Launch Pad 39B could be incorporated, such as the gaseous oxygen vent arm, called the "beanie cap," and the orbiter access arm, which is replete with the memories of astronauts walking through before waving farewell and boarding a shuttle for liftoff.

While the spacecraft and its myriad of components will be the main attraction, designers also dove deep into the human aspect of the program.

"We treat our orbiters like our own family members and they're very close to our hearts," Berrios said. "That is probably the most important component of our storytelling."

Annually, the Kennedy Space Center Visitor Complex welcomes more than 1.5 million guests and by adding a flown shuttle to the mix, it's expecting a major boost in attendance and assist the local economy.

"We'll see an immediate economic impact from hotels and air travel and cars -- all the things that people do when they come to Central Florida," Moore said.

It's not just about the number of people who will flock to see the space-flown shuttle, though, Moore said, it's about touching the lives of NASA's future engineers, scientists and explorers.

"I really like hearing about the rides on the way home when the kids say, 'Mom, did you know?'" Moore said. "Those conversations are priceless and we're setting the stage for these kids' future in a big way."

Moore also said there's a possibility that people could witness Atlantis making its trek from Kennedy to the visitor complex.

"The notion of taking it up the roads and maybe up (Space) Commerce Way and having school kids along the side with welcome home flags," Moore said, "I can imagine that being a Brevard Country traffic-stopping kind of day."

Atlantis is planned to round out the shuttle program this year with its last flight -- STS-135. After its return from space, technicians and engineers will spend a few months prepping the vehicle for public display -- paving the way for a grand opening as early as the summer of 2013.

"This is the home of human spaceflight, it's the home of the space shuttle," Cabana said. "To be able to share that excitement, that story with all our visitors to inspire the next generation of explorers . . . it's huge in being able to tell the story of human spaceflight and of NASA. I think it's outstanding that Atlantis gets to stay here with us and not leave after her last flight."

NASA's remaining shuttles will embark on longer journeys to reach their final destinations and Bolden congratulated the institutions that will have the unique opportunity to share a large piece of space history with the world by saying, "Take good care of our vehicles. They've served the nation well and we at NASA have a deep and abiding relationship and love affair with them that's hard to put into words."

CLICK ON PHOTO *Photo courtesy of Kennedy Space Center Visitor Complex*

An artist's conception shows shuttle Atlantis with its payload bay doors open and robotic arm extended. To learn more about the Kennedy Space Center Visitor Complex, click on the photo.

2011 KSC All-American Picnic

NASA astronauts, from right, Kay Hire, Terry Virts and Mark Vande Hei greeted workers and their families, signed autographs and posed for photographs at the picnic.

Children of all ages got to choose from dozens of activities, including petting animals and riding ponies. The train ride and obstacle courses were a hit as well.

Attendees enjoyed a barbeque lunch, which was catered by Sonny's Real Pit Bar-B-Q.

Children and adults got the chance to snack on corn on the cob, cotton candy and snow cones.

About 5,000 people attended the 32nd annual Kennedy Space Center All-American Picnic on April 2. This year's picnic celebrated 47 years of success at Kennedy with food and fun, classic children's games, train rides, a singing competition called KSC Idol, exhibits, a chili cook-off, dessert contest, and car and motorcycle show.

NASA photos by Kim Shiflett and Jim Grossmann

Cryogenics Test Laboratory team earns national recognition

By Linda Herridge
Spaceport News

Kennedy Space Center's Cryogenics Test Laboratory (CTL) team of NASA and contractor workers recently earned national recognition from The Engineers' Council for its work to develop the Simulated Rapid Propellant Loading (SRPL) System.

Walt Hatfield, cryogenics and fluids manager with ASRC Aerospace Corp. at the time, accepted the Distinguished Engineering Project Achievement Award on behalf of the group during a ceremony at the National Engineers Week Honors and Awards Banquet in Universal City, Calif., Feb. 26.

"It was an honor to receive this award," said Hatfield, who was the project lead for design and development of the SRPL.

The award recognizes public or private organizations or consulting firms that during the past three years have brought to fulfillment engineering projects which, because of their scope or unique character, are outstanding and deserving of merit.

"To truly appreciate the magnitude of this award, you need only look at the past recipients," said Kennedy's Engineering Director Pat Simpkins. "They've included the Mars rovers and the International Space Station power system designs. For Kennedy to be recognized for engineering and technological achievement on this scale is truly awesome."

The team also received a KSC Group Achievement Award, Feb. 8, which was presented by Kennedy Center Director Bob Cabana.

According to NASA CTL Manager Jared Sass, the SRPL System is used to develop and demonstrate new methods and equipment for loading a launch vehicle with cryogenic propellant. The modular system incorporates dozens of technologies and innovations and mimics the configuration and complexity of a typical cryogenic propellant tanking operation for a space shuttle or any other launch vehicle.

"Demonstrating the capability to rapidly distribute cryogenic liquids with little or no boil off and in a fraction of the time will further enable Kennedy and NASA to not only make heavy-lift launch systems far more efficient and effective, but also will provide new technologies for commercial spaceflight endeavors to be successful," Simpkins said.

Hatfield, now with engineering support contractor Team QNA, said the SRPL System is designed to test various methods for loading a tank using minimal personnel. The supporting computer software was designed to enable the development of the capability of making decisions in milliseconds to troubleshoot problems that may occur during the tanking process.

The system took about 18 months to design, develop and fabricate with most of the work performed at the lab. Sass said they saved more than $1 million by salvaging and refurbishing about 75 high-quality, 1960s-era components, including valves, from the Santa Susanna Test Facility in Simi Valley, Calif., and acquiring two replenish pumps that originally were installed to load the space shuttle at Vandenberg Air Force Base, Calif.

Hatfield said an energy-efficient cryogenics cooling capability is integrated into the system and a fault, detection, isolation and recovery (FDIR) software system can detect faults, isolate problems, and use a smart database and physics math model to make decisions in milliseconds to continue the loading or go into recovery mode.

CLICK ON PHOTO *For NASA*

Vaporized liquid nitrogen drifts away from the dump basin at Kennedy Space Center's Cryogenics Test Laboratory as the Simulated Rapid Propellant Loading (SRPL) System is used to perform a cold flow test of a new magnetically coupled cryogenic pump in December 2010. The test lab's NASA and contractor team recently earned recognition from The Engineers' Council, for its work to develop the SRPL System. To learn more about the technologies being developed at Kennedy, click on the photo.

> *"Demonstrating the capability to rapidly distribute cryogenic liquids with little or no boil off and in a fraction of the time will further enable Kennedy and NASA to not only make heavy-lift launch systems far more efficient and effective, but also will provide new technologies for commercial spaceflight endeavors to be successful."*
>
> **Pat Simpkins,**
> **Kennedy Space Center Engineering Director**

Scenes Around Kennedy Space Center

CLICK ON PHOTO *NASA/Kim Shiflett*

A large crane dismantles another section of the fixed service structure (FSS) on Launch Pad 39B on April 6. Work to remove the rotating service structure (RSS) also continues at the pad. The FSS and RSS were designed to support the unique needs of the Space Shuttle Program. In 2009, the pad was no longer needed for the shuttle program, so it is being restructured for future use. Its new design will feature a "clean pad" for rockets or spacecraft to come with their own launcher, making it more versatile for a number of vehicles. The new lightning protection system, which was in place for the October 2009 launch of Ares I-X, will remain. For more images, click on the photo.

For NASA

A retirement luncheon is held for Julie Shally on March 31 in Headquarters. Kennedy's Center Director Bob Cabana was one of the many attendees who congratulated Shally on her accomplishments with the center's Engineering Electrical Division.

CLICK ON PHOTO *NASA/Frankie Martin*

A technician, garbed in protective wear, commonly known as a bunny suit, inspects a piece of equipment in the Space Station Processing Facility on April 11 prior to installation into the Raffaello multi-purpose logistics module for space shuttle Atlantis' flight to the International Space Station. Atlantis and its payload are being prepared for the STS-135 mission. Atlantis is targeted to launch June 28, on its final flight for the Space Shuttle Program. For more information on the STS-135 mission, click on the photo.

CLICK ON PHOTO *NASA/Jim Grossmann*

From right, Miguel Rodriguez, Kennedy Space Center deputy director for Management, Engineering and Technology, and Ray Lugo, director of Glenn Research Center, talk briefly with Launch Services Program's Deputy Program Manager Chuck Dovale and Launch Services Program Director Amanda Mitskevich, during a Lunch and Learn at the Operations and Support Building II on April 6. The event was sponsored by Kennedy's Hispanic Outreach and Leadership Alliance (HOLA). For more about HOLA, click on the photo.

CLICK ON PHOTO *NASA/Jim Grossmann*

The first stage of a United Launch Alliance Delta II launch vehicle is secured into position inside the Pad 17B gantry at Cape Canaveral Air Force Station on April 7. The Delta II will carry NASA's Gravity Recovery and Interior Laboratory, or GRAIL, spacecraft into lunar orbit. The GRAIL mission is a part of NASA's Discovery Program. GRAIL will fly twin spacecraft in tandem orbits around the moon for several months to measure its gravity field. The mission also will answer long-standing questions about Earth's moon and provide scientists a better understanding of how Earth and other rocky planets in the solar system formed. GRAIL is scheduled to launch Sept. 8. For more information, click on the photo.

Tennis, flag football, golf among many center sports

By Frank Ochoa-Gonzales
Spaceport News

While Kennedy Space Center does have its share of great athletes, there still are leagues that need more of them to step forward and join a team.

Here is a list of sports and their POCs:

Flag Football - Matt Jimeniz, 321-867-4509 or **matthew.j.jimeniz@nasa.gov**

Tennis (singles) - Alan Wheeler, 321-867-3565 or **alan.j.wheeler@nasa.gov**

Tennis (doubles) - Teresa Bollig, 321-264-8575 or **teresa.e.bollig@nasa.gov**

Twilight **Golf** League - Tom Mahaney, 321-476-2410 or cell 321-536-8931

ISC **Golf** League: Paul Hise, 867-7526

SRB **Golf** League: Robert Vaughan, 867-7526.

SIGL **Golf** League: Rodney P. Berwanger, 867-6074

And don't forget the Operations and Checkout Building still hosts the Fitness Center that offers all badged employees:

- Personal training
- Fitness and body composition assessments
- Fitness and wellness classes
- Motivational and incentive programs
- Outreach presentations and programs

The facility is open Monday through Friday from 5:30 a.m. to 7:30 p.m.

If you would like your athletic league highlighted in Spaceport News, send an e-mail to: **KSC-Spaceport-News@mail.nasa.gov**

Looking up and ahead . . .

Targeted for April 29 Planned for May 13	Launch/KSC: Endeavour, STS-134; 3:47 p.m. EDT Landing/KSC: Endeavour, STS-134; 9:28 a.m. EDT
No Earlier Than May 5	Launch/CCAFS: Atlas V, SBIRS GEO-1; TBD
No Earlier Than June 9	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; 10:20 a.m. EDT
No Earlier Than June 23	Launch/CCAFS: Atlas V, GPS IIF-2; TBD
Targeted for June 28 Planned for July 10	Launch/KSC: Atlantis, STS-135; 3:48 p.m. EDT Landing/KSC: Atlantis, STS-135; 11:03 a.m. EDT
No Earlier Than July 15	Launch/CCAFS: SpaceX Falcon 9, Dragon C2; TBD
Aug. 5	Launch/CCAFS: Atlas V, Juno; Launch Window 12:10 to 1:40 p.m. EDT
Sept. 8	Launch/CCAFS: Delta II Heavy, GRAIL; 8:35:52 a.m. to 9:14:35 a.m. EDT
No Earlier Than Oct. 9	Launch/CCAFS: SpaceX Falcon 9, Dragon C3; TBD
Oct. 25	Launch/VAFB: Delta II Heavy, NPP; TBD
No Earlier Than Nov. 25	Launch/CCAFS: Atlas V, Mars Science Laboratory; TBD
No Earlier Than December	Launch/CCAFS: Delta IV-Heavy, NROL-15; TBD
No Earlier Than Dec. 7	Launch/CCAFS: SpaceX Falcon 9, Dragon C4; TBD

Kennedy Space Center Activities

2011 KSC Spring Flag Football League Standings and Upcoming Schedule

TEAM	RECORD	POINTS SCORED	POINTS ALLOWED
Stuffers	3-0	88	10
Islaughter	3-0	88	14
Redheads	2-1	39	19
Rowdies	1-2	38	51
FAT	0-3	13	39
Blood Hunters	0-3	6	54

Week 5 Schedule (April 20)
5:30 p.m. - Rowdies vs. FAT
6:30 p.m. - Islaughter vs. Redheads
7:30 p.m. - Stuffers vs. Blood Hunters

Week 6 Schedule (April 27)
5:30 p.m. - Blood Hunters vs. Islaughter
6:30 p.m. - Rowdies vs. Stuffers
7:30 p.m. - FAT vs. Redheads

Games are played Wednesdays at KARS Park I. For more information, contact Matt Jimeniz at 321-867-4509 or **matthew.j.jimeniz@nasa.gov**.

2011 KSC Tennis League Rankings, Leaders and Upcoming Schedule

Singles

Group 1 Rankings
Bob Ingham
Billy Specht
Ken Young
Alan Wheeler

Group 2 Rankings
Tom Bond
Norm Hosan
Calvert Staubus
James Hudleston

Group 3 Rankings
Kevin Panik
Kate Liu
Scott DeWitt
Laura Scott

Week 3 Schedule (April 14)
Bond vs. Specht
Ingham vs. Young
Wheeler vs. Staubus
Panik vs. Hosan
Scott vs. Hudleston
DeWitt vs. Liu

New Cycle Begins (April 21)
Schedule determined by outcome of matches played April 14.

The league seeks new players and is open to all Kennedy civil service and contractor personnel and dependents. Matches are played Thursdays at KARS Park I and II. For more information, contact Alan Wheeler at 321-867-3565 or **alan.j.wheeler@nasa.gov**.

Doubles

COURT LEADERS FROM APRIL 12

Court 9 - Scott Schilling
Court 8 - Ron Feile
Court 7 - Vijay Shravahrg
Court 6 - Norm Ring
Court 4 - Amy Lombardo
Court 3 - TBD
Court 2 - TBD
Court 1 - TBD

COURT GROUPS FOR APRIL 19

Court 9
Scott Schilling
Rod Downing
Dave Davies
Chip Hooper

Court 8
Ron Feile
Andy Maffe
Miguel Rodriguez
Art Shutt

Court 7
Vijay Shravahr
Jay Hebert
Ray Jones
Tom Li

Court 6
Norm Ring
Alan Wheeler
Jeff Andress
Kyle Nowlin

Court 4
Amy Lombardo
Kate Liu
Teresa Bollig
Laura Scott

Court 3
TBD

Court 2
TBD

Court 1
TBD

The league seeks new players and is open to all Kennedy civil service and contractor personnel and dependents. Matches are played Tuesdays at KARS Park I and II. For more information, contact Teresa Bollig at 321-264-8575 or **teresa.e.bollig@nasa.gov**.

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