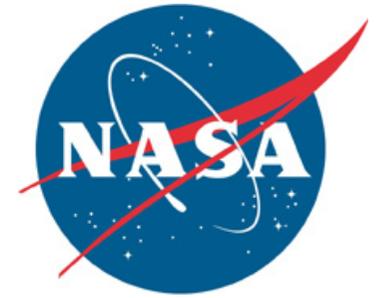


# Spaceport News

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

[www.nasa.gov/centers/kennedy/news/snews/spnews\\_toc.html](http://www.nasa.gov/centers/kennedy/news/snews/spnews_toc.html)



## STS-119 takes final US arrays to orbiting lab

By Linda Herridge  
*Spaceport News*

**L**ili Villarreal, a NASA mission operations engineer in the International Space Station and Spacecraft Processing Directorate, watched with co-workers as space shuttle Discovery lofted into orbit atop a billowy plume of smoke just as dusk set in along the Space Coast at 7:43 p.m. EDT March 15.

The Kennedy Space Center Space Station Processing Facility payload processing team watched its hard work pay off when Discovery lifted off Launch Pad 39A carrying the S6 truss to the International Space Station.

The team was caretaker of the fourth and final truss segment and solar arrays, which arrived at the center

### MMT Lead

Learn more about Launch Integration Manager for NASA's Space Shuttle Program Mike Moses, Page 2.

in December 2002.

Villarreal, a former Boeing Co. employee, supported the S6 truss team with Boeing during most of the assembly operations.

"We are all excited to see that picture of the station when the shuttle departs the ISS," Villarreal said. "To see the truss components together and to see all of the beautiful solar arrays deployed is something we have all worked so hard to achieve."

On flight day 5 of the

See **STS-119**, Page 2



NASA/Rusty Backer-George Roberts

Space shuttle Discovery takes off March 15, at 7:43 p.m. EDT from Launch Pad 39A at Kennedy Space Center.

## Inside this issue . . .



Meet Mike Moses

Page 2

Kepler launches



Page 3

All-American Picnic



Pages 4-5

Heritage: Women's History Month



Page 7

# Obstacles no match for management lead

By Linda Herridge  
Spaceport News

Michael Moses' first time as Mission Management Team lead came with a few challenges.

The launch integration manager for NASA's Space Shuttle Program was in his office at Kennedy Space Center when Discovery's launch was scrubbed due to a hydrogen leak during tanking on March 11, at 2:36 p.m. EDT.

Moses received an update from Launch Director Mike Leinbach at the Launch Control Center, or LCC, and then got busy assembling his team to assess the problem and decide how to proceed.

"I want to bring to the position a fair and balanced integration of the shuttle program elements, ultimately making the decisions and risk trades to make sure we're flying safely," Moses said.

On March 13, crews replaced the seven-inch quick disconnect and two seals, one on the external tank side and one on the ground-equipment side.

Then on launch day, a crew was sent to Launch Pad 39A to fix a helium pressure



NASA/Kim Shifflett

Launch Integration Manager Mike Moses is all smiles after the successful launch of Discovery, beginning the STS-119 mission. In Firing Room 4 at the Launch Control Center, Moses undergoes the traditional tie-cutting ceremony.

issue giving way to a flawless liftoff.

As Moses sat at the ops position in the LCC during Discovery's launch March 15, at 7:43 p.m. EDT, he said, "It's a whole lot sweeter being here tonight."

Moses is responsible for shuttle landing, recovery, processing and launch

activities. He reports directly to Space Shuttle Program Manager John Shannon, and assists with overall management, integration and operations of the program. He sits at the operations manager position in the LCC, and provides shuttle program authority to proceed for launch.

Daily responsibilities in-

**"It's a whole lot sweeter being here tonight."**

**Mike Moses,  
Launch Integration  
Manager**

clude Program Requirements Control Board meetings, major milestone reviews and facilitating program and agency Flight Readiness Reviews. Moses also serves as the program's interface to the 45th Space Wing range operations.

Moses began his career at Johnson Space Center as a flight controller in the Mission Operations Directorate in August 1995. He worked for United Space Alliance as a flight controller in the Space Shuttle Propulsion Systems Group from August 1995 to August 1998. From there, he became a NASA employee, continuing to work in the propulsion systems group and supporting 29 shuttle missions.

In November 2003, Moses transferred to become

the group lead for the Shuttle Electrical Systems Group. He was selected to be a flight director in February 2005, and participated in five shuttle missions as a shuttle orbit flight director. He was the shuttle lead flight director for the STS-123 mission in February 2008, prior to appointment to his current position.

"I didn't know that flight control was my calling until I started working in that position," Moses said.

He has a Bachelor of Science in physics from Purdue University in Indiana, a Master of Science in space sciences from the Florida Institute of Technology in Melbourne, and a Master of Science in aerospace engineering from Purdue University.

He is a recipient of the NASA Exceptional Leadership Medal, Johnson Director's Commendation and several NASA Group Achievement Awards.

Moses and his wife, Beth, reside in Cape Canaveral, Fla. They have two daughters, Sarah, 4, and Lauren, 1. Beth is a private pilot and also works for NASA in the EVA Project Office at Johnson.

## From STS-119, Page 1

STS-119 mission, and from inside the orbiting laboratory, Mission Specialists John Phillips and Koichi Wakata will use the station's robotic arm to put the S6 truss segment into position.

Spacewalkers Steve Swanson and Richard Arnold will assist with the installation of the S6 and unstow the solar array blanket boxes on the array structure.

The arrays will be delicately deployed on flight day 6 or 8 depending on whether a focused inspection is required, and the astronauts also will deploy a heat dissipating radia-

tor on the S6 truss.

Villarreal said the S6 truss was processed by a group of about 30 people called the outboard truss team. Final assembly and integration of the truss long spacer and Integrated Equipment Assembly was performed by Boeing.

Robby Ashley is NASA's mission manager for S6 and also serves as deputy to the station directorate's Project Integration Division. He helped process the S0, P1 and P4 truss segments as well.

"It's exciting, but at the same time it's a little bittersweet. It's the end of an era," Ashley said. "We've processed the station's truss seg-

ments over a 10-year period."

Dave Cormack, the Boeing S6 flow manager, and Ashley were in Firing Room 2 at the Launch Control Center during Discovery's launch.

"There's a sense of satisfaction seeing the S6 truss segment and solar arrays finally launch," Cormack said. "It will be exciting to see the solar arrays deployed on the station."

Ashley said the team's goal is to get the payloads processed, out the door and launched.

"But the true satisfaction comes once they're on orbit, activated and fulfilling their intended mission, and we can see the fruits of all our labor being realized up there on the space

station," Ashley said.

Two Boeing mechanical engineers and one electrical engineer will monitor mission activities from the mission evaluation room at Johnson Space Center in Houston.

"Our core team will follow mission activities on the station," Ashley said.

After 13 days of hard work, Discovery and crew are to return home March 28, at 1:43 p.m. EDT.

That hard work will pay off when the nation and its international partners see the space station's superstructure complete and operating at full power to support full science.

# Kepler launches, seeks Earth-like planets

Is there anybody out there? For many generations, humans have wondered if there was a planet similar to Earth out in space somewhere. NASA's journey to find out began when its Kepler spacecraft took off from Cape Canaveral Air Force Station on top of a Delta II rocket March 6, at 10:49 p.m. EST.

"It was a stunning launch," said Kepler Project Manager Dr. James Fanson of NASA's Jet Propulsion Laboratory in Pasadena, Calif. "Our team is thrilled to be a part of something so meaningful to the human race -- Kepler will help us understand if our Earth is unique or if others like it are out there."

NASA's Launch Services Program at Kennedy Space Center managed processing and launch, including payload integration and certifying the Delta II launch vehicle for NASA's use.

"Very smooth countdown . . . we did work an item at the end having to do with data that was a little bit out of family," said NASA Launch Manager Omar Baez. "We quickly came to resolution on that and were able to proceed -- and hit the window right at the beginning."

About an hour after a successful launch, applause erupted in the Mission Director's Center when Steve Agid, launch vehicle telemetry manager, gave this confirmation:

"Delta flight commentary at 64 minutes, 30 seconds into the flight, we've just received word of a positive confirmation of spacecraft separation."

The spacecraft is expected to drift away from Earth at a rate of 10 million



NASA/Regina Mitchell-Ryall, Tom Farrar

United Launch Alliance's Delta II rocket carrying NASA's Kepler spacecraft rises through the exhaust cloud created by the firing of the rocket's engines on Launch Pad 17-B at Cape Canaveral Air Force Station on March 6, at 10:49 p.m. EST. Kepler is a telescope designed to search the nearby region of our galaxy for Earth-size planets orbiting in the habitable zone of stars like our sun. Kepler will survey more than 100,000 stars in our galaxy.

miles per year and is moving at a rate of five miles per second.

While it took Kepler about three days to get past the moon's orbit, it will spend the next three

and a half years in an orbit around the sun, where it will count planets by looking for the tiny blips in starlight caused by planets eclipsing their suns.

"Kepler now has the

perfect place to watch more than 100,000 stars for signs of planets," said William Borucki, the mission's science principal investigator at NASA's Ames Research Center at Moffett Field,

## WORD ON THE STREET

**"What do you think Kepler will find during its mission?"**

Page 8

Calif. Borucki has worked on the mission for 17 years. "Everyone is very excited as our dream becomes a reality. We are on the verge of learning if other Earths are ubiquitous in the galaxy."

While the spacecraft is in its initial setup mode, NASA scientists and engineers will be in contact with it 24 hours a day.

When it moves into scientific mode, NASA will be in communication with Kepler every four days, and once a month the ground will turn the spacecraft so its antenna points toward Earth and data can be transmitted down.

"We expect the first downloads of data to come in about May and June, by July we'll have processed enough of it to look for stars that actually dim," said Dr. Geoff Marcy of the University of California at Berkeley. "Then it'll be the job of ground-based telescopes to verify the Earths that Kepler has found and measure their masses.

"And the beauty is that if you can measure the mass of an Earth by the Doppler-shift wobble of the star, and Kepler can measure the diameter of the Earths, the mass divided by the volume tells you the density. If we find planets the density of rock of which, of course, the Earth, Venus and Mars are made, you know you've got a rocky planet close kin to our Earth."

"Even if we find no planets like Earth, that by itself would be profound. It would indicate that we are probably alone in the galaxy," Borucki said.

# 2009 Kennedy All-American Picnic



NASA Astronaut Ken Ham signed autographs and posed for photographs at the picnic.



The human joust was a popular attraction at the picnic. Friends duelled it out in an inflatable arena. The event was part of the Generation XYZ games, which were for individuals ages 14 and older. Other games included cornhole, Guitar Hero and money booth madness.



Face painting was a favorite of the kids attending the picnic. The facial art themes included tigers, butterflies, fairies and clowns. Other children events included two large inflatable slides, two jumping tents, fingerprinting provided by the Brevard County Sheriff's Office, and free cotton candy, popcorn and snow cones.



The annual Chili Cook-Off was once again a big hit as chili makers vied for titles in three competitions: Official Chili, won by the Constellation Chili team; People's Choice Chili, won by Shamrock Saloon & Eatery team; and Best Store Front, won by Moonshine Chili team. Proceeds totaling \$1,638 from the People's Choice Chili competition went to the March of Dimes, a charity chosen by the Shamrock Saloon & Eatery team.

*More than 5,000 people attended the 30th annual Kennedy Space Center All-American Picnic. This year's picnic featured exciting entertainment for the entire family -- classic children's games, a chili cook-off, face painting, rock climbing (background) and a car show.*



NASA photos

Kennedy Space Center Director Bob Cabana walked around the Automobile and Motorcycle Exhibition admiring the hard work Kennedy employees put into their "rides." There were 23 categories vehicle enthusiasts could enter.

# Scenes Around Kennedy Space Center



NASA/Jack Pfaller

Media gather in the Assembly and Refurbishment Facility at Kennedy Space Center on March 9, to see the aft skirt for the Ares I-X flight test, targeted for launch in July 2009. The Ares I-X flight will provide NASA an early opportunity to test and prove hardware, facilities and ground operations associated with Ares I, part of the Constellation Program to return humans to the moon and beyond.



NASA/Jack Pfaller

An overhead crane lowers NASA's Lunar Reconnaissance Orbiter, or LRO, at Astrotech in Titusville, Fla. The orbiter will be rotated on the table to provide proper access for processing. Launch of LRO is targeted for May 20.



NASA/Kim Shifflett

The top of the shipping container is moved away from the Geostationary Operational Environmental Satellite-O, or GOES-O, wrapped in a protective cover in the Astrotech payload processing facility in Titusville, Fla. The weather satellite is undergoing final testing of the imaging system, instrumentation, communications and power systems.



From left: Lillian, Jordan, 4, and Eric Jacoby meet with the Kennedy Space Center Visitor Complex's Space Man during KSC Space Day at Space Coast Stadium in Viera, Fla.

NASA/ Kim Shifflett

## Spaceport News wants to know about your special talent

If you have a hidden talent or an interesting hobby, Spaceport News would like to share it. Send your information to [KSC-Spaceport-News@mail.nasa.gov](mailto:KSC-Spaceport-News@mail.nasa.gov) or mail it to Spaceport News at: IMCS-440, Kennedy Space Center, FL 32988.

## Remembering Our Heritage: Celebrating Women's History Month

# Chosen few Apollo trailblazers wore high heels

By Kay Grinter  
Reference Librarian

To land a man on the moon before 1970 was not NASA's only mission in the Apollo heyday. Affirmative action was in its infancy, and NASA scoured the country for women with the "right stuff" to succeed in technical careers.

NASA recruiters courted female college graduates with degrees in math or science, as well as engineering disciplines. "Aerospace technologist" was the job title NASA assigned its engineers.

Mathematics major JoAnn Morgan worked for NASA four summers during her college studies and her potential was apparent to NASA before the employee search began. She was offered a position as an instrumentation controller in 1963 before she finished her degree. Her work with computers took her into the blockhouses on Cape Canaveral, as well as into the firing rooms at Kennedy Space Center.

The blockhouses used for the early tests of the Saturn I and IB rockets had only one restroom -- a men's room. Morgan recalled the first time she was sent into the field: "One of the launch officials asked me to leave, explaining 'we don't have women in the blockhouse.' My boss had given me a headset, so I called him. 'What should I do?' He told me to plug in my headset, run the tests, participate in the integrated test and send him the results." Just carrying out orders set the stage for change.

By the time Apollo 11 launched in 1969, Morgan had five years of experience. "I worked in the firing room during the countdown of several missions, but Apollo 11 was the first time I was in the room at liftoff," Morgan said.

Morgan not only was the first woman in the firing room for a launch, but also the first woman to be appointed to the Senior Executive Service and to be awarded a NASA medal during her 45-year career at Kennedy.

Judy Sullivan, formerly Judy



NASA 1969/2009

Judy Sullivan, a math and science teacher, joined NASA in 1966 as the first woman engineer in Spacecraft Operations, working closely with the astronauts. She was lead engineer for the biomedical system for the Apollo 11 mission. Today, Sullivan is a successful model and actress.

Shanaberger, was a math and science teacher who joined NASA in 1966 as the first woman engineer in Spacecraft Operations, working closely with the astronauts. She was lead engineer for the biomedical system for the Apollo 11 mission. Most of her duties were carried out in the Manned Spacecraft Operations Building, or MSOB, now called the Operations and Checkout Building.

Sullivan was in the suit lab as Neil Armstrong dressed for his historic launch. During the countdown, she monitored the data returned by the astronauts' biomedical sensors from the control room and communicated with the pad regarding crew readiness. She was the only woman in the room and wore a headset.

"Men were careful not to use questionable language over the loop when they knew a woman was listening," Sullivan recalled. "People asked me what it was like to work with all those men, but my college experience had prepared me. Few women were registered in math and science classes."

Shortly after the launch of Apollo 11, Sullivan represented NASA on the television game show, "To Tell the Truth." A panel of celebrities tried to choose the "real" biomedical space engineer by asking job-related questions of a group of three women, all claiming to

work for NASA.

"Miniskirts were in fashion so they shortened my hemline, and I wore ruffles. They were totally fooled," Sullivan recalled. "I won \$500 and had a great time seeing New York City." Today, she has a successful acting and modeling career.

Ann Montgomery, a math major, joined the Apollo team in 1968 as a crew systems engineer. Known then as Ann Lavender, she had oversight for all the equipment and supplies stowed in the lunar and command modules. Testing and fit checks were performed on everything making the trip into orbit or to the moon, whether it was lunar tools, books, clothing or Kleenex.

Women engineers were rare. "I had to fight to get out on the launch pad. The guard had been reprimanded for letting a secretary through, so he wouldn't let me in. I spent 45 minutes trying to convince him when he finally realized I had the right access number on my badge," Montgomery said. "At that time, there was no ladies' room on Pad 39B."

A professional dress code for men and women was followed for meetings. "Flat, closed-toe shoes

See **HERITAGE**, Page 8



NASA 1972/2009

Ruth Ann Strunk was one of a small group of women engineers hired by NASA during the Apollo Program. She was an aerospace technologist working with computers in the Manned Spacecraft Operations Building in 1972. She returned to Kennedy Space Center in 1998 and is employed in the energy and water management office by EG&G Technical Services today.

From **HERITAGE**, Page 7

and pants were worn in the field, but dresses and high heels were expected at meetings, so I changed clothes a lot -- sometimes four, five, six times a day," Montgomery laughed. "If you had a sense of humor and stuck with it, most people were great."

Montgomery earned a master's degree in engineering while working for NASA and was in the Senior Executive Service when she retired.

Ruth Ann Strunk, a math major, also was hired in 1968, but as an acceptance checkout equipment, or ACE, software engineer. She monitored the work of contractors in the MSOB who wrote the computer programs designed to check out the command module, lunar module and the Apollo J mission experiments. These experiments were conducted aboard the service

modules on Apollo 15, 16 and 17 by the command module pilots.

When asked what it was like working in a man's world, Strunk reported, "I felt I was an accepted team member. It was a great experience and a unique opportunity."

Strunk left NASA's employ in 1973 but returned to Kennedy in 1998 after working 25 years in the private and government contracting sectors. In the intervening years, she earned a Master of Business Administration degree from Stetson University and currently works in EG&G's energy and water management office overseeing the Automated Utility Data Reporting and Information System under development.

"I am proud of the advancement and the number of women who are working and enjoy working here," Strunk said. "It was a wonderful opportunity NASA afforded me during Apollo that I have been able to use ever since."

## Looking up and ahead

No earlier than March 17	Launch/CCAFS: Atlas V, WGS SV-2; 9:24 p.m.
No earlier than March 24	Launch/CCAFS: Delta II, GPS IIR-20; 4:34 a.m.
Tentatively targeted March 28	Landing/KSC: Discovery, STS-119; 1:43 p.m.
No earlier than April 28	Launch/CCAFS: Delta IV, GOES-O; 6:24 p.m.
No earlier than May 5	Launch/VAFB: Delta II, STSS-ATRR; TBD
Target May 12	Launch/KSC: Atlantis, STS-125; 1:11 p.m.
No earlier than May 20	Launch/CCAFS: Atlas V, LRO/LCROSS; TBD
June	Launch/CCAFS: Falcon 9; TBD
Target mid-June	Launch/KSC: Endeavour, STS-127; TBD
No earlier than June 16	Launch/CCAFS: Delta II, STSS Demo; TBD
No earlier than July 8	Launch/CCAFS: Delta IV, WGS SV-3; TBD
Target July 11	Launch/KSC: Ares I-X flight test/ Launch Pad 39B; TBD
Target Aug. 6	Launch/KSC: Atlantis, STS-128; TBD
No earlier than Aug. 14	Launch/CCAFS: Delta II, GPS IIR-21; TBD
No earlier than Sept. 29	Launch/CCAFS: Delta IV, GPS IIF-1; TBD
No earlier than Oct. 1	Launch/VAFB: Taurus, Glory; TBD
No earlier than Oct. 8	Launch/CCAFS: Atlas V, SDO; TBD
Target November	Launch/CCAFS: WISE; TBD
Target Nov. 12	Launch/KSC: Discovery, STS-129; TBD
No earlier than Nov. 12	Launch/CCAFS: Delta IV, GOES-P; TBD
December	Launch/CCAFS: Atlas V, Commercial Payload; TBD
Target Dec. 10	Launch/KSC: Endeavour, STS-130; TBD
Target Feb. 11, 2010	Launch/KSC: Atlantis, STS-131; TBD
Target April 8, 2010	Launch/KSC: Discovery, STS-132; TBD

# WORD ON THE STREET

*What do you think Kepler will find during its mission ?*



*"I hope it finds other Earth-like planets. That's what it's all about."*

**George Jacobs, with NASA**

*"Anything is possible. Who knows what's out there? We have to explore."*

**Jael Lamothe, with NASA**



*"I don't know what we'll find. But I do know we're taking a giant step in answering the question."*

**Jose De La Cruz, with Deltha-Critique**

*"I think they will find Earth-like planets . . . just not sure they will find other life."*

**Leslie Kelley, with NASA**



*"With all that's out there, they should find something. We can't be the only ones here."*

**Patrick Smith, with NASA**



John F. Kennedy Space Center

## Spaceport News

Spaceport News is an official publication of the Kennedy Space Center and is published on alternate Fridays by External Relations in the interest of KSC civil service and contractor employees.

Contributions are welcome and should be submitted **three weeks** before publication to the Media Services Branch, IMCS-440. E-mail submissions can be sent to **KSC-Spaceport-News@mail.nasa.gov**

Managing editor . . . . . Candrea Thomas  
 Editor . . . . . Frank Ochoa-Gonzales  
 Copy editor . . . . . Rebecca Sprague

Editorial support provided by Abacus Technology Corp. Writers Group.  
 NASA at KSC is on the Internet at [www.nasa.gov/kennedy](http://www.nasa.gov/kennedy)  
 USGPO: 733-049/600142