

KENNEDY SPACE CENTER'S
SPACEPORT
m a g a z i n e

**Prep for Orion Splashdown:
Underway Recovery Test 6 Complete**



KENNEDY SPACE CENTER'S SPACEPORT MAGAZINE CONTENTS

- 4..... The team behind Orion recovery
- 12..... Thermal cycle test confirms Orion and its systems
- 14..... A multi-user spaceport success story
- 23..... NASA initiates first grow out in Advanced Plant Habitat on ISS
- 24..... Anniversary event marks start of U.S. space exploration



Cover: As part of Underway Recovery Test 6, the Orion test article is pulled in by a winch line at the rear of the USS Anchorage's well deck Jan. 18, 2018, in the Pacific Ocean.

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A full Moon sets behind the Vehicle Assembly Building and mobile launcher at NASA's Kennedy Space Center. At the nation's premier multi-user spaceport, NASA and its commercial and international partners are looking to return humans to the Moon and beyond utilizing a variety of rockets and capabilities. Photo credit: NASA/Ben Smegelsky

LANDING DAY PREPPERS

The team behind Orion recovery

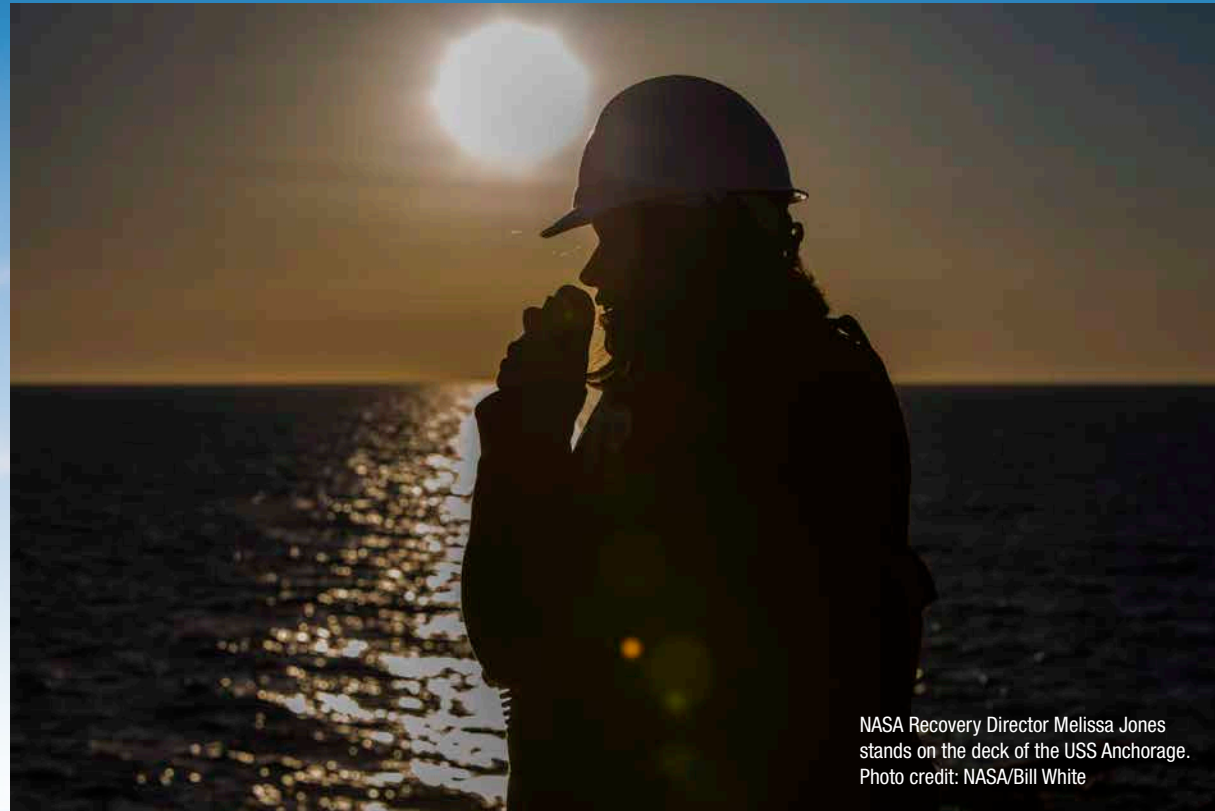
BY AMANDA GRIFFIN

NASA's developing the **Orion** spacecraft to venture to the Moon and far into deep space, building it to be technologically advanced, highly capable and safe for its crew. But strides also are being made by the team on the ground to recover the spacecraft and its astronauts efficiently and effectively. After astronauts return from deep space and re-enter the Earth's atmosphere in Orion, they likely will splash down in the Pacific Ocean about 50 miles off the coast of San Diego, California, when it will be the job of **Exploration Ground System's NASA Recovery Team** based at **Kennedy Space Center** to oversee the operation to recover the spacecraft and the crew onboard.

But it's not just NASA that is doing all the work. The recovery team has been training for years, perfecting its operations and bolstering ground support equipment. During the last outing, **Underway Recovery Test 6** in January, team members honed their skills aboard a U.S. Navy amphibious assault ship, the USS Anchorage, alongside Navy divers and additional small boat units.

Teams from the U.S. Navy's Explosive Ordnance Disposal Mobile Unit 3, the Special Boat Unit, the USS Anchorage and the USS New Orleans work together to connect tending lines to the Orion test article off the coast of San Diego on Jan. 21, 2018. Kennedy Space Center's NASA Recovery Team works with the U.S. Navy to improve recovery procedures and hardware ahead of Orion's next flight, Exploration Mission-1, when it splashes down in the Pacific Ocean. Photo credit: NASA/Bill White

Here's a look at some of the key players involved in the interagency recovery process:



NASA Recovery Director Melissa Jones stands on the deck of the USS Anchorage. Photo credit: NASA/Bill White



Capt. Dennis Jacko, left, commanding officer of the USS Anchorage, talks with U.S. Navy personnel on the deck of the ship. Photo credit: NASA/Bill White

THE DIRECTOR

Everything is set in motion about five days before splashdown, when the team leaves San Diego and heads out to a midway point in the Pacific Ocean to await a call from the **Mission Control Center** in Houston. About 72 hours before splashdown, NASA Recovery Director Melissa Jones gets the call with the landing site coordinates. It now is her job to work with the ship's captain to get the combined NASA and Navy team to the capsule's location quickly and get the team ready to bring the crew module and the astronauts safely aboard the recovery ship.

"We have two landing sites: a primary landing site that is close to shore and a weather-alternate landing site that could be up to 1,200 nautical miles away," Jones said. "We have to protect for that whole range of possibilities."

Getting to the landing site is probably the easiest part—so long as weather isn't an issue. The recovery of the capsule and crew can be hazardous, however. But launching the helicopters and small boats used to make contact with the capsule can't be done too soon.

"There are over 20 pieces of debris that will purposefully come off the capsule upon reentry," Jones said. "Mortar can lids associated with the parachutes and the parachutes themselves—will need to be clear of the area before that comes down."

Initially, the team has to stand off from the capsule to ensure it is safe. There will be hundreds of parachute lines in the water, and there also could be hydrazine or ammonia contamination. More obvious than contamination on the craft is whether Orion landed in the intended orientation. If it is not right-side up—which is likely to happen 50 percent of the time—then divers attach balloons underneath the capsule that are inflated to upright it.

All the while, there are helicopters in the air, boats and divers in the water, people in the well deck of the ship, a lot of moving parts—and they have two hours to get the crew out of the spacecraft and onto the ship to be transported to medical facilities for evaluation once they've splashed down.

"It can be exhausting work, working several days straight, long hours, to try to do this testing to get us ready," Jones said. "But we know that when the day comes, and we're recovering astronauts, that is the most important thing. We've got to get to those guys in time—it has to be safe and it has to be right."

THE CAPTAIN

Capt. Dennis Jacko, commanding officer of the USS Anchorage, may be the ship captain the day of splashdown. He and his ship will be ready.

Jacko has been working with NASA for six years, and while the ship he commands is traditionally an amphibious assault ship used to transport U.S. Marines to shore, the design of the ship also is uniquely suited for recovering vehicles returning from space.

"We have fantastic medical facilities, a well deck, tremendous storage capacity to bring all the necessary gear aboard, and we have a flight deck with embarked helicopter capabilities," Jacko said. "We're ready for any type of contingency that NASA needs to support."

Weather likely will be the ship's biggest challenge on recovery day. Once the space capsule comes down safely and splashes in the ocean, high sea conditions and high winds could present challenges for the recovery crews working to get the astronauts out of the capsule.

Even though Jacko is in command of the ship, he will get his location coordinates from the NASA Recovery Director.

"The missions are going to be carefully planned, so we should know exactly where Orion will be coming back down, and NASA's going to let us know when and where," he said. "We'll arrive in the general vicinity, and depending on where it comes down, we can move as fast as 24 knots and cover as much as 500 miles in a day to reposition to where Orion is going to land."

The captain and his crew are very excited to be part of this historic NASA mission.

"There's nothing more important than watching that capsule come down with the American flag on it," Jacko said. "It's a big win for America, leading to remain on the edge of space exploration."



Diver and 1st Class Petty Officer Michael Tuft, far right, takes a break with fellow team members aboard the USS Anchorage during Underway Recovery Test 6. Photo credit: NASA/Bill White

THE DIVER

Once the ship reaches the landing site, a diver such as 1st Class Petty Officer Michael Tuft, with the Navy's Explosive Ordnance Disposal Mobile Unit 3, will be one of the first people the astronauts inside the bobbing capsule will see.

"These guys just came back from space, they're going to be a little bewildered, but I get to be the first face that they see," Tuft said.

During the Orion recovery, Tuft will be a boat commander for one of the Combat Rubber Raiding Crafts (CRRCs) in the water, hooking tending lines up to the capsule and possibly recovering the astronauts. He and a team of about 15 divers have been working with NASA for well over two years. "We know the ins and outs of how to do this, and the astronauts know they are in good hands as soon as they see our faces," he said.

But before he can get to the crew onboard, he has to make sure it is safe to approach. He uses a special "sniffer" device to ensure there aren't any hazardous materials, and then they stabilize the spacecraft. They do this by hooking a sea anchor to the capsule — a big, underwater parachute that holds the capsule steady so it doesn't drift. Next, they disconnect the three main parachutes that Orion deployed after re-entering the Earth's atmosphere. A separate boat recovers the parachutes while Tuft and the other divers attach a sea anchor to Orion. At that point, the capsule is stable, and the astronauts are safe and right-side up. Now, if the astronauts want to be removed from the capsule, a stabilization collar is installed around Orion and the divers assist them out and they are taken away by helicopter. Otherwise, the divers will hook up all the lines that will bring the capsule back into the well deck of the ship, and the astronauts stay aboard for the ride.

"Time is always of the essence as a Navy diver, but with NASA, you want to get the astronauts out of the capsule as soon as you can," Tuft said.

The divers have been training at the Neutral Buoyancy Lab at Johnson Space Center during the past two years. They trained in the pool for day and night operations, even simulating varying sea conditions to get ready for the actual open ocean.

"We train in day, night, rough seas and calm seas, because we don't know what we're going to get. My guys have to be on their game and know exactly what to do, no matter what issue we encounter during the recovery."



NASA astronaut Steve Bowen observes Orion underway recovery test procedures from the deck of the USS Anchorage. Photo credit: NASA/Bill White

THE ASTRONAUT

During underway recovery tests, an astronaut is sent along to help observe and better understand the procedures and techniques that are going to be used to recover the Orion capsule. It is always a plus to have an astronaut who has actually returned from space before, and having one who served in the Navy is icing on the cake.

Astronaut Steve Bowen's job during the testing is to imagine he just came back from space and is in the Pacific waiting to be picked up. Bowen doesn't know if he will be one of the crew aboard Orion when it splashes down, but that just intensifies his focus. "I've been looking at the capsule, in particular, in the open water, to see how it moves, how it rolls, how it pitches, and try to put myself in that crew member's position."

Because Bowen has spent a fair amount of time at sea, he does have an advantage over other astronauts who might not have that experience.

"I understand what it's like to be on a boat that doesn't have a keel in the open ocean. It's not necessarily the friendliest of places to be."

After spending 42 days in space, Bowen contends that it is hard to impart to others what it is like to come back to Earth — the immediate physical manifestations of gravity. He says it's easy to explain the dehydration, reduction in muscle mass, weakness and bone density. But other things, such as how hard it is just to move your head or what your helmet feels like once you're back on Earth, are a bit harder to convey. He hopes to help answer those questions for the team to ensure the smoothest recovery possible for the returned crew.

According to Bowen, "We hope we bring a crew perspective that people can tap into and ask questions of to better understand what the crew will be going through when they are recovered and what kind of condition they will be in when they land."

NASA and the Navy have several more tests and dress rehearsals to ensure they are ready before the first uncrewed Orion mission aboard the agency's new Space Launch System rocket, known as **Exploration Mission-1**. And when astronauts are onboard during Exploration Mission-2, it will be nothing but smooth sailing with this highly trained recovery team at the helm.

The Centaur upper stage that will help launch NOAA's Geostationary Operational Environmental Satellite-S, or GOES-S, arrives at the Vertical Integration Facility at Space Launch Complex 41 at Cape Canaveral Air Force Station on Feb. 8, 2018. The Centaur was then mated to a United Launch Alliance Atlas V booster. GOES-S is the second in a series of four advanced geostationary weather satellites that will significantly improve the detection and observation of environmental phenomena that directly affect public safety, protection of property and the nation's economic health and prosperity. GOES-S is slated to launch March 1, 2018.
Photo credit: NASA/Kim Shiflett





Technicians assist as the Orion crew module for Exploration Mission-1 is moved toward the thermal chamber in the Neil Armstrong Operations and Checkout Building high bay at NASA's Kennedy Space Center in Florida. Photo credit: NASA/Frank Michaux

PREPARING FOR EM-1

Thermal cycle test confirms Orion and its systems

BY LINDA HERRIDGE

When NASA's **Orion** spacecraft launches into space atop the agency's **Space Launch System** rocket on its first **uncrewed integrated flight**, Exploration Mission-1, it will travel thousands of miles beyond the Moon and return to Earth for splashdown in the Pacific Ocean. While traveling to deep space, Orion will experience extreme hot and cold temperatures, with re-entry temperatures nearing 5,000 degrees Fahrenheit.

Before Orion is exposed to the harsh conditions of launch, deep space and re-entry, it is being prepared and tested inside the Neil Armstrong Operations and Checkout Building high bay at Kennedy Space Center.

The Orion Program successfully completed a thermal cycle test on the Orion crew module inside a specially constructed thermal cycle chamber in the airlock of the high bay. Over the next five days, the crew module was rapidly cycled between hot and cold temperatures to thermally stress the hardware and ensure the workmanship of the crew module's critical hardware and its subsystem operations. The cycle of temperatures for the initial thermal test ranged from 29 to 129 F during 105 hours of testing.

"Our goal was to expose the vehicle to rapid changes in temperature to see how Orion and its systems performed," said Rafael Garcia, Orion Program Test and Verification lead. "When the test was completed, we found no major issues."

NASA and Lockheed Martin engineers in three different areas

conducted and monitored the test, including the team in the high bay near the chamber controls, the ground test instrumentation readout area, and the Test and Launch Control Center, where system managers powered on and monitored the crew module's subsystems.

"All of Orion's systems performed well," Garcia said. "The thermal cycle chamber performed as designed."

A thermal cycle test of Orion's integrated crew and service module, along with electromagnetic interference and compatibility testing, is scheduled for early next year at NASA Glenn's Plum Brook Station in Sandusky, Ohio. While testing at Kennedy helps ensure Orion is ready for EM-1, Plum Brook facilities can simulate more extreme conditions and will help validate the integrated spacecraft design for future missions. The service module is the powerhouse of the spacecraft, providing it with the electricity, propulsion, thermal control, air and water it will need in space.

During EM-1, the Orion crew module structure will reach temperatures ranging from minus 300 F to plus 250 F depending on the Sun's angle on its way to the Moon.

"The information from Kennedy testing also will be used to confirm thermal models used to predict temperatures during the mission. It's the only time the spacecraft will be tested in this way," said Mark Cavanaugh, the Orion passive thermal control deputy system manager.



The Orion crew module for Exploration Mission-1 was moved inside the thermal chamber in the Neil Armstrong Operations and Checkout Building high bay to prepare for a thermal cycle test. Photo credit: NASA/Frank Michaux

FALCON HEAVY

A multi-user spaceport success story

BY BOB GRANATH

The launch of a SpaceX Falcon Heavy rocket on its demonstration flight is another sign that NASA's Kennedy Space Center is continuing to grow as the nation's premier, multi-user spaceport. The new vehicle lifted off from NASA's historic Launch Complex 39A at Kennedy at 3:45 p.m. EST on Feb. 6.

Acting NASA Administrator Robert Lightfoot congratulated the entire SpaceX team on the successful launch of the Falcon Heavy.

“All of us in this business know the effort it takes to get to a first flight of any new vehicle and recognize the tremendous accomplishment we witnessed today,” he said. “I am really proud of the hard work of our NASA team, in particular at Kennedy, for the transformation into a multi-user spaceport. Watching the Falcon Heavy rise above the historic pad that has been the launch point for so many critical missions is a true testament to the hard work transitioning our nation’s launch infrastructure in support of the commercial launch industry.”

Kennedy Space Center Director Bob Cabana also expressed congratulations to Space X on the launch of the Falcon Heavy.

“The successful launch of a new vehicle on its first flight is a significant accomplishment they can be very proud of,” he said. “As a multi-user spaceport, I look forward to the continued expansion of commercial spaceflight from Kennedy and the integration of a new class of launch vehicle into our Nation’s space program.”

In 2014, NASA signed a 20-year [property agreement with SpaceX](#) for the use and operation of the launch pad.

Beginning in 2011, Kennedy sought partnerships with the U.S. aerospace industry to use former space shuttle facilities. Today, NASA has partnerships with more than 90 companies that enable commercial space manufacturing, processing and launch operations along Florida’s Space Coast.

Kennedy’s first significant partnership with industry allowed Boeing to use Orbiter Processing Facility 3, now known as the Commercial Crew and Cargo Processing Facility, or C3PF. Here Boeing is manufacturing and processing its CST-100 Starliner spacecraft, which is slated to carry astronauts to the [International Space Station for NASA’s Commercial Crew Program](#). SpaceX will similarly launch astronauts from Launch Complex 39A for NASA.

A handful of NASA employees serve as customer advocates and support the space center’s commercial

partners. Through reimbursable Space Act Agreements, NASA provides services that are needed at a spaceport.

“We support launch campaign activities such as propellant and life support services, which includes providing commodities such as helium and nitrogen to support launch, flight hardware transport and roadblock security support near the launch pad,” said Robyn Mitchell, the NASA customer advocate who supports SpaceX.

In her customer advocate role, Mitchell monitors the partner’s processing and facilities schedules to help ensure their operations and mission milestones are met. This includes integrating support plans in response to the partner’s requests for services.

“When partners, such as SpaceX, are preparing for a launch, we have Support Readiness Reviews,” Mitchell said. “While SpaceX is responsible for the launch vehicle and payload, NASA organizations verify support requests are complete and confirm the readiness of Kennedy’s facilities, equipment and infrastructure for launch.”

Mitchell noted that the ongoing responsibilities of her office are key to establishing and maintaining a multi-user spaceport capability at Kennedy, specifically working with commercial partners to help them identify technical requirements, anticipate operational impacts and develop solutions taking advantage of the center’s unique launch infrastructure and capabilities.

The Falcon Heavy test is evidence of the transformation of NASA’s Kennedy Space Center as a multi-user spaceport. NASA and its commercial and international partners are looking to return humans to the Moon and beyond, and there will be opportunities for a wide range of rockets and capabilities.

NASA’s [Space Launch System \(SLS\)](#) rocket and [Orion](#) spacecraft is targeted to lift off next year from nearby Launch Complex 39B. The initial SLS rocket is expected to have a liftoff thrust of 8.8 million pounds, and is designed to be an evolvable launch vehicle able to meet the most challenging deep space crew and cargo needs.

“As SpaceX continues to refine operations of its Falcon Heavy rocket, we welcome this capability to be added to those available soon from NASA’s SLS,” said Tom Engler, Kennedy’s director of Center Planning and Development.



A SpaceX Falcon Heavy begins its demonstration flight with a 3:45 p.m. EST liftoff from Launch Complex 39A at NASA’s Kennedy Space Center. This is a significant milestone for the world’s premier multi-user spaceport. In 2014, NASA signed a property agreement with SpaceX for the use and operation of the center’s pad 39A, where the company has launched Falcon 9 rockets and prepared for the first Falcon Heavy. NASA also has Space Act Agreements in place with partners, such as SpaceX, to provide services needed to process and launch rockets and spacecraft. Photo credit: NASA/Kim Shiflett



The SpaceX Falcon Heavy rocket's two side cores descend toward landing at Cape Canaveral Air Force Station following a successful liftoff at 3:45 p.m. EST from Launch Complex 39A at NASA's Kennedy Space Center. Photo Credit: SpaceX



Employees, invited guests and members of the news media gathered to witness the liftoff of the SpaceX Falcon Heavy rocket from Launch Complex 39A. The demonstration flight is a significant milestone for the world's premier multi-user spaceport. In 2014, NASA signed a property agreement with SpaceX for the use and operation of the center's pad 39A, where the company has launched Falcon 9 rockets and is preparing for the first Falcon Heavy. NASA also has Space Act Agreements in place with partners, such as SpaceX, to provide services needed to process and launch rockets and spacecraft. Photo credit: NASA/Frank Michaux



NASA initiates first grow out in Advanced Plant Habitat on space station

BY LINDA HERRIDGE

NASA soon will better understand how plants grow in space with the help of a new, fully automated plant growth facility called the **Advanced Plant Habitat**, or APH, aboard the International Space Station. With its first grow out initiated in January, the habitat will be used to conduct plant bioscience research. Investigation data will help the agency prepare crews to grow their own food in space during **deep space missions**.

Expedition 54 astronaut Joe Acaba worked through the procedures to open and prep the plant habitat. Supported by researchers in the Experiment Monitoring Room in the Space Station Processing Facility at the agency's Kennedy Space Center, he carefully installed the science carrier containing Arabidopsis and dwarf wheat seeds, and then reinstalled the door and acoustics blanket that was built for the APH to dampen the sound when the fans are running on high.

According to Bryan Onate, APH project manager, the plants will be allowed to grow for about five weeks under red, blue and green LED lights. The Arabidopsis seeds will grow for the first 2.5 weeks, and then the dwarf wheat will grow during the last 2.5 weeks.

"The test will help us validate the APH with plants and to determine if the planting procedure is good as we get ready for our first science mission," Onate said.

The APH is a fully enclosed, closed-loop system with an environmentally controlled growth chamber. The habitat is equipped with a monitoring system, the Plant Habitat Avionics Real-Time Manager, or PHARMER, that provides real-time telemetry, remote commanding and photo downlink to the team at Kennedy.

Read the full story at <https://go.nasa.gov/2C3uw2V>.

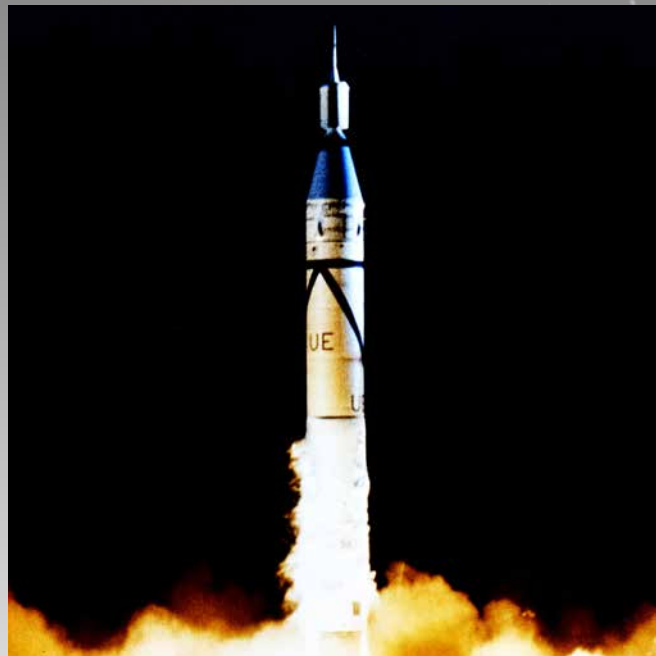
Bryan Onate, Advanced Plant Habitat (APH) manager, second from left, and Nicole Dufour, APH Flight Operations lead, monitor activation of the plant habitat aboard the International Space Station from the Experiment Monitoring Room in the Space Station Processing Facility at NASA's Kennedy Space Center. Photo credit: NASA/Sheila Plourd

SPACE EXPLORATION BEGINS

Anniversary event marks start of U.S. space exploration

BY BOB GRANATH

NASA and other government officials gathered at Cape Canaveral Air Force Station's Launch Complex 26 to mark the beginning of U.S. space exploration. From that location, on Jan. 31, 1958, a Jupiter C rocket lifted off with America's first satellite – Explorer 1.



The United States' first satellite, Explorer 1, is launched into orbit by a Jupiter C rocket at 10:48 p.m. EST on Jan. 31, 1958. Explorer 1 confirmed existence of high-radiation bands above the Earth's atmosphere. Photo credit: NASA



Kennedy Space Center Director Bob Cabana speaks to guests at an event celebrating the 60th anniversary of America's first satellite. The ceremony took place in front of the Space Launch Complex 26 blockhouse at Cape Canaveral Air Force Station where the Explorer 1 satellite was launched atop a Jupiter C rocket on Jan. 31, 1958. Photo credit: NASA/Kim Shiflett

The launch site now is part of the U.S. Air Force Space and Missile Museum, where the ceremony took place on the 60th anniversary of the event in which the United States was in a Cold War competition with the Soviet Union to orbit satellites.

Brig. Gen. Wayne Monteith, 45th Space Wing commander and director of the Eastern Range, noted that America's first satellite paved the way for more achievements in the years to come.

"The U.S. had finally entered the race to the Moon and beyond," he said. "We are now leading the world. We have launched 3,568 rockets from the Eastern Range. With our partners at NASA, we are the busiest spaceport in the world."

Also on hand was Dr. John Meisenheimer, launch weather officer for *Explorer 1*. Due to high upper-level winds on Jan. 29 and again on Jan. 30, he gave a "no-go" forecast.

"My calculation showed that the jet stream would come close to the Cape and cause extreme wind shears around 200 mph," he said. "The (Jupiter C rocket's) guidance system couldn't handle it. On Jan. 31, there was a wave on the jet stream that would move it away and that gave us a window of opportunity to launch *Explorer 1*."

According to Kennedy Space Center Director Bob Cabana, the years since *Explorer 1* have brought many achievements.

"Continuing the legacy of scientific exploration that began 60 years ago, our Launch Services Program this year marks its 20th anniversary," he said. "LSP has been responsible for some of NASA's most memorable scientific missions, including the Curiosity rover to Mars, Cassini to Saturn, Juno to Jupiter and New Horizons to Pluto."

Following the successful launch of *Explorer 1*, the satellite's cosmic ray detector discovered radiation belts around Earth held in place by the planet's magnetic field. The belts later were named for Dr. James Van Allen, professor of physics and astronomy at the University of Iowa. As the principal investigator, he developed the instruments for the *Explorer 1* satellite.

Since opening to the public in 1966, the Air Force Space and Missile Museum has introduced millions of visitors to the history of rocketry and spaceflight. Inside the blockhouse, much of the instrumentation remains as it was in the 1950s when America was taking its first steps into space.

For more historical photographs and pictures of the Jan. 31, 2018, event, check out the [Explorer 1 60th Anniversary Flickr album](#).



During a ceremony at Cape Canaveral Air Force Station's Space Launch Complex 26 a historical marker is unveiled noting the launch of America's first satellite, *Explorer 1*. From the left, Ray Sands, chairman of the Air Force Space and Missile Foundation -- sponsor of the marker, Brig. Gen. Wayne Monteith, 45th Space Wing commander and director of the Eastern Range and Kennedy Space Center Director Bob Cabana. The *Explorer 1* satellite was launched atop a Jupiter C rocket on Jan. 31, 1958. During operation, the satellite's cosmic ray detector discovered radiation belts around Earth which were named for Dr. James Van Allen, principal investigator for the satellite. Photo credit: NASA/Kim Shifflett



Technicians dressed in clean room suits monitor the progress as a crane lowers NASA's Transiting Exoplanet Survey Satellite (TESS) onto a test stand inside the Payload Hazardous Servicing Facility (PHSF) at Kennedy Space Center on Feb. 12, 2018. Inside the PHSF, the satellite will be processed and prepared for its flight. TESS is scheduled to launch atop a SpaceX Falcon 9 rocket from Space Launch Complex 40 at Cape Canaveral Air Force Station. TESS is the next step in NASA's search for planets outside our solar system, known as exoplanets. TESS is a NASA Astrophysics Explorer mission led and operated by MIT in Cambridge, Massachusetts, and managed by NASA's Goddard Space Flight Center in Greenbelt, Maryland. Dr. George Ricker of MIT's Kavli Institute for Astrophysics and Space Research serves as principal investigator for the mission. Additional partners include Orbital ATK, NASA's Ames Research Center, the Harvard-Smithsonian Center for Astrophysics and the Space Telescope Science Institute. More than a dozen universities, research institutes and observatories worldwide are participants in the mission. NASA's [Launch Services Program](#) is responsible for launch management. Photo credit: NASA/Ben Smegelsky



Vice President Mike Pence addresses a meeting of the National Space Council in the high bay of the Space Station Processing Facility at NASA's Kennedy Space Center on Feb. 21, 2018. Chaired by the Vice President, the council's role is to advise the president regarding national space policy and strategy, and review the nation's long-range goals for space activities. Photo credit: NASA/Kim Shiflett

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