

With success of Artemis I, when will NASA fly Artemis II?

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With Orion safe back on Earth, the last and most important tests of the Artemis I mission have been completed, but there are still miles to travel and months of data sifting to go before NASA will target an Artemis II

launch date.

While the latest announced timeline for that flight is no earlier than May 2024—only 18 months away—NASA officials after Sunday's successful landing kept referring a two-year turnaround between Artemis I and II, which would put its launch closer to the end of 2024.

"I think one thing we've always been concerned about is, what do we learn from [Artemis I] and are there changes we have to make? I think we've learned a lot," said Jim Free, NASA's associate administrator for the Exploration Systems Development Mission Directorate during a post-landing press conference Sunday.

"We obviously want to try to do it quicker," Free said, and pointed out the Orion team is "always looking to ways to do things quicker. We're trying to roll in lessons learned from the processing of the Artemis I vehicle at Kennedy. Are there things we can shorten there? Optimize? So that's all of our lessons learned path going forward."

The uncrewed Orion capsule splashed down Sunday in the Pacific Ocean to complete its 25 1/2-day mission that launched from Kennedy Space Center on Nov. 16.

Officials said more than 240 mission goals were accomplished. They included a successful launch atop the Space Launch System rocket, maneuvers during [lunar orbit](#) and ultimate return of Orion that featured a record-setting reentry for a human-rated spacecraft hitting 24,464 mph that generated temperatures near 5,000 degrees Fahrenheit.

Johnson Space Center Director Vanessa Wyche said part of that process will be assigning the crew for Artemis II, slated to bring four astronauts on an orbital flight without a lunar landing that will take about eight days, and mark humans' first deep-space mission since the end of the

Apollo program 50 years ago.

"We knew that we wanted to wait for this mission to go—make sure that it was a success," she said. "There's still some things that need to be learned as we get the spacecraft back to Florida. ... But our intent is if all is still go and everything looks good, then our plan is to name the crew in early 2023."

NASA astronaut Shannon Walker noted during live coverage of the landing that waiting to name a crew is not a bad thing if any sort of delay would push the target [launch date](#).

"Once we get this capsule back, we'll look it over and we'll be able to determine when Artemis II will actually be able to launch, and once we know that launch day, we'll figure out the right time to name the crew based on the training flow," she said. "We don't want to have the crew just spinning their wheels if Artemis II is going to be a long way out."

Astronaut Randy Bresnik, who since 2018 has been heavily involved with Orion and Artemis decisions, said typically there would be two years from the announcement of the crew until launch, "ideally assigning the crew to it so that we can start building their spacesuits, getting them involved in training and getting them ready to go in that two-year mark."

That regime could mean a launch pushed into 2025, but there could be room to speed up that timeline.

"Hopefully, we will either meet or beat that two-year mark," he said. "So that'll be exciting to see if we can move that fast to continue the momentum that we got from this flight. ... Looking forward to the next two years where we are able to take that and capitalize on it and, as we say, 'wash, rinse, repeat.'"

Farther down the line, Artemis III is slated for no earlier than 2025, but that too could slip in the domino effect between launches. That's the mission that looks to return humans, including the first woman, to the surface of the moon.

After that NASA wants to launch one mission a year with an eventual goal of building a base on the moon and sending the first humans to Mars by 2040.

While the Artemis I test flight was originally slated for as early as 2016 when the program was announced, a series of delays from manufacturers, COVID-19 and a slew of hurricanes kept pushing the launch date, but with a working deep-space rocket and capsule, NASA Associate Administrator Bob Cabana says even a two-year wait before Artemis II will seem quick.

"It is not that far away," he said. "It's going to mean a lot when we get the crew assigned and we see them in training—we get that human face to this."

Before any of that, though, KSC Director Janet Petro said the Orion capsule from Artemis I needs to be brought back to Florida by truck, with an expected arrival at KSC's multi-payload processing facility by the end of December. There, remaining hazardous fluids will be removed and then post-launch work will begin in the new year.

"The teams will be opening up the hatch of the Orion and then once that's complete ... the moment of truth. They'll remove that heat shield and begin a really detailed inspection and assessment of how that [heat shield](#) performed during its reentry and recovery operation," she said.

Also teams will unload science payloads from the flight including the three mannequins that collected flight stress and radiation level data that

will help with the spacesuit design. Then Orion will head to NASA's Glenn Research Center in Cleveland for acoustic and environmental testing.

NASA's Michelle Zahner, the Orion mission planning lead with the Vehicle Integration Office, said the focus for "several months" will be on pouring over Artemis I data to "really dissect it and understand the vehicle performance" before final work is signed off for Artemis II's Orion capsule.

"We did a lot of testing and analysis prior to the mission but nothing really compares to seeing the vehicle perform in the harsh space environment," she said of the capsule that flew 1.4 million miles as well as setting records for human-rated spacecraft for both the farthest distance flown from Earth at 268,000 miles and longest flight in space without docking with a space station. "We pushed the vehicle further than we probably would with crew on board. But through that we learned a lot we, learned that the vehicle is more robust than we thought in many areas."

The hardware for Artemis II is already in the works with the core stage nearly complete at NASA's Michoud Assembly Facility in New Orleans. It soon will be connected to the engine section with its four RS-25 engines, some of which previously flew on space shuttle missions, before being moved to Kennedy Space Center in 2023.

Both the Lockheed Martin-built Orion crew capsule for Artemis II and the European Space Agency-supplied service module are already at KSC as well, although some parts from Artemis I's Orion capsule will be transferred to the Artemis II capsule. Since it's going to carry crew, it needs to have its life support system green-lit along with other crew features such as monitors.

Also, all of the segments that will make up the two solid rocket boosters built by Northrop Grumman are ready in Utah awaiting a launch date so they can travel to KSC. At that point, the parts will be put together in the Vehicle Assembly Building.

And the gears keep cranking for future Artemis mission hardware, with plans already shifted so the most complicated part of the core stage—the engine section with its four RS-25 engines—will be assembled at KSC's Space Station Processing Facility starting with Artemis III. That section already arrived to Florida this past weekend.

Then final assembly of the engine section to the rest of the core stage will be done in the VAB's High Bay 2 down the line.

That clears up space in New Orleans to increase the speed with which Boeing can knock out core stages for future missions as well as begin construction on the Exploration Upper Stage section that will be used starting with Artemis IV. That's the stage that will have 100,000 pounds of thrust in space through four RL-10 engines, as opposed to the single RL-10 used on Artemis I, II and III.

This larger stage is capable of hauling significant hardware to the moon in addition to the Orion capsule including parts to the planned Gateway mini lunar space station.

"We are on the way," Cabana said. "We're going to get this one-year cadence eventually where we're doing this on an annual basis—this is our future."

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