

# NASA capsule buzzes moon, last big step before lunar orbit

November 21 2022, by Marcia Dunn

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This screengrab from NASA TV shows NASA's Orion capsule, left, nearing the moon, right, Monday, Nov. 21, 2022. At center is earth. Credit: NASA via AP

NASA's Orion capsule reached the moon Monday, whipping around the far side and buzzing the lunar surface on its way to a record-breaking orbit with test dummies sitting in for astronauts.

It's the first time a capsule has visited the moon since NASA's Apollo

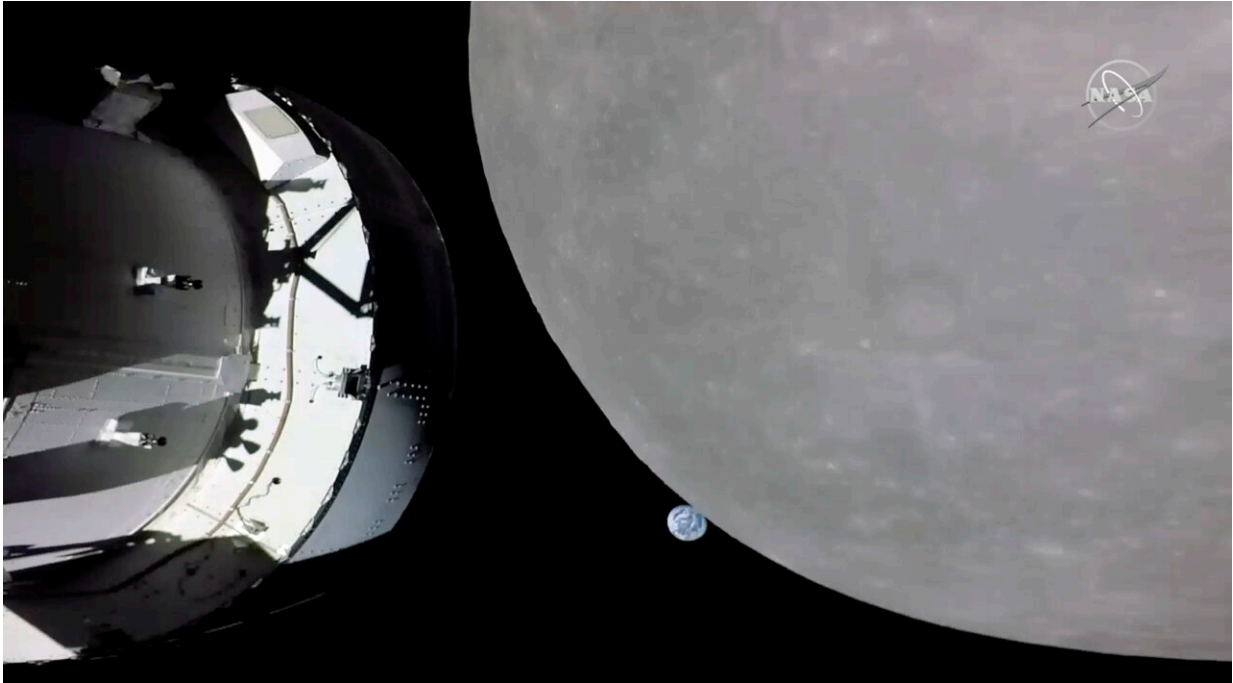
program 50 years ago, and represents a huge milestone in the \$4.1 billion test flight that began last Wednesday.

Video of the looming moon and our pale blue planet more than 230,000 miles (370,000 kilometers) in the distance left workers "giddy" at Houston's Johnson Space Center, home to Mission Control, according to flight director Judd Frieling. Even the flight controllers themselves were "absolutely astounded."

"Just smiles across the board," said Orion program manager Howard Hu.

The close approach of 81 miles (130 kilometers) occurred as the crew capsule and its three wired-up dummies were on the far side of the moon. Because of a half-hour communication blackout, flight controllers in Houston did not know if the critical engine firing went well until the capsule emerged from behind the moon. The capsule's cameras sent back a picture of the Earth—a tiny blue dot surrounded by blackness.

The capsule accelerated well beyond 5,000 mph (8,000 kph) as it regained radio contact, NASA said. Less than an hour later, Orion soared above Tranquility Base, where Neil Armstrong and Buzz Aldrin landed on July 20, 1969. There were no photos of the site because the pass was in darkness, but managers promised to try for pictures on the return flyby in two weeks.



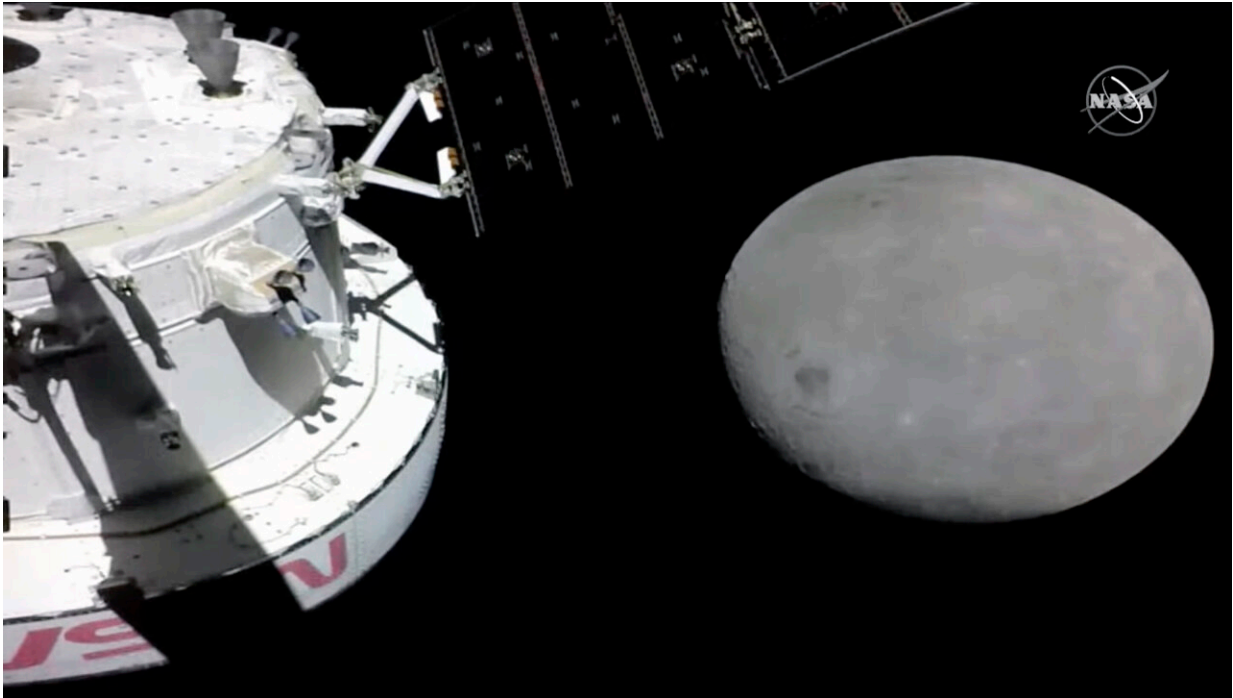
This screengrab from NASA TV shows NASA's Orion capsule, left, nearing the moon, right, Monday, Nov. 21, 2022. At center is earth. Credit: NASA via AP

Orion needed to slingshot around the moon to pick up enough speed to enter the sweeping, lopsided lunar orbit. Another engine firing will place the capsule in that orbit Friday.

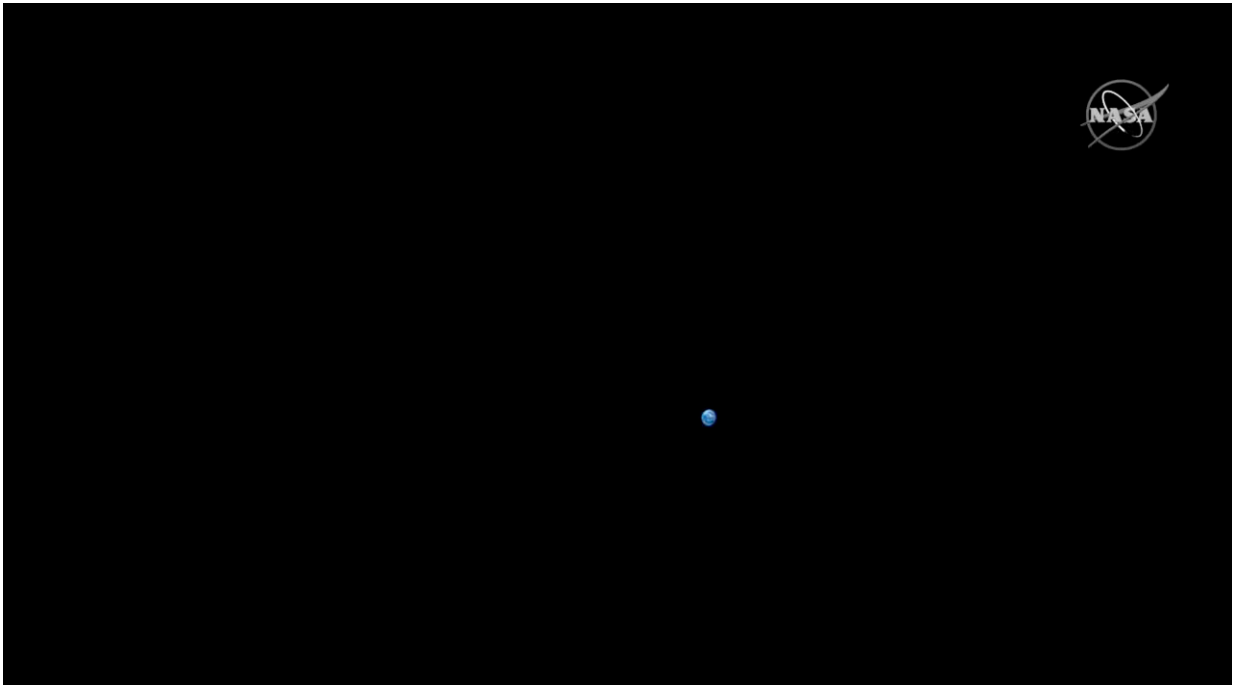
This coming weekend, Orion will shatter NASA's distance record for a spacecraft designed for astronauts—nearly 250,000 miles (400,000 kilometers) from Earth, set by Apollo 13 in 1970. And it will keep going, reaching a maximum distance from Earth next Monday at nearly 270,000 miles (433,000 kilometers).

The capsule will spend close to a week in lunar orbit, before heading home. A Pacific splashdown is planned for Dec. 11.

Orion has no lunar lander; a touchdown won't come until NASA astronauts attempt a lunar landing in 2025 with SpaceX's Starship. Before then, astronauts will strap into Orion for a ride around the moon as early as 2024.



This handout from NASA TV shows NASA's Orion spacecraft approaching the moon on Monday, Nov. 21, 2022. Credit: NASA via AP



This handout from NASA shows earth taken from NASA's Orion spacecraft while behind the moon on Monday, Nov. 21, 2022. Credit: NASA via AP

Mission manager Mike Sarafin was delighted with the progress of the mission, giving it a "cautiously optimistic A-plus" so far.

The Space Launch System rocket—the most powerful ever built by NASA—performed exceedingly well in its debut, Sarafin told reporters. He said teams are dealing with two issues that require workarounds—one involving the navigational star trackers, the other the power system,

The 322-foot (98-meter) rocket caused more damage than expected, however, at the Kennedy Space Center launch pad. The force from the 8.8 million pounds (4 million kilograms) of liftoff thrust was so great that it tore off the blast doors of the elevator, leaving it unusable.

Sarafin said the pad damage will be repaired in plenty of time before the next launch.

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Citation: NASA capsule buzzes moon, last big step before lunar orbit (2022, November 21)  
retrieved 6 August 2024 from <https://phys.org/news/2022-11-nasa-capsule-moon-big-lunar.html>

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