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Back to Moon: Nasa set to launch Artemis-1 lunar mission on Monday

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In a step towards sending humans back to Moon over half a century later, Nasa is set to launch Artemis-1 mission on Monday, which will be the US space agency's first non-crew mission to the Moon in recent times that will pave the way for the manned orbital mission (Artemis-2) and manned landing mission (Artemis 3) in 2025.

The new Space Launch System (SLS) will be the most powerful rocket engine ever flown to space, even more powerful than Apollo's Saturn V rocket that took astronauts to the Moon in the 1960s and 1970s. The Orion spacecraft that will be launched by the rocket is scheduled to travel to the Moon, deploy some small satellites and then settle into orbit.

“Artemis-I will be the first in a series of increasingly complex missions to build a long-term human presence at the Moon for decades to come. The

primary goals for Artemis I are to demonstrate Orion's systems in a spaceflight environment and ensure a safe re-entry, descent, splashdown and recovery prior to the first flight with crew on Artemis II,” says Nasa.

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“This is a mission that truly will do what hasn't been done and learn what isn't known,” said Mike Sarafin, Artemis I mission manager at Nasa headquarters in Washington.

Artemis-1 will test how well SLS and Orion can complete a mission to the Moon and back and will ensure that both rocket and the spacecraft can safely ferry astronauts that far into space and back. The spacecraft will stay in orbit for approximately six days to collect data and allow mission controllers to assess the performance of the spacecraft.

The SLS is a new type of rocket system because it has both a combination of liquid oxygen and hydrogen main engines and two strap-on solid rocket boosters derived from the space shuttle. It's really a hybrid between the space shuttle and Apollo's Saturn V rocket.

The mission is also going to carry a series of small satellites that will be placed in orbit of the Moon. Those will do some useful precursor science, everything from looking further into the permanently shadowed craters where scientists think there is water to just doing more measurements of the radiation environment.

The Artemis programme is driven by a number of different goals. It includes in situ resource utilisation, which means using resources at hand like water ice and lunar soil to produce food, fuel and building materials. The Nasa administration has said that in that first crewed flight, on Artemis-3, there will be at least one woman and very likely a person of colour.

Though no humans will be aboard in the Artemis-1, a mannequin — nicknamed Commander Moonikin Campos to honor a legendary Nasa engineer who helped bring Apollo-13 safely back to Earth — will be on board, sitting inside the commander's seat. Various sensors on its seat and spacesuit will gather data about vibrations, acceleration and radiation throughout the mission. Two additional mannequin torsos will be on board, outfitted with thousands of sensors to record even more details. The main objective of the uncrewed mission is to test the rocket's heat shield, which will protect astronauts upon re-entry, Nasa administrator Bill Nelson said.

Additionally, a package called Callisto, named for the companion of Artemis in Greek mythology, will be flying inside Orion. Callisto houses both an Amazon Alexa and a touchscreen that will host Cisco's Webex software. The payload is meant to test

out smart tools that future astronauts might use on Orion in order to communicate over video with the mission control and get information about where they are in space.