

# Girlhood dream come true for British engineer at Nasa's moon launch



Blast-off drama comes down to last-minute fix with a spanner, reports **Jacqui Goddard** from Cape Canaveral

When Siân Cleaver first arrived at the Kennedy Space Center she was a wide-eyed tourist aged eight. Yesterday, she returned as a member of the engineering team that helped make successful the launch of Nasa's mightiest rocket.

The long-awaited Artemis I mission — comprising the Space Launch System rocket carrying the Orion crew capsule — lifted off from Cape Canaveral, Florida, at 1.47am in a thunderous, flaming spectacle that bathed the night-time landscape in brilliant light. "This is history in the making," said Cleaver, 32 and from Chelmsford, Essex. She is part of the engineering team at Airbus that built the Orion European Service Module (ESM), which provides the capsule's electrical power, propulsion and life support systems.

"We've all been incredibly excited for this. It's the fulfilment of a childhood dream for me. To feel that rumble and see it head off to the moon... just magic," said Cleaver, who joined Airbus on their graduate scheme after gaining a master's degree in physics and astronomy from Durham University. She was beaten to her childhood dream of being an astronaut by a fellow Briton.

As part of an educational outreach programme by the European Space Agency, which contributed the ESM to



the mission, a Shaun the Sheep toy — made famous by Nick Park's Wallace and Gromit series — is riding aboard. The British consul-general in Miami, Rufus Drabble, was among VIP guests invited

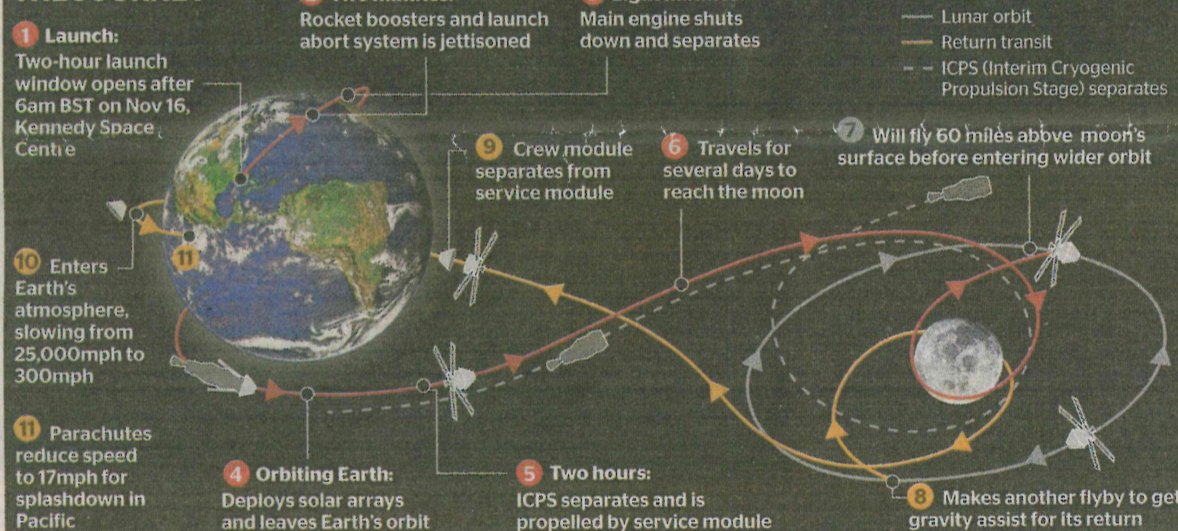
to the launch and described it as "something to behold".

Coming 50 years after astronauts last set foot on the lunar surface, the uncrewed mission will put Orion through its paces to prepare for a crewed voyage around the moon in 2024.

The Artemis programme has been over a decade in development and cost \$37 billion to date — a bill that will pass \$90 billion by 2025. Delayed for years

Artemis I is on its way after last-minute hitches threatened another failure. Siân Cleaver, left, from Essex, is part of the Airbus team that helped to build the capsule

## THE JOURNEY



by technical and funding hurdles, the launch of the world's mightiest rocket to send humanity back to the moon and on to Mars had perhaps seemed fated for one final hitch. This time though, engineers were determined not to allow a leaky fuel valve to put a wrench in Nasa's hopes of getting its Artemis I mission off the ground to fulfil its slogan: "We are going." They hopped in their cars, headed to the danger zone and, as the 322ft rocket groaned from a million-gallon bellyful of explosive fuel, used a wrench to tighten a nut and save the mission.

Then came a second near-showstopper after the US Space Force lost signal on a radar crucial to the emergency self-destruct system. A faulty ethernet cable was quickly replaced.

Jim Free, Nasa's associate administrator for exploration ground systems, was full of praise for everyone who had made the launch possible. "Today was monumental for Nasa, the United States and the world. Our first Artemis mission is on its way to the moon and for so many globally, a dream was realised," he said. "The contributions to get us to today can't be measured; they are more than pieces of hardware. They are hardworking people's hearts and souls."

The 1.3 million-mile, 26-day mission is the first in a series that will ultimately establish bases on the lunar surface, where astronauts will conduct tests and build new technologies to support the push to Mars. Artemis III, destined for 2025 or beyond, will land humans on the moon for the first time since 1972.

In an emotional speech Charlie Blackwell-Thompson, the launch director, told the workforce: "What you have done today will inspire generations to come. The harder the climb, the better the view."

● Britain officially has its first operational spaceport, after the Civil Aviation Authority granted a licence for satellite launches from Cornwall. A section of Newquay airport is now formally known as Spaceport Cornwall and is gearing up for the first launch from British soil in the coming weeks. A crew of engineers, pilots and mission controllers from Virgin Orbit has been on site for over a month preparing to make history by firing a rocket packed with small satellites into orbit.

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Two launch attempts in August were scrubbed because of hydrogen leaks and further delays caused by two hurricanes. The final few hours of this countdown were packed with drama after a liquid hydrogen leak opened up on the mobile launch platform, compromising the fuelling process and threatening another launch postponement.

Billy Cairns, a cryogenic engineering technician, risked his life along with two colleagues to enter the blast exclu-