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{ MY INDIA } UNION MINISTER SAYS

'Chandrayaan-4 set for launch in 2027'

The Chandrayaan-4 mission, whose objective is to bring back lunar samples that are not damaged and contaminated, will be launched in 2027, Union science & technology minister Jitendra Singh said on Thursday. "The Chandrayaan-4 mission aims to collect samples from the moon's surface and bring them back to the Earth," Singh told PTI. During a speech at Akashvani in October last year, former Isro chief S Somanath said Chandrayaan-4 would likely be launched in 2028. India has sent three space missions to Moon in 2008, 2019 and 2023 in the Chandrayaan series. In the first two iterations, the Moon's surface, sub-surface and exosphere were studied. »P12

Chandrayaan-4 set to launch in 2027: Centre

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MUMBAI: The Chandrayaan-4 mission, whose objective is to bring back lunar samples that are not damaged and contaminated, will be launched in 2027, Union science & technology minister Jitendra Singh said on Thursday.

India has sent three space missions to Moon in 2008, 2019 and 2023 in the Chandrayaan series. In the first two iterations, the Moon's surface, sub-surface and exosphere were studied in a global scale from orbiter platforms. Chandrayaan-3 was the first-ever successful lunar soft-landing and robotic exploration in the southern polar region of the Moon, and has conducted in-situ studies of the lunar surface, near-surface plasma. It also recorded, for the first time, lunar ground vibrations in the southern polar regions. Chandrayaan-4 will involve at least two separate launches of the heavy-lift LVM-3 rocket that will carry five different components of the mission which will be assembled in orbit.

"The Chandrayaan-4 mission aims to collect samples from the moon's surface and bring them back to the Earth," Singh told PTI Videos in an interview. During a speech at Akashvani in October last year, former Isro chairman S Somanath had said that Chandrayaan-4 would likely be launched in 2028.

In September last year, the Union Cabinet approved two space science missions -- Chandrayaan-4, and the Venus Orbiter Mission (VOM) to study different facets of the planet including its surface and atmosphere. The Indian Space Research Organisation (Isro) website states that VOM is scheduled to launch in March 2028.

According to information on the Indian Space Research Organisation (Isro) website, these two missions are stepping stones to the Prime Minister Narendra Modi's Space Vision 2047, which includes placing the Bharatiya Antariksha Station in orbit by year 2035. The government has also envisaged an Indian landing on the Moon by 2040.

India successfully landed on the south side of the Moon with its Chandrayaan-3 mission in 2023. PTI

The country is also set to launch two missions -- Gaganyaan and Samudrayaan -- in 2026, said Singh. The Gaganyaan mission involves sending Indian astronauts in a specially designed spacecraft to low-earth orbit and bringing them back safely. Samudrayaan will carry three scientists in a submersible up to a depth of 6,000 metres in the deep ocean, to explore the seabed and unlock vast resources, including critical minerals, rare metals, and undiscovered marine biodiversity. For this, the National Institute of Ocean Technology, Chennai, an autonomous institute under MoES, has developed 6,000m depth rated Remotely Operated Vehicle (ROV) and various other underwater instruments.

"This achievement will align with the timelines of India's other landmark missions, including the Gaganyaan space mission, marking a pleasant coincidence in the nation's journey toward scientific excellence," Singh said.

Prior to Chandrayaan-4 and Gaganyaan mission, the first uncrewed mission of the Gaganyaan project carrying a woman robot astronaut, or Vyommitra, will take place this year.

Last year, Singh said that Vyommitra astronaut is designed to simulate human functions in the space environment and interact with the life support system.

Speaking of Isro's progress and plans, Singh said while the first launch pad was set up in 1993 and the second one after a 10-year gap in 2004, India's space sector has undergone unprecedented expansion, both in terms of infrastructure and investment, in the last decade.

"We are now building a third launch pad and for the first time for heavier rockets, and expanding also beyond Sriharikota with a new launch site in Tamil Nadu's Tuticorin district to launch small satellites," he said.

The minister said that India's space economy, currently valued at $8 billion, is projected to reach $44 billion in the next decade, further cementing India's role as a global space powerhouse.

"In the last few years, Isro has been notching success after success, and therefore the leadership feels more confident to take up more ambitious projects in even shorter timelines. Advancing timelines reflects their confidence," said Aniket Sule, associate professor (astronomy), Homi Bhabha Centre for Science Education, an affiliate of the Tata Institute of Fundamental Research.

{ ON COLLISION COURSE? }

2024 YR4: The asteroid that's set to cross Earth's path

Astronomers are tracking an asteroid first spotted in Chile just after Christmas 2024. Current calculations show a slim but not entirely insignificant 1.8% chance of Earth impact on Dec 22, 2032. Here's what we know

The monitoring

- Space agencies worldwide are tracking the asteroid until April 2025, when it becomes too faint to see
- Then comes a three-year waiting period until June 2028, when it returns to visibility
- This pattern of observation and waiting will continue until the critical year: 2032.

The risk in numbers

- Current calculations show a 1.8% chance of Earth impact - similar odds to drawing the ace of spades from a deck of cards
- While this means there's a 98.2% chance it will miss us completely, the probability is high enough to keep astronomers watching closely
- What is also important to remember is impacts of this size occur every few thousand years.

A historical comparison

- In 1908, a similarly sized asteroid exploded over Tunguska, Siberia
- News website Gizmodo quoted ESA scientist Daniel Moissl, who drew parallels to the historic 1908 Tunguska event
- As Moissl explained, if 2024 YR4 were to impact - though he emphasised this remains unlikely - the effects would be comparable how Tunguska, approximately 40 meters in diameter, "flattened 2,000 square kilometres of forest and sent seismic waves through the area and was felt hundreds of kilometres away."

The asteroid

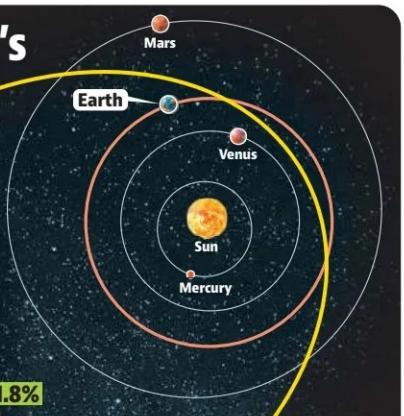
40-90 meters
in diameter (comparable to an Olympic swimming pool)

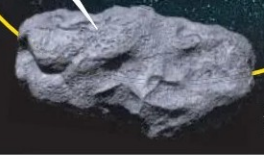
Impact probability

on January 29, 2025: 1.3%

on February 6, 2025: 1.8%

- Current trajectory: Moving in elongated orbit around Sun, crossing Earth's path
- Potential impact date: December 22, 2032
- Possible impact zone: Eastern Pacific Ocean to South Asia corridor





*Not to scale, image are for representational purpose only

What now?

- Global space agencies have activated planetary defense protocols
- The world's most powerful telescopes are tracking its path, while scientists continually refine their calculations
- If the risk increases, space agencies stand ready to recommend further action to the United Nations
- It is likely that agencies will release an update after the observation window ends in April.