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## PM names 4 astronauts for Gaganyaan mission

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**NEW DELHI:** Prime Minister Narendra Modi on Tuesday introduced to the world India's four "astronaut designates", elite fighter pilots of the Indian Air Force (IAF), who have been selected to be sent to space as part of India's first humancrewed spaceflight—the Gaganyaan mission.

The announcement was made during Modi's visit to the Indian Space Research Organisation's (ISRO) Vikram Sarabhai Space Centre (VSSC) research institute in Thiruvananthapuram, Kerala.

The four astronauts—IAF's group captain Prasanth Balakrishnan Nair, group captain Ajit Krishnan, group captain Angad Pratap and wing commander Shubhanshu Shukla—have been training extensively for the Gaganyaan mission for the last five years in Russian and Indian facilities. They were awarded "Antriksh Yatri Pankh" (astronaut wings) by the Prime Minister at a ceremony on Tuesday.

Introducing the astronauts, Modi said they were the "four forces" who will carry on their shoulders the aspirations of 1.4 billion people.



**Group Captain Prasanth Balakrishnan Nair**

Born in Chennai on April 19, 1982, Krishnan received the President's Gold Medal and Sword of Honour at the Air Force Academy. He has around 2,900 hours of flying experience.

**Group Captain Ajit Krishnan**

Born in Chennai on April 19, 1982, Krishnan received the President's Gold Medal and Sword of Honour at the Air Force Academy. He has around 2,900 hours of flying experience.

**Group Captain Angad Pratap**

He was born in Prayagraj on July 17, 1982. He is a flying instructor and a test pilot with around 2,000 hours of flying experience. He has flown several aircraft including Su-30 MKI, MiG-21, MiG-29, Jaguar and Hawk.

**Wing Commander Shubhanshu Shukla**

Shukla is the youngest of the four and was commissioned in the fighter stream of IAF in June 2006. He is a fighter combat leader and a test pilot with around 2,000 hours of flying experience.

The 4 astronaut-designates are not just four names or individuals, they are the power that are carrying the aspirations of 140 crore Indians into space. — Narendra Modi

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## IAF test pilots with shining track record to lead India's space quest

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**NEW DELHI:** A closely guarded secret for over four years was revealed by Prime Minister Narendra Modi on Tuesday. He announced the identities of the four Indian Air Force fighter pilots selected for India's first crewed spaceflight—the Gaganyaan mission.

The Prime Minister introduced to the nation the astronauts, or "vyomanas". Group Captains Prasanth Balakrishnan Nair, Angad Pratap, Ajit Krishnan, and Wing Commander Shubhanshu Shukla, who were hand-picked by the IAF and have undergone rigorous training for the mission in Russia.

The four astronauts, who were awarded the "Antriksh Yatri Pankh" (astronaut wings) by the PM at the Vikram Sarabhai Space Centre, Thiruvananthapuram, are from the elite Air Force Test Pilot School, which comes under the Bengaluru-based Aircraft and Systems Testing Establishment (ASTE).

With the Gaganyaan project, the Indian Space Research Organisation (ISRO) plans to demonstrate its human spaceflight capabilities. The crew will be launched into an orbit 400 kilometers away for a three-day mission. The mission scheduled for launch by 2025.

PM Modi said that the names of the astronauts have become intertwined with India's success.

During the inaugural ceremony held today at the Vikram Sarabhai Space Centre, Thiruvananthapuram, Hon'ble PM unveiled the Indian Astronaut Logo and awarded the astronaut wings to the four IAF Astronauts. IAF will be working in 'Mission Mode' along with ISRO to achieve our Nation's dream of achieving our own Manned Space Flight," the IAF said on X.

An alumnus of the Khadakwasla-based National Defence Academy, Nair was awarded the Sword of Honour at Air Force

Academy Dundigal, near Hyderabad, for overall excellence during his career. IAF officials said, soon after the names of the astronauts were revealed. He is the senior-most astronaut for the mission.

Born at Thiruvazhiyad in Kerala on August 26, 1976, Nair was commissioned in the fighter stream of IAF on December 19, 1998. He is a 'Category A' flying instructor and a test pilot with around 3,000 hours of flying experience.

Krishnan, also an alumnus of NDA, was a recipient of the President's Gold Medal and Sword of Honour at the Air Force Academy, the officials said. He was born in Chennai on April 19, 1982. He was commissioned in the fighter stream of IAF on June 21, 2003.

Prayagraj-born Pratap, meanwhile, was commissioned in the fighter stream of IAF on December 18, 2004. He is a flying instructor and a test pilot with around 2,000 hours of flying experience. He has flown several aircraft including Su-30 MKI, MiG-21, MiG-29, Jaguar and Hawk.

Shukla is the youngest of the four. Also alumnus of NDA, he was commissioned in the fighter stream of IAF on June 17, 2006. He is a fighter combat leader and a test pilot with around 2,000 hours of flying experience.

Nair, Krishnan, Pratap and Shukla have flown a variety of fighter planes and have excelled in their careers. Nair, former Champion Solo Commander Abhilash Tomy (ret), who met the astronauts last year, said, "My first impression was that they were extremely motivated and looking forward to the new experience of travelling to space. They had been in training for many years, and that showed when I interacted with them. They were raring to go."

Tomy, a former navy officer, held several meetings with ISRO officials last year for the safe recovery of astronauts from sea after their return from space.



Astronauts-designate Shubhanshu Shukla, Prasanth Balakrishnan Nair, Ajit Krishnan and Angad Pratap for the Gaganyaan Mission. (ISRO/NOISGFT-X)

## ISRO finalises Russian spacesuits for Gaganyaan's astronaut designates

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**NEW DELHI:** The astronaut designates for India's first human spaceflight, Gaganyaan, will be wearing Russian-made spacesuits for the mission, people familiar with the matter said on Tuesday hours after Prime Minister Narendra Modi revealed names of the four Indian Air Force fighter pilots picked for ISRO's mission.

The Indian Space Research Organisation is sticking to its initial plan of suitting up the astronauts in Russian space suits keeping in mind the safety of the crew, the people cited above said, even though the agency had worked on indigenous Intra Vehicular Activity (IVA) suits, which were developed by the Vikram Sarabhai Space

Centre. "Considering the program-

matic requirements and to doubly ensure the crew safety, it is planned to induct Russian space suits for the (Gaganyaan) mission," an ISRO document accessed by HT said.

Indian Air Force group captain Prasanth Balakrishnan Nair, group captain Ajit Krishnan, group captain Angad Pratap and wing commander Shubhanshu Shukla, who have been training for the Gaganyaan mission for the last five years in Russian and Indian facilities, received "astronaut wings" from PM Modi on Tuesday.

The four astronaut-designates have already been to Russia for suit trials, officials said.

"On September 3, 2023, Indian cosmonauts, who have been training for a spaceflight in Russia under the contract of Glavkosmos, visited Zvezda, where their anthropometric param-

### GAGANYAAN MISSION

"The four astronaut-designates are not just four names or individuals, they are the four forces that are carrying the aspirations of 140 crore Indians into space... They symbolise the trust, courage, valour and discipline of today's India," Modi said.

He emphasised the four-decade gap after which an Indian will be venturing into space. But this time, there will be a marked difference; the effort will be "Made In India", he said.

"After over 40 years, Indians will be travelling to space again. But this time, the countdown and the rocket will all be ours," the Prime Minister said.

Cosmonaut Rakesh Sharma remains the only Indian to ever travel to space. He flew on-board the Russian-made Soyuz spacecraft in 1994.

The Gaganyaan mission, which is expected to take flight in 2025, will be India's first human spaceflight project and it aims to demonstrate ISRO's human spaceflight capability by launching a crew of three members on a low-Earth orbit for 400km for a three-day mission and bringing them back safely.

ISRO chairman S Somanath said that work for Gaganyaan is progressing at "lightning speed", and the mission is expected to take flight by 2025. "We will have at least one uncrewed flight for Gaganyaan this year," he said.

Out of the four astronaut designates, or "vyomanas", being trained, three will be selected for the final mission. Group captain Nair, 47, from Kerala, is the recipient of the Sword of Honour at the Air Force Academy. He was commissioned in 1998 in IAF's fighter stream. Group captain Krishnan, 41, from Chennai, is the recipient of the President's Gold Medal and the Sword of Honour at the Air Force Academy. He was commissioned in 2003 and is a flying instructor and test pilot with IAF.

Group captain Pratap, 41, from Prayagraj, was commissioned in 2004 and is a flying instructor and test pilot. Wing commander Shukla, 38, from Lucknow, was commissioned in 2006 and is a fighter combat leader and a test pilot with IAF.

Leading up to the mission, ISRO scientists have been conducting dozens of rounds of tests to ensure all systems are safe to carry and bring astronauts back

safely to Earth. ISRO has also undertaken modification of its rocket and propulsion systems ensuring that they are safe for human flights—a feat that the Indian space agency has not yet attempted in its 55-year history.

Only three countries—the erstwhile Soviet Union, US and China—have so far achieved the feat of sending manned missions into space on their own spacecraft.

For the mission, ISRO has reconfigured its three-stage medium-lift rocket—Launch Vehicle Mark-3 or LVM3 (known formerly as GSLV Mark-3)—to meet human rating requirements and christened it "Human Rated LVM3" or HLVM3. This is the rocket that was used for ISRO's high-profile launches such as lunar missions Chandrayaan-2 and Chandrayaan-3, among others.

On top of this reconfigured rocket will sit a newly developed orbital module, which will carry crew module (inside which the crew will be housed) and a service module.

The extensive tests for the mission have been running from as early as 2017 and are set to continue for several months, building on the decades of experience that the space agency has garnered to international acclaim.

Three sets of engine on the rockets have been successfully tested by ISRO several times over the past six years, improving on the already well-proven propulsion system of LVM3. Similarly, extensive tests have been carried out, and will continue, on the crew modules which includes emergency escape systems, parachutes for the splash landing in the Indian Ocean, and propulsion and navigation systems.

During his visit to the Vikram Sarabhai Space Centre, Modi also inaugurated three important space infrastructure projects worth about ₹1,800 crore. These include "PSLV Integration Facility" at Satish Dhawan Space Centre, Sriharikota; "Semi-cryogenics Integrated Engine and stage Test facility" at ISRO Propulsion Complex at Mahendragiri; and "Tritonic Wind Tunnel" at VSSC.