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Tiangong space station to welcome new inhabitants

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China's Shenzhou XIX crew members are set to begin half a year of living aboard the Tiangong space station, as the country's 14th manned spaceflight was scheduled to launch early Wednesday morning.

Lin Xiqiang, deputy director of the China Manned Space Agency, said at a news conference on Tuesday morning at the Jiuquan Satellite Launch Center in northwestern China that the three crew members — mission commander Senior Colonel Cai Xuzhe, Lieutenant Colonel Song Lingdong and Lieutenant Colonel Wang Haoze — will be onboard the Shenzhou XIX spaceship.

A Long March 2F carrier rocket was scheduled to take off with the spaceship at 4:27 am on Wednesday from the Jiuquan spaceport in the Gobi Desert. The three astronauts will later replace the Shenzhou XVIII crew aboard Tiangong.

Cai was part of the six-month Shenzhou XIV mission, which last-

ed from June 2022 to December that year. The flight will be the first journey in space for Song and Wang.

Notably, Wang will be the third Chinese woman to fly into space, after Liu Yang and Wang Yaping, and the first female spaceflight engineer. Zhu Yangzhu, a male astronaut who took part in the Shenzhou XVI mission, was China's first spaceflight engineer.

Wang Haoze is also the only woman in the country's third generation of astronauts. The 18 third-generation astronauts were selected in September 2020 from about 2,500 applicants and announced in October 2020.

Before joining the astronaut team, Wang was a senior researcher at the Academy of Aerospace Propulsion Technology, a subsidiary of the State-owned conglomerate China Aerospace Science and Technology Corp.

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Senior Colonel Cai Xuzhe (center), Lieutenant Colonel Song Lingdong (right) and Lieutenant Colonel Wang Haoze, who will carry out the Shenzhou XIX spaceflight mission, meet the media on Tuesday at the Jiuquan Satellite Launch Center in northwestern China. WANG JIANGBO / FOR CHINA DAILY

Space: New tasks include experiments, spacewalks, lectures

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Lin said that "after the Shenzhou XIX spacecraft enters its preset orbital position, it will activate the rapid rendezvous-docking mode and use about six-and-a-half hours to approach and connect with the front part of the Tianhe core module".

Orbiting about 400 kilometers above Earth, the Tiangong has three permanent components — the Tianhe core module and Wentian and Mengtian science lab modules — and is currently connected with two visiting craft, the Shenzhou XVIII crew ship and the Tianzhou 7 cargo ship. It is one of the largest and most complex structures ever established in space.

The Shenzhou XIX team will take over the massive orbital outpost from their peers in the Shenzhou XVIII — mission commander Senior Colonel Ye Guangfu and crew members Lieutenant Colonel Li Cong and Lieutenant Colonel Li Guangsu — who arrived on April 26 and have been in orbit for six months.

The two groups will work together for about four days for the hand-over process, and then the Shenzhou XVIII astronauts will depart and fly back to Earth on Monday, according to Lin.

The Shenzhou XIX team will be the eighth group of astronauts to inhabit Tiangong, which was completed in late 2022.

Lin said the Shenzhou XIX crew will perform a host of tasks, including carrying out scientific experiments and technological demonstrations, conducting spacewalks to install space debris shield equipment and other external devices, retrieving

instruments from outside the space station, and giving science lectures.

Their work will be related to multiple research disciplines such as microgravity physics, material science, space medicine, spacecraft technology and life sciences, he said, adding that the team is scheduled to return to Earth in late April or early May.

Lunar exploration

Responding to questions on China's crewed lunar exploration plan, Lin said that Chinese scientists and engineers have been conducting comprehensive research and development of the Long March 10 heavy-lift carrier rocket, the Mengzhou crew spaceship and the Langye lunar lander, as well as other hardware necessary for a manned mission to the moon.

He noted that his agency has given contracts for two design concepts for the crewed lunar rover, developed separately by the Shanghai Academy of Spaceflight Technology and the China Academy of Space Technology, and will conduct evaluations and tests of the prototypes to make the final choice.

Cargo mission

In another development, Lin said at the news conference that the launch of Tianzhou 8, China's next cargo mission to the Tiangong space station, has been rescheduled to mid-November.

The official said the rearrangement was made by mission headquarters after considering the impact of Super Typhoon Yagi. The storm wreaked havoc in September in Hainan province, which is home to

Biographies of Shenzhou XIX crew

Cai Xuzhe, 48, a native of Hebei province, is a senior colonel and the mission commander of the Shenzhou XIX spaceflight.

He became a member of the People's Liberation Army Air Force in September 1995 and was a commander of a fighter jet unit and a first-grade aviator.

Cai was selected as one of the PLA Astronaut Division's second-generation astronauts in May 2010. He was a member of the backup crew for the Shenzhou XIII mission.

In June 2022, Cai started his first space expedition — the six-month Shenzhou XIV mission, becoming one of the third group of astronauts to inhabit the Tiangong space station.

In March 2023, he was given the honorary title Heroic Astronaut and was conferred with a Third-Grade Space Service Medal.

Cai is now a first-grade astronaut of the PLA Astronaut Division.

Song Lingdong, 34, a native of Shandong province, is a lieutenant colonel. He was recruited by the PLA Air Force in September 2008, and was a first-grade pilot and squadron commander at an Air Force fighter jet brigade, before being selected as one of the third generation of astronauts in the PLA Astronaut Division in September 2020.

He is now a fourth-grade astronaut in the division.

Wang Haoze, 34, a native of Hebei province, is a lieutenant colonel and the third Chinese woman to take part in a spaceflight.

She was a senior rocket engine researcher at China Aerospace Science and Technology Corp, the nation's leading space contractor, before being recruited by the PLA Astronaut Division in September 2020 to join the third generation of astronauts.

Wang is now a fourth-grade astronaut in the division.

the Wenchang Space Launch Center. The original launch was scheduled to take place before the Shenzhou XIX mission, Lin's office previously said.

The pre-launch preparations for Tianzhou 8 have been proceeding according to the new plan, the official said, noting that there currently are sufficient daily living and work supplies onboard the space station, because a scenario such as

the postponement had been considered when making plans.

According to Lin, although workers at the Wenchang spaceport had tried their best to prepare for the typhoon, the storm had caused some damage to the center's launch and living facilities.

After the typhoon, they immediately began to restore damaged equipment and made all-out recovery efforts, he said.



Shenzhou XIX astronauts Song Lingdong (from left), Cai Xuzhe and Wang Haoze undergo training on May 23. KONG FANGZHOU / FOR CHINA DAILY

Commander Cai gears up for his record-breaking mission

Senior colonel to return to Tiangong space station after only 22 months

By ZHAO LEI
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Senior Colonel Cai Xuzhe, commander of the Shenzhou XIX mission, said he has been looking forward to returning to the Tiangong space station since his last orbital journey, during which he helped complete the massive outpost.

"I clearly remember that right before we left Tiangong with our Shenzhou XIV spaceship, I lingered a while to visit every corner of the space station. I am very familiar with them," the astronaut said. "When we arrived at Tiangong, it only had the Tianhe core module, and by the time we finished our mission, it consisted of three permanent components that established its current T-shaped configuration. It is fair to say we witnessed the completion of the space station."

Cai said that in the days after he came back to Earth, he often thought about flying to orbit again, which motivated him to train hard and make all-out efforts to prepare for his next spaceflight.

When he takes off with Shenzhou XIX mission, he will have participated in two spaceflights in a span of only 22 months, a new record among Chinese astronauts.

Senior Colonel Tang Hongbo is the current record holder, with two spaceflights in a 25-month interval between the Shenzhou XII and Shenzhou XVII missions.

Long-held aspiration

Born in May 1976 to a farmer's family in Caizhang village in Shenzhou, Hebei province, Cai started hearing stories about communist revolutionaries when he was just 3 years old by his grandfather, a devoted communist who joined the Party during wartime.

Cai said that he admired one of his uncles, who was a People's Liberation Army soldier, and told the uncle that he wished to join the military as well.

There was an Air Force base nearby, and many combat aircraft often flew over Cai's family home. Each time he heard the thundering sounds of the planes roaring by, he would run outside and gaze up at them until they were out of sight.

The aircraft instilled in him a desire to fly, an aspiration he clung to as he grew older. He was a diligent student and strived to do well in school in order to achieve his dream.



Top: Workers and Shenzhou XIX crew members take part in an underwater training exercise on August 26. Above: Astronauts Cai (top left), Song, and Wang participate in an extravehicular activity training for the Shenzhou XIX mission on May 29. PHOTOS BY KONG FANGZHOU / FOR CHINA DAILY

When he was in high school, Cai managed to come up with enough money to subscribe to a monthly magazine called China Air Force and read each issue painstakingly. He made up his mind to try his best to join the military and become a combat aviator.

During his senior year, he heard that the Air Force was recruiting students to learn how to fly. He immediately applied for selection.

Following rounds of strict tests and selection procedures, the young man was admitted to the Aviation University of Air Force at age 19 and began to learn to fly at the university's branch in Baoding, Hebei.

At the flight school, Cai trained hard and was honored upon graduation for his outstanding performance.

After receiving his diploma, the aviator was assigned to a flight training base, where he gradually became a veteran pilot and decorated flight trainer.

During his years at the base, he accumulated a total of 1,523 hours of flight time in fighter jets and was promoted to first-grade pilot.

In the spring of 2009, Cai heard about the selection of the country's

second generation of astronauts and decided to take part in the initial recruitment that began in May that year.

Due to his good scores in the physical, knowledge and skills examinations, he was one of seven people selected to join that crop of astronauts in May 2010.

Shenzhou selection

When they arrived at the PLA Astronaut Division in northwestern Beijing, Cai and his peers were exposed to nearly 100 subjects they needed to be well-versed in as part of their training, including physics, astronomy, astronautics, space medicine and spacecraft operations.

He spared no efforts to acquire new knowledge and skills to prepare himself for a chance to join a spaceflight.

After waiting nine years, Cai was picked in December 2019 for the Shenzhou XIV mission and started undergoing training specially designed for the flight.

In June 2022, together with mission commander Chen Dong and Liu Yang, Cai embarked on his first space expedition and entered the Tiangong space station. They spent

six months working inside the colossal base.

During their orbital stay, the Shenzhou XIV crew, dubbed "the busiest team" by many Chinese fans at the time, oversaw the arrival and docking of two large science lab modules — Wentian and Mengtian — and assembled experimental apparatuses inside them.

The astronauts conducted three spacewalks to install and fine-tune equipment and perform extravehicular rescue drills.

At the end of their mission, Cai and his teammates were joined by the three astronauts in the Shenzhou XV flight, who arrived in late November 2022. Their meeting was the first time that as many as six Chinese people were traveling in orbit at the same time, and was also the first in-orbit gathering between two Chinese crews.

After handing over the Tiangong's control to the newcomers, the Shenzhou XIV crew flew back to Earth in early December 2022.

Memorable experience

Recalling his experience in space, Cai said that during his downtime, he was able to enjoy his personal hobbies, including gardening and reading.

"I brought seeds of lettuce, wheat and tomato and planted them inside the space station. That is why people saw many video clips of me taking care of those plants," the astronaut said. "I also brought some books. I thought about bringing an e-book, but I dropped that idea because I prefer printed copies. Moreover, I brought some movies and TV series to Tiangong, and I watched them while doing exercise."

He also enjoyed peering down at Earth, which gave him a sense of home and belonging.

"Whenever we had spare time, we liked to take some time to look at our mother planet and other beautiful scenes in the universe. Watching through the windows always made me feel comfortable," he recalled.

Back on the ground, Cai spent half a year in quarantine and participating in recuperation programs, which are standard procedures for Chinese astronauts returning from space, and restarted regular training.

Speaking about the Shenzhou XIX mission, the commander said his team has worked very hard to prepare for the challenges awaiting them in orbit.

"We are scheduled to carry out several spacewalks to mount shield devices that will protect the space station from the impact of space debris," Cai said. "We are fully ready with our minds, bodies and skills for this coming mission, and we have the confidence, determination and ability to make it a success."

Sole female member prepares for 1st flight

By ZHAO LEI
at Jiuquan Satellite Launch Center

Lieutenant Colonel Wang Haoze, a crew member of the Shenzhou XIX mission and China's first female spaceflight engineer, thanked her postgraduate mentor as she prepares for her maiden spaceflight.

"I think I'm lucky to be part of the country's space program because I didn't major in any field pertaining to spacecraft or space sciences in my undergraduate and postgraduate programs," the 34-year-old astronaut said.

Wang said that she studied energy and power engineering at Southeast University's School of Energy and Environment before receiving a bachelor's degree in 2012 and then continued to take part in a three-year postgraduate program in thermal engineering at the same school.

"It was my postgraduate mentor who led me to a career in the space industry. Professor Gu Fan is very interested in spaceflight and often discussed relevant topics with us. He also encouraged his postgraduate students to apply for jobs in the space industry," Wang recalled, explaining that she was influenced by the professor and decided to join the spacecraft research community.

As her graduation approached, Wang submitted her resume to the Beijing Aerospace Propulsion Institute, China's major research body of liquid-propellant rocket engines and a subsidiary of the Academy of Aerospace Propulsion Technology.

After tests and selection procedures, she received an offer and started her job at the institute in the summer of 2015 as an engine designer.

Wang added that another reason she is grateful to Gu is because he taught her to treat every piece of work with attention and earnestness.

At the institute, Wang was part of the research and development of new models of rocket engines, a new field that she had never been involved in. Faced with new challenges and knowledge, she enjoyed learning and overcoming difficulties, which appeared as an intriguing game to her.

Hard work and perseverance always pay off. The first product designed by Wang was praised by a renowned expert. She gradually became the backbone of her team.

Three years after working on rocket engines, the designer was told by human resources colleagues that the country would recruit the third generation of astronauts.

"They convened a meeting of all institute employees who they believed were qualified, telling us

“My mom used to tell me since I was a little girl that there is nothing in the so-called belief that only boys can do certain things and girls can't.”

Wang Haoze, crew member of the Shenzhou XIX mission

about the recruitment and encouraging us to have a try. I was thinking, 'well, it's cool,' but I had never imagined I would have an opportunity to become an astronaut," Wang said, adding she felt very lucky to be there at a time of rapid advances in China's space industry.

The selection of the third generation of astronauts began in May 2018 and involved three rounds of tests. About 2,500 applicants participated in the process that concluded in September 2020.

Finally, Wang and 17 male candidates were selected and divided into three groups: seven spacecraft pilots, another seven spaceflight engineers and four mission payload specialists.

At the Astronaut Center of China, Wang has faced grueling challenges. She has spent tough times with teammates in survival drills in deserts and at sea, and has endured a 72-hour sleep deprivation test.

Despite the difficulties, she said she has never considered quitting.

"My mom used to tell me since I was a little girl that there is nothing in the so-called belief that only boys can do certain things and girls can't. Though I am the only female in the group of third-generation astronauts and everyone here is very kind to me, I have never thought about getting privileges just because of my gender," she said.

The two female astronauts who have already made spaceflights, Liu Yang and Wang Yaping, often share their experiences in space missions with her, especially their knowledge about spacewalks, Wang added.

Looking into her first orbital journey, the astronaut said: "We have practiced our maneuvers so many times on the ground. I wish to fly to the space station as soon as possible to see what it looks like. I want to float inside Tiangong to experience the excitement of weightlessness. I also hope that I can complete each and every task successfully and make our 'space home' better."

For Gen Y astronaut, space dream comes true

By ZHAO LEI
at Jiuquan Satellite Launch Center

Lieutenant Colonel Song Lingdong will soon become one of the first astronauts from the post-1990s generation in China to embark on a space journey.

Born in August 1990 to a farmer's family in Caoxian county, Shaanxi province, Song was recruited by the People's Liberation Army Air Force in September 2008 and was sent to learn flying.

In the first months at the Air Force's flight school, the young man had bad scores in his physical tests because of long-time malnutrition. He also had a tough time while sitting in his first flights inside basic trainer aircraft due to airsickness.

Knowing clearly about his weaknesses, Song decided to rely on perseverance and rigorous training to offset them. He soon became the one student in his class who always appeared on the exercise field and often asked the trainers to double the amount of his training.

Thanks to his hard work, he received the top score in his solo flight examination and was commended for his excellent performance.

After graduation, Song was sent to a fighter jet brigade and moved up through the ranks.

At a comparatively young age, he was promoted to a first-grade pilot.

In the spring of 2018, Song was told about the PLA Astronaut Division beginning to pick new members and soon applied.

He said the desire to fly above the atmosphere was inspired by a TV news report he saw with his classmates about China's first spaceflight in October 2003, when he was just 13 years old.

In September 2020, the elite aviator was selected as one of the third group of astronauts and started undergoing intensive training in Beijing.

Not long after assuming the new post, Song found he was trapped by one of his own character traits: his impatient disposition. He soon realized that what a successful astronaut really needs is calmness and team spirit.

He learned to slow down and even started going fishing to improve his patience.

In the eyes of mission commander Cai Xuzhe and teammate Wang Haoze, Song is now fully capable of fulfilling a spaceflight and can be relied upon.