CHINA'S 'HEAVENLY PALACE': GREAT STRIDES IN MANNED SPACE MISSION

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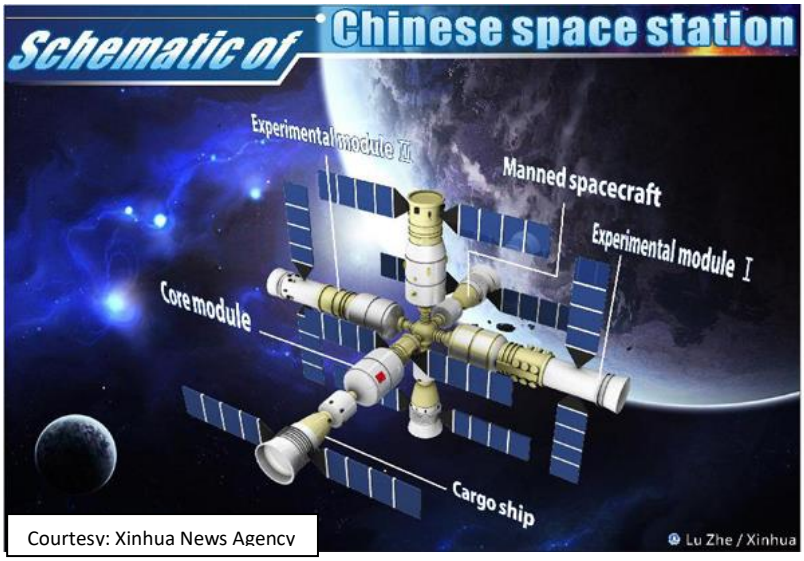
China's unmanned spacecraft Shenzhou-8 was successfully sent into space from the Jiuquan Satellite Launch Centre on board a Long March-2F rocket on November 1, 2011. Shenzhou, which means 'magic vessel,' finally achieved a historic first by carrying out a rendezvous and docking maneuver with the Chinese orbiting space lab module Tiangong-1 at 1:35 AM (Chinese local time) on November 3, 2011, about 343 km above the Earth.

Tiangong-1 or 'Heavenly Palace-1' was put into space on September 29, 2011 in preparation for the country's first space docking endeavours. The docking took place two days after the launch of the Shenzhou-8. The spacecraft is scheduled to return to Earth after conducting two docking operations.

But the Tiangong-1, China's first space module, can hardly be compared to a palace. In its present form, it is the most basic first block around which a full-fledged and self-sustaining Space Station will be built. It has a length of 10.4 meters, maximum diameter of 3.35 meters and weighs about 8.5 Tonnes. However, the future space station would weigh about 60 Tonnes and be able to accommodate up to six astronauts. It would also be more spacious and will provide better working environment and habitability. The accompanying schematic diagram put out by Xinhua depicts the future space station in full glory, with up to four docking ports and two spacecraft docked therein.



Courtesy: Xinhua News Agency

China's Manned Space Program

China launched its first unmanned Shenzhou experimental spacecraft in 1999, followed by three other launches between 2000 and 2002. Yang Lewei became the first Chinese person to be launched into space onboard Shenzhou-5 in October 2003, remaining in space for 21½ hours and going around the earth 14 times. The mission was a qualified success and some Chinese media dubbed it as the "Great Leap Skyward." The second manned space mission was undertaken in October 2005 when Nie Haisheng and Fei Junlong—both colonels in the PLA—circled the globe five times onboard the Shenzhou-6, before landing back.

Chinese Space Launch Centres

The Jiuquan Satellite Launch Center has been at the forefront in the furtherance of the Chinese manned space mission all along. It is located in the Gobi desert area of Inner Mongolia Autonomous Region and is China's oldest launch site. This facility is mainly used to send experimental satellites into low and medium orbits. The Launch Centre has been associated with 10 pioneering space activities which include the launch of China's first satellite in 1970, first recoverable satellite in 1975, the first unmanned spacecraft in 1999 and the first manned spacecraft in 2003. The showpiece launches of Tiangong-1 and its docking partner, the Shenzhou-8 are the current accomplishments of the centre.

The Other three Space launch centers are the Taiyuan, the Xichang and the Wenchang Centre. The Taiyuan Center situated in north China's Shanxi province, is used for launching solar-synchronous and meteorological satellites. The Xichang Launch Center is located in southwest China's Sichuan Province and is mainly designed to launch powerful-thrust rockets and geostationary communication satellites from its two launch pads. China's fourth under construction, Wenchang launch centre is situated on the Hainan Island. It is scheduled to be completed by 2013 upon which, it will be used mainly for launching synchronous satellites, heavy satellites, space stations and deep space probe satellites.

Future of Manned Space Program

China has great ambitions in space as it sees the space as a medium which can be increasingly used for deploying asymmetric capabilities against the conventionally stronger adversary. China has a wide array of satellites programs underway which include the navigation, meteorological, earth observation, remote sensing, communication and specialised duty ones. It has a thriving moon mission as also the Mars mission in progress. The intensity of the Chinese space exploration effort is indicated from the very fact that in 2010, it launched 15 rockets to send 20 satellites in space and plans to surpass that figure by launching 20 rockets and 25 satellites into space by the end of 2011.

China is presently developing new generation of CZ-5 and CZ-7 carrier rockets which would be capable of generating larger thrust to so as to carry heavier payloads required for building a space station. This is the most compelling requirement, since each future capsule of the station is expected to weigh about 20 tonnes. The rocket building facility at Tianjin, near Beijing is already in the advanced stage of heavy duty rocket construction. The Tiangong-1 design will also be used to develop a cargo spacecraft with compatible docking port, which will be used for resupplying and refuelling the future space station. Such heavy duty spacecraft will be launched from the newly-built Wenchang Launch Centre in future.

The successful docking of Shenzhou-8 spacecraft with the Tiangong-1 has thus validated the first crucial step of providing access to the space module as its ability to operate for long duration will be essential toward building a fully functional space station. The next series of Shenzhou-9 and 10 will dock with Tiangong-1 next year. The Shenzhou-9 will carry two or three astronauts aboard and will possibly include a female crew too.

The eventual completion of the manned mission by 2020 will enable Beijing to station men permanently in space and will have tremendous multiplier effect on the entire space program of the country.

About the Author:

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