China Manned Space Programme

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Content

- Introduction to development strategy
- Achievements up to date
- China’s space station and its latest development
- International cooperation
- Conclusion
Part I: Development strategy

- In 1992, the Chinese government approved the launch of China’s manned space programme
- Formulated the “three-step strategy” to implement the Programme
Three-step strategy

**The 1st step:** To launch manned spaceships to master the basic human space technology

**The 2nd step:** To launch space labs to make technological breakthrough in EVA, R&D, and accommodation of long-term man-tended utilization on a modest scale

**3rd step:** To construct China’s space station to accommodate long-term man-tended utilization on a large scale
Part II: Achievements up to date

- Unmanned spaceflight missions
  - SZ-1, 20 Nov 1999, 1\textsuperscript{st} unmanned spaceflight
  - SZ-2, 10 Jan 2001, 2\textsuperscript{nd} unmanned spaceflight
  - SZ-3, 25 Mar 2002, 3\textsuperscript{rd} unmanned spaceflight
  - SZ-4, 30 Dec 2002, 4\textsuperscript{th} unmanned spaceflight

- Achieved goals:
  - Laying a solid foundation for manned missions
Manned spaceflight missions – **Basic Human Spaceflights**

- Shenzhou-5, 2003, 1\textsuperscript{st} manned spaceflight mission
- Shenzhou-6, 2005, 1\textsuperscript{st} multiple-crew and multiple-day spaceflight mission

**Achieved goals:**
- Fulfilled the task of the 1\textsuperscript{st} step of the three-step strategy
- Manned spaceflight missions – **Space Walk**

**Shenzhou-7, 2008, 1st Extravehicular Activity (EVA)**
Manned spaceflight missions – **Rendezvous & Docking**

- 2011, **TG-1 Space Lab**
- 2011, **SZ-8 docking with TG-1**
- 2012, **SZ-9 docking with TG-1**, 1st Chinese Female Astronaut, LIU Yang
- 2013, **SZ-10 docking with TG-1**, 2nd Chinese Female Astronaut, WANG Yaping, Space class

**6 Rendezvous and Docking Missions in total**

China Manned Space Agency (CMSA)
So far, China has carried out 11 spaceflight missions in total, 5 of which were manned missions, sending 10 Chinese astronauts into space and returning them safely.
Part III: China’s Space Station Project and its Progress

- China’s manned space programme has comprehensively entered into the stage of Space Station construction.

- The construction is well under way following the two-phase plan:
  - Phase 1: Space lab
  - Phase 2: Space station
Phase 1: Space Lab

- Missions:
  - To launch Tiangong-2 space lab, a manned spaceship, a cargo spaceship
  - To conduct rendezvous and docking missions
  - To master key technologies including on-orbit propellant re-entry
  - To prepare for the construction of the Space Station

- Progress/plan:
  - In 2014, the newly built Hainan Launch Site witnessed a successful ground drill for CZ-7 carrier rocket to launch the cargo spaceship.
  - In 2016, the first space flight experiment of CZ-7 carrier rocket will be performed.
  - Afterwards, subsequent planned flight missions will follow.
### Phase 2: Space Station

#### Design specification
- Three modules, symmetrically T-shaped
- Inclination: 42° ~ 43°
- Altitude: 340~450 km
- Lifetime: 10 years
- Crew members: 3, a maximum of 6 for rotation

#### Core module
- Control and manage the complex
- Provide accommodation and working place for astronauts

#### Experiment module I and II
- Space science experiments
- Space applications
- Space technology demonstration

### Station Expansion Capability
- According to future requirements for utilization and international cooperation, newly built modules can be added, and aboard payloads can be exchanged.
- Lifetime of the Station can be extended through proper maintenance and repair.
The three modules of China’s Space Station are all designed to feature advanced technology and multi-purpose facilities:

- Space medicine
- Space life science and biology
- Microgravity fluid physics
- Combustion science
- Fundamental physics
- Space astronomy and astrophysics
- Space earth science and technology
- Space new technology
- Space based information technology
- Space applications new technology
- Space environment and physics
- Space component and parts
- **Station modules**
  - To be launched by the CZ-5B
  - At Hainan Space Launch Site.

- **Cargo spaceships**
  - Pressurized, semi-pressurized, unpressurized
  - To transport airtight cargo, large extravehicular payloads, experiment platform
  - To be launched by CZ-7
  - At Hainan Space Launch Site

- **Crew transportation**
  - Shenzhou(SZ) Spaceship
  - CZ-2F launch vehicle
  - Crew members: 3
  - Crew rotation: up to 6 months
  - Launch site: Jiuquan
Space Station construction plan

- Currently, China’s Space Station project is well under way
- The modules of the Station and new types of launch vehicles as well as other related facilitates are under development
- The Core Module is scheduled to be launched in 2018
- The Experiment Module I and II will follow afterwards
- The Station will be put into operation around 2022
Part IV: International cooperation

Bring benefits of China’s Space Station to humanity

Principles:
• Peaceful use of outer space
• Equality and mutual benefit
• Joint development

Cooperation areas

- Collaborative development of single devices, components, subsystems, modules
- Space science experiments and application onboard Station
- Astronaut selection / training / flight
- Application of human space technology

Agreements

UN Member States

In particular developing countries

UN-HSTI

Chinese government/CMSA

Agreements

Others
Conclusion

- China’s Space Station will provide a reliable and expandable microgravity platform for space science and technology research and applications.

- CMSA is considering further and long-term development in human space exploration after the forthcoming accomplishment of the present three-step strategy,

- It is certain that China will never halt its footsteps in human space exploration and will continue to explore the vast space, deeper and further!
Thank you for your kind attention!

Website: en.cmse.gov.cn