

HUMAN SPACE ENDEAVOURS SYMPOSIUM (B3)  
How Can We Best Apply Our Experience to Future Human Missions? (2)

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ACHIEVEMENTS AND EXPECTATION OF CHINA'S RENDEZVOUS AND DOCKING TASK

**Abstract**

In recent years, China has made rapid progress in its space industry. Breakthroughs have been made in major space projects, such as manned spaceflight; space technology has been generally upgraded remarkably; the economic and social benefits of space applications have been noticeably enhanced; and innovative achievements have been made in space science. Especially in September 2011 November 2011 and June 2012, China successively launched the "Tiangong-1" (Space Palace-1) "Shenzhou-8" spaceship and "Shenzhou-9" spaceship, and successfully accomplished automated and manual space rendezvous and docking test. It indicates that China has mastered space rendezvous and docking technique (RVD), with the ability to build a space laboratory, namely, short-term man-attended space station, laying the foundation for the construction of future space laboratories and space stations. This paper presents the technical characteristics, achievements and expectations of China's rendezvous and docking task. Firstly, three-steps development strategy for China's manned spaceflight is discussed. Secondly, technical characteristics and difficulties of rendezvous and docking task in China is presented. The situation of rendezvous and docking task in-orbit of "Shenzhou-8", "Shenzhou-9" and "Tiangong-1" is described in detail. The process of "Shenzhou-10 mission" is mentioned, too. Thirdly, the major achievements of this task are analyzed. The key techniques, which are mastered by the rendezvous and docking task, are provided, such as long-distance rendezvous technique, autonomous control technique, manual operation technique, docking and separation technique. Finally, expectations of subsequent China's rendezvous and docking tasks are shown as space laboratories, manned spaceship, space freighters and space station.