Research and Design of China Aerospace TT&C System Operation and Management Model

Fei Fan[(1)], Hui Zhao[(1)], Naiwei Wang[(1)] , Zhonggui Bao[(1)]

(1) Beijing Institute of Tracking and Telecommunications Technology, Beijing 100094, China,+8601066361207,feifan1116@163.com

Abstract: *Recently, China's aerospace missions are being more diverse and complicated, especially for manned space mission and deep space mission. In order to meet the new requirement of TT&C system, the traditional TT&C system in China is facing the new challenge in adaptability, reliability and safety. As we known, aerospace TT&C system is an extremely complicated and large running system, supporting to high precision orbit measurement, determination, control for lots of probes. Moreover, operation and management has a very important role in aerospace TT&C system. With the developing of China's aerospace TT&C system, Researching the operation and management model and method is essential for building China' s self-control aerospace TT&C operation and management system.*

Based on a comprehensive analysis of international aerospace TT&C system operation and management situation, this paper proposes a new self-control aerospace TT&C system operation and management model, according to China's aerospace TT&C system characteristics and development trend. The design principle adopting flat network topology, and this paper focuses on the design of this system in detail from the aspects of system component, architecture, function component and circulate mode.

At the same time, a laboratory simulation environment is constructed in a laboratory environment for building the aerospace TT&C system operation and management prototype system, to verify correlating design and method. Then, the experimental contents and experimental environment are designed in detail. Finally, the system performance is analyzed from the aspects of real-time, adaptability, usability and etc, providing a new method for China's aerospace TT&C operation and management system building. In short, the new operation and management model could meet the new developing requirement of China's TT&C system.

Keywords: *TT&C system, Operation and Management Model, prototype system, Experimental verification*