IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Services, Missions, Operations, and Facilities (2)

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RESEARCH ON DEVELOPMENT STRATEGY OF CHINA SPACE LAUNCH SERVICE AND SUPPORT TECHNOLOGY

Abstract

According to incomplete statistics, the number of China's space launch missions in the next five years will increase by more than 50Based on deeply analyzing the restrictive factors of China's space launch service and support, we propose a three-stage strategy on launch service and support technology for implementing the overall plan of China's space industry in the future 5 years. In the first stage, the capacity of existing launch service support facilities shall be enhanced. China's existing launch service and support facilities are operating at full capacity in launch sites. The facilities need to be improved on intelligence, automation, and high universality. The facilities will be upgraded to the launch support technologies such as unattended, automatic refueling docking, and zero-second shedding the connectors between the launch vehicle and ground equipment for the reliability of the launch service. By the modular and integrated design, the unified models of test and launch control equipment will be developed for launch vehicles. Then the comprehensive launch service capability is enhanced on existing launch sites. In the second stage, next-generation launch service and support facilities will be constructed. China's four launch sites are nearing their maximum launch service and support capacity. The new launch complex should be reasonably configured and built on the whole. Standards and specifications for space launch sites are formulated to support the construction of a new standardized launch complex. Advanced information technologies such as big data, cloud computing, digital twin, and the Internet of Things are comprehensively utilized to improve the support capability of launch facilities. The unattended, intelligent perception and autonomous decision-making can make launch sites have a robust and agile system of launch support facilities. In the third stage, we shall develop various models of space launch services and supports. China currently has four launch sites, three of which are in inland areas. Due to the rapid development of the economy and society, it is more and more difficult to select the rocket

debris falling area. It has to lose payload capacity to adjust the flight trajectory or launch site for the safety requirements of the debris falling area. Therefore, it is necessary to develop multi-mode launch and build coastal launch sites, sea or air-launch support. Based on the development goal of reusable rockets in a fixed-point soft landing, related recovery service and support facilities in the landing area need to be constructed.