

International Cooperation for Space Exploration (1)
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EXPERIENCE AND RESULTS OF KHRUNICHEV SPACE CENTER INTERNATIONAL
COOPERATION ON THE ISS PROGRAM

Abstract

Khronichev Space Center (KhSC) technical and technological experience in developing, launching and exploitation of heavy transport vehicles and orbital stations are considered. These capabilities became a background of KhSC involving into the ISS Program. KhSC contribution into the ISS configuration development is described as well as assembly technology and important functions support during the ISS exploitation life. ISS joint partnership modernization experience to enlarge station functional capabilities is analyzed as well as possible emergencies parrying which weren't envisioned at development stage and met in the process of Russian and American segments operation complex analysis. ISS Program reliability and stability is estimated taking into account station's first module FGB "Zarya" redundant flight control means provided by international partners. Attention is given to new design solutions and calculation methods realization in accordance with requirements developed together with partners to adapt the FGB module into the ISS Program. This paper also covers non-replaceable hardware life extension strategy development, as well as diagnostics procedures to forecast reliable operation of hardware which is beyond its guarantee lives, confirmation of design solutions, calculations and different verification approaches used by the ISS partners. Recommendations are given on how to use experience gained jointly by KhSC, Roscosmos, NASA and the Boeing Company, involved into the first ISS element creation, for future global international projects