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MAJOR ENGINEERING ACHIEVEMENTS AT EXECUTION OF RUSSIAN RESEARCH PROGRAM ABOARD THE ISS TO SUPPORT FUTURE EXPLORATION MISSIONS

Abstract

Space experiments associated with technology development and demonstrations, including study of the operating procedures, aboard the Russian segment of the International Space Station (ISS RS), in the interests of future space missions, can be considered as one of the most important parts of the ISS RS utilization program. Without results of this kind of study it is impossible to provide for technological advances at development of space transportation systems, habitable modules, and onboard equipment of a new generation of human space complexes, designed for exploration of the Solar System. The experiments' results make valuable contribution to future space exploration, and also serve in many respects for the benefit of humanity. This paper explores the major engineering achievements of Russian research program aboard the ISS RS, studies results of the most important experiments over technology development and demonstrations, as well as analyses future of their application at designing of exploration missions beyond low Earth orbit.