HUMAN SPACE ENDEAVOURS SYMPOSIUM (B3)
ISS Utilisation (3)

Author: Prof. Evgeny Mikrin
S.P. Korolev Rocket and Space Corporation Energia, Russian Federation, eugeny.mikrin@rsce.ru

Mr. Alexander Markov
S.P. Korolev Rocket and Space Corporation Energia, Russian Federation, Alexander.V.Markov@rsce.ru
Dr. Igor V. Sorokin
S.P. Korolev Rocket and Space Corporation Energia, Russian Federation, igor.v.sorokin@gmail.com
Mr. Sergey Gusev
S.P. Korolev Rocket and Space Corporation Energia, Russian Federation, Sergey.Gusev@rsce.ru
Mr. Dmitry Putan
S.P. Korolev Rocket and Space Corporation Energia, Russian Federation, Irina.Dunaeva@rsce.ru

NEW INFORMATION TECHNOLOGIES TO INCREASE THE ISS RUSSIAN SEGMENT UTILIZATION EFFICIENCY

Abstract

Presently we are in the transition period from the assembly to the full-scale utilization of the International Space Station's Russian Segment (ISS RS) integrated research modules. During ten years of the ISS RS operation 5116 units of payloads and expendables have been delivered onboard and operated successfully to support research activities. It allowed us to conduct over 300 space experiments included in national and international research programs. In order to create high-tech onboard environment to conduct research on the ISS RS RSC Energia upgrades its payloads complex accommodating different modules' payload complexes into integrated information environment managed by the Information-Control System (ICS). Combination of ICS and Integrated Payloads Complex (IPC) creates a unified mechanism for the control, acquisition, and storage of scientific information received from all payloads installed in the modules' pressurized compartments, as well as on the external surface of the ISS RS. In this case it is possible to keep a unified level of information support for any space experiments including multidisciplinary investigations involving several types of payloads installed in different modules. The paper systematizes relevant tasks of new information technologies application on the ISS RS with the main purpose to increase the segment's utilization efficiency, analyses functions and methods of the new integrated ICS-IPC system improvement, and also considers prospect for the advanced hardware adaptation and methods of payloads control application on the ISS RS.