

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Astronaut Training, Accommodation, and Operations in Space (5)

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MULTI-SEGMENT COSMONAUT TRAINING TECHNOLOGY

Abstract

The International Space Station (ISS) is the largest scientific and technical project of our time. 14 countries participate in it, each of them makes its own significant contribution to its implementation, and broad cooperation ensures a reduction in terms and costs. The current concept of the ISS flight control assumes that the station is conditionally divided into two segments - Russian (ISS RS) and American (US segment of the ISS) ones. The American segment includes Japanese and European modules. Over the past 20 years, since 2000, 64 crews of the main expeditions and 19 Russian visiting crews have successfully completed work programs aboard the station. To ensure effective training of crews for activities on board transport vehicles and Russian modules of the station, the specialists of Yu.A.Gagarin Cosmonaut Training Center (CTC) have created and put into practice a multi-segment training technology, which is a combination of methods, academic disciplines, and technical means intended for the formation of the knowledge, skills, abilities, and professionally important qualities required to perform space flights. Within the framework of the multi-segment training of the ISS crews, training sessions are held alternately at two main training bases: at Yu.A.Gagarin Cosmonaut Training Center in Russia and at NASA's Johnson Space Center in USA. Some training sessions are held at the training bases of other countries participating in the ISS program (ESA, JAXA and CSA). This technology has been developed for the first time ever. It is built on the long-term experience of training cosmonauts under the flight programs of the Soyuz transport spacecraft and the Mir multi-module orbital station and is being improved as the ISS develops and the range of crew tasks expands. This technology is based on CTC's complex of unique technical

equipment for cosmonaut training, including integrated and dedicated simulators of the Soyuz transport vehicle, existing and prospective ISS RS modules, US segment, the Progress cargo vehicle as well as biomedical instrumentation and various training equipment.