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

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TRENDS OF TECHNOLOGICAL AND METHODOLOGICAL DEVELOPMENT OF COSMONAUTS' TRAINING SYSTEM IN THE LIGHT OF NEW SPACE PROJECTS

Abstract

Experience on cosmonauts' training shows that in order to form a professional of hazardous occupation, who is capable to work with a unique complex of space facilities and to test it under extreme conditions, a long period of professional development is required, which is full of various types of theoretical and practical training, simulations on simulators and mock-ups, and test procedures to evaluate psychophysiological capacities of a human body. For future space programs a training system for researchers and test engineers needs to be upgraded in a way that cosmonauts' time for advanced training would be used with maximum efficiency in order to acquire a wide range of professional skills. Although, the system of cosmonauts' training has repeatedly demonstrated a substantial degree of its flexibility and adaptability to new conditions, in general, the authors believe that currently, it is reasonable to focus on the following areas of its modification: 1) expansion of digital content of knowledge on human spaceflights, update of the requirements to technological standards of knowledge representation in order to provide users with remote access to digital materials; 2) employment of the virtual prototype models of space facilities and the modes of their utilization based on up-to-date approaches to creation of virtual environment in mock-ups and simulators; 3) semi-realistic simulators of flight factors, which act upon a human body, combined with computer models of operator's activity while solving the mission tasks; 4) conditions created for a trainee's high motivation to find their own approach to digest skill and knowledge, including conditions based on user's autonomous access to digital resources; 5) improving procedures for monitoring and consideration of training results, as well as for objectiveness of final grades; enhancement of procedures for extended professional selection of candidates for participation in promising projects. Therefore, the update strategy includes not only previously developed methods and technical training facilities, but innovative approaches of digital era.