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Main Objectives of the ISS-51/52 Crew Training and Activity When Implementing the Space Flight Program. A.A. Kuritsyn, A.I. Kondrat, V.A. Kopnin, D.E. Rybkin, E.I. Korzun, A.A. Medvedev

Abstract. The paper considers results of the ISS-51/52 crew activity aboard the Soyuz-MC-04 spacecraft and the ISS. The implementation of scientific applied research and experiments aboard the station is covered. The tasks solved when performing extravehicular activity are reviewed. Comments and suggestions on improving the ISS Russian Segment are given.

Keywords: tasks of crew training, spaceflight, International Space Station, scientific applied research and experiments.

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Medical Aspects of Securing the Flight of the ISS-51/52 Crew Members (Express Analysis). V.V. Bogomolov, V.I. Pochuev, I.V. Alferova, E.G. Khorosheva, V.V. Krivolapov

Abstract. The paper shows the results of medical support of the ISS-51/52 expedition and gives a brief description of operation of the medical support system and maintaining the stability of human environment aboard the ISS RS. Besides, the paper sums up results of the implementation of medical recommendations, program of medical monitoring and the use of onboard facilities meant to prevent the alteration of cosmonauts' health status in spaceflight.

Keywords medical support, medical monitoring, preventive system, human environment, work/rest schedule.

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Methods of Analyzing the Deviations in the Functioning of the “Crew–MSV–Environment” System that Arise during the Operation of Manned Space Complexes in order to Increase Efficiency of Crews’ Activity and Ensure the Spaceflight Safety.

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Abstract. The paper presents the methods of analyzing various deviations that arise in the course of operation of manned space complexes (MSCs) and shows the possibility of application of said methods for developing the necessary measures in order to improve the efficiency of crews’ activity and ensure the spaceflight safety by example of the results of missions of the ISS Expeditions.

Keywords: analysis of the results of missions of the ISS Expeditions, safety of missions of the ISS Expeditions, unfavorable factors of a space flight, deviations in the functioning of the “crew–MSV–environment” system, efficiency of activity of the ISS crews.

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Operational Approaches to the Ground-Based Simulation of the Long-Term Space Missions in Order to Study Individual Performance Style for the Sake of Cosmonaut Selection.

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Abstract. Issues of ground-based simulation of space missions in order to model such specific features of environment inside the pressurized chamber as limited resources and high social responsibility in the absence of moral and emotional support of habitual social environment are

discussed. Simulation of the in-crew fulfillment of performance tests and professional tasks provides good opportunities to investigate personal performance and behavior styles for the sake of elaboration of selection criteria for the extended autonomous missions. The study is based on the hypothesis that the extreme and stressful conditions require mobilization of human internal psycho-physiological resources, expressed in the stress-coping strategies of the crewmembers. The study allowed evaluating individual performances styles as a reflection of personal coping strategies. The individual styles of operators to perform various types of professional activities (manual docking of the “Soyuz TMA” transport spacecraft; driving a rover on the surface of Mars) are described. The stability of operators' personal styles in performing tasks was demonstrated. Correlation between performance styles and personal types of adaptation (coping strategies) to the extreme spaceflight conditions was detected.

Keywords: autonomous mission, resources, performance style, coping strategies.

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Cosmonaut Training for Work on the Lunar Surface.

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Abstract. The list of standard extravehicular operations was developed on the basis of an analysis of the features and main tasks of extravehicular activity in order to train cosmonauts for work on the lunar surface. Ground-based technical facilities for cosmonaut training for work under lunar gravity conditions were specified and cosmonauts' abilities to master the standard extravehicular operations using these facilities were evaluated.

Keywords: cosmonaut, Moon, spacesuit, extravehicular activity, extreme conditions, low gravity simulation, cosmonaut training.

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Methods of Choosing the Options for Interaction of a Cosmonaut with Anthropomorphic Robotic Systems. V.G. Sorokin

Abstract. Methods of choosing the options for interaction of a cosmonaut with anthropomorphic robotic systems designed to be used in space were developed by analyzing the ways of the use of those systems.

Keywords: anthropomorphic robotic systems, type, intravehicular activity, extravehicular activity, choice, use, cosmonaut, on-planet activity, mode, method.

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The Problem of the Periodization of the Development of Onboard Means for Recording Visual Information of Manned Spacecraft. D.Yu. Shcherbinin

Abstract. The paper describes an approach to the division of the process of developing onboard means for recording visual information of manned spacecraft into the main qualitatively different periods in accordance with the objective laws of technical evolution. Periodization was carried out on the basis of an analysis of the development of data of technical means from 1961 through 2000. The chronology of equipping manned space vehicles with new special-purpose and general-purpose photo and video cameras most actively used during the said historical period is given.

Keywords: space filming, space means for recording visual information, manned space flights, space photographic equipment.

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Actualization of Professional Standards for Specialists in the Field of Manned Space Exploration. V.N. Saev, Yu.A. Vinogradov, O.S. Gordienko, P.P. Dolgov, G.D. Oreshkin, A.I. Shurov

Abstract. The paper deals with the issues of actualization of professional standards for “Test cosmonaut”, “Cosmonaut training specialist”, “Cosmonaut training equipment specialist”. The paper contains reasons for the actualization of professional standards, main stages of actualization, features of actualizing each professional standard, and also discussions of projects of the professional standards actualization.

Keywords: professional standard, test cosmonaut, cosmonaut training specialist, cosmonaut training equipment specialist, professional activity, job responsibilities, qualification.

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