Paper ID: 9839
oral

HUMAN SPACE ENDEAVOURS SYMPOSIUM (B3)
Overview Session (Present and Near-Term Human Space Flight Programs) (1)

Author: Dr. Sergey Krikalev
Yu.A. Gagarin Research and Test Cosmonaut Training Center, Russian Federation, skrikalev@gctc.ru

Dr. Boris I. Kryuchkov
Yu.A. Gagarin Research and Test Cosmonaut Training Center, Russian Federation, bic43@mail.ru

MANNED COSMONAUTICS – THE PRESENT AND THE FUTURE

Abstract

In 2011 we will celebrate the 50-year anniversary of the first flight of a man in space. The 108-minute spaceflight of Yu.A. Gagarin is a new chapter in the annals of our blue planet Earth and will live in a memory of humankind forever. There are a variety of activities and tasks in space that need human involvement. In particular they are: assembling of unique large-scale constructions in space, repair of space vehicles, performance of scientific experiments, construction and maintenance of bases on the other planets, manufacturing of the unique materials, etc. The wide use of robotics technologies will not reduce the role of a man in space. Vice versa the robotics will enlarge human capabilities taking the routine and dangerous operations. Among the main achievements of the manned cosmonautics during 50 years are: assembly of manned orbital complexes, lunar missions, fulfillment of large-scale research programs, realization of international cooperation in space, missions of non-professional cosmonauts supporting. The future space missions will be linked with the development of the following main trends: designing of new manned transport; manned missions in astrospace (the Moon, Mars, Lagrange points, asteroids, etc.); realization of a mass human space flight projects. Many spacefaring nations have declared that the Moon and Mars mission programs are the main object of their space investigations. Both projects call for substantial financial expenses, introduction of new technologies and cannot be fulfilled simultaneously. There are many reasons for the Moon mission program priority. The 21-st century will be the century of mass space flights, and non-professional cosmonauts, mainly space tourists, will contribute to their realization most of all. At present there are only 10 space tourists. All of them participated in missions aboard the ISS, duration of which varies from 8 to 11 days. Surely sub-orbital tourism will provide the greatest contribution in mass manned space flights evolution. However long-duration orbital flights being more expensive than sub-orbital ones still have great advantages compared to them. Accomplishment of ambitious tasks of the manned cosmonautics in the 21-st century will require resolving many problems of cosmonaut training and ensuring their safety aboard manned spacecrafts and planetary bases. These problems are mostly related to the development of new cosmonaut selection and training concepts, creation of new life support systems, safety of a man staying in deep space, post-flight rehabilitation as well as the development of principles of cosmonaut career longevity.