

Future of the Russian Manned Cosmonautics

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Magnificent beginning of manned space missions was determined by rivalry between the Soviet Union and the USA. The first spaceflight by Gagarin and the first EVA by Leonov in the Soviet Union forever added glorious pages into the history of cosmonautics. Our rivals – the Americans responded to our challenge by fantastic program of manned missions to the Moon. At that time we – cosmonauts cherished a dream of transiting from rivalry to cooperation in exploration of space. Our dream came true with the historic “Apollo-Soyuz” joint spaceflight. This flight demonstrated, that our countries could cooperate in resolving the most urgent tasks of the Mankind on the Earth and in Space.

It seemed, that termination of rivalry would result in new achievements in space with an optimal quality-cost ratio. But in reality everything turned out to be illogical, incomprehensible and even absurd. By implementing progressive idea of non-expendable spacecrafts the Americans greatly miscalculated their reliability and economic efficiency. Instead of a two-fold cost decrease they got a two-fold increase of payloads launch cost. For these miscalculations America paid not only with millions of dollars, but unfortunately with the lives of the astronauts.

In our turn we, being aware of the negative experience by the Americans, nevertheless carried to an absurdity the idea of expendable space vehicles. We designed, developed and launched nonexpendable “Buran”, and made it only once and in unmanned configuration. Later on we closed this very expensive and totally useless program.

Likewise orbital stations program evolved into similar absurd state. My personal experience of working onboard single-module stations “Salyut-4”, “Salyut-6” and “Salyut-7” proved, that their performance index was only few percents, same as in steam engines. In fact, out of dozens of scientific instruments onboard only some were operating at one time – those, which required same altitude and could be maintained by a single crew, or in other words - operated no more than 8 hours out of 24.

Nevertheless instead of looking for ways to enhance scientific efficiency of manned missions, we launched even less effective multi-modular station “Mir”. Same few instruments were in operation onboard at one time, but over a hundred were idle due to the same as earlier reasons. “Mir” performance index was less than 1%, e.g. even worse than that of “Salyut”.

What conclusion would the US specialists have made based upon our experience of “Mir” operation and utilization?

First of all, each module should be outfitted with the homogeneous equipment and instruments, installed along one axis. At that all 100% of instruments will operate at one time if required attitude is maintained.

Secondly and above all – the modules should be docked immediately after insertion into orbit. Let them fly in an autonomous mode and operate automatically throughout all 24 daily ours without human interference. It’s not difficult to calculate, that it will increase efficiency of investigations by an order of magnitude and more. But this is true only for the normal work. In cases of recharging, repairing or upgrading the automated systems need servicing by humans. Maintenance and service operations should be envisaged at a design stage. If so it provides for an optimal combination of an automated system-human. And each will do what it makes better.

Immediately postflight of “Salyut-6” station back in 1978 – 12 years earlier Hubble telescope launch I came to a conclusion and reported to the Chief-Designer Mr.V.P.Glushko, that permanently manned universal stations – represented a dead-end in the cosmonautics. An optimal way according to the cost-quality ratio belongs to specialized serviced automated systems. I shared this idea during my visits to various NASA centers. I was convinced, that the Americans would come to the same conclusion. I thought, that US specialists would analyze “Mir” experience and using same money instead of permanently manned ISS would launch a dozen of specialized serviced automated systems of the “Hubble” type. One system for the Earth observations, another – for the atmospheric studies, the third – for the Sun studies, another one – for asteroids and so on. But the Americans initiated creation of the ISS, which has even more modules than “Mir” and thus is even less effective. Nonsense! But why so?

Long awaited cooperation in Space turned out to be less fruitful than rivalry? Who is to blame for? What to do?

I believe that rivalry of two superpowers in Space required realization of the most effective, ambitious projects. The heads of the states rigidly controlled such projects. Cooperation in Space no longer attracts such an attention of the supreme state authorities. As a result – space branch gets into the hands of the military-industrial complex. And unfortunately their main task is to get hold of the most expensive projects, doesn’t matter how low effective they are. In our country it is a very expensive and useless “Buran”. Together with the US counterparts we have even more expensive ISS. It hasn’t been fully deployed despite long years of its existence. The full crew of 6 persons is not working and most probably will not work onboard the ISS. The crew of 2-3 can only maintain station and themselves alive. They have no time for science, except for medical experiments. But for medical purposes a habitable module of 1 or 2 compartments would be sufficient.

Not a single more or less significant scientific result has been obtained for the whole duration of the ISS flight. The ISS hasn't justified its existence and has no any serious perspectives for the future. Above all it's a consequence of still non-reliable Shuttles and re-routing of a part of the US funds from the ISS to the Moon and Mars missions. Launches of some US modules earlier planned for the ISS deployment have been cancelled. I believe, that we also shouldn't develop and launch to the ISS a new Russian scientific Multipurpose Laboratory Module (MLM), because there will be nobody there to service it. Therefore useless to present day and having no prospects - the ISS is a sort of like a suitcase without a handle. Its uncomfortable to carry and hard to dispose of. To my mind, on the whole grandiose, multi-modular manned orbital stations are good only for science fiction serials. For us and the Americans – the ISS belongs to yesterday. I think its high time to de-orbit it as the ISS impedes paramount programs of missions to the Moon and Mars. To de-orbit it as we have done with “Mir” as it impeded the ISS. And it's even better to give for free to Chinese...if they accept it to save money for construction of their own space station. And when time comes to finally de-orbit the ISS, the Chinese will pay for such a present. And that will be a difficult exercise and will cost them a lot of money.

And what should we do now? We have already added into the history of cosmonautics a page of a dead-end branch – multi-modular permanently manned orbital stations. It's time to get back to the main road, which was contemplated by Korolev and von Braun back in the 60-s of the last century – manned flight and landing on the Mars. The Americans at the suggestion of Mr. Bush (Jr.) have already proclaimed this goal as a priority. We need to immediately join the international Mars program. Moreover at the Institute of Biomedical Problems there already is a “habitable module of Martial spacecraft”. It is almost ready for a continuous 500-day ground based “mission” to the Mars. The implementation of this experiments needs to be expedited. Instead of developing MLM its necessary to design a living module of the Martian vehicle with a greenhouse for the 500-day test flight in the Earth orbit. It will be carried out without crew rotation and without supply by cargo ships. Our experience of the longest manned missions and experience of the 500-day ground base “mission” to Mars will contribute into the realization of such a step. The most difficult task will be to arrange for a 500-day turnover of matter, water and air. But we Russians are the best, at least the cheapest at constructing habitable modules. Used on the Earth orbit a habitable module can be sent to the Lunar orbit as a part of the Moon developing project, and in the future – be sent to the Mars and even to asteroids.

Tsiolkovskiy said: “The Earth is a cradle of the Mankind, but one can't dwell in a cradle forever”. We have been dwelling in the cradle for 44 years and wish to dwell for another 10-15 years. We should feel ashamed in the eyes of present and future generations!

That is why – right on to the Moon, Mars and further on everywhere!