

HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Commercial Human Spaceflight Programs (2)

Author: Dr. Oleg Saprykin
TSNIIMASH, Russian Federation

ABOUT PROBLEMS OF TRANSITION TO COMMERCIAL MANNED SPACE AND POSSIBLE
SOLUTIONS

Abstract

The complexity of the implementation of the manned space flights on the current level of technology is so great that, of all the tasks undertaken astronauts, only repair of expensive satellites and space stations brings direct justified, payback) results. However, the number of expensive satellites available to service a manned spacecraft is relatively small (within 10-20 objects). Wider range of commercial services (such as space tourism, media business, tests of unique technologies and others) still can't justify the cost of building the manned space stations, ships. The level of costs for creation of the manned spacecraft today is about 100 times higher than commercial investments in the field above-named services. Profitability is possible only if the package of orders. The number of orders (N) directly depends on the quality of execution (Q), the cost of performing (C) and the time delays (T). All three relationships ($N=N(Q)$, $N=N(C)$, $N=N(T)$) is essentially nonlinear. For example, orders from maturing within one year in the 10 to 100 times greater than orders within 3-5 years. The number of orders with maturities in 7-10 years and ten times less than the number of orders with 5-year performance period. The quality of execution (Q) - is a complex indicator. While the order is almost always implemented two opposite processes: one - the process of adapting the requirements to the capabilities of the performer by the customer, the second - adaptation of the order to the requirements of the customer, the contractor (performance requirements). Simplified can be interpreted quality of performance of the order higher if it prevails the second process, and low if prevails first. With the provision of high quality in practice before the executor of a dilemma: what to use to take into account the customer's requirements - universal or specialized tool. Analysis of the model requirements and the experience of operation of manned objects in low-earth orbits (IEO) proves the necessity of using in this area of space specialized manned space vehicles. The way of radical (by orders of magnitude) reduction of the cost of space flight (C) lie in the direction of new propulsion technologies, new principles of design, and also new methods of organization of manned space missions, examples of which will be provided. To reduce waiting time of order execution (T) is possible only when the serial production of space vehicles, the creation of relevant industries.