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SALYUT-6--SOYEZ-29: OUR COMMENTARY, THE CREW AND THE STATION

V. Kravets

Translation of "Salyut-6--Soyuz-27: nash kommentariy; ekipazh i stantsiya," Pravda, No. 199, July 18, 1978., p. 3

(NASA-TM-75393) SALYUT-6--SOYUZ-29: OUR  
COMMENTARY, THE CREW AND THE STATION  
(National Aeronautics and Space  
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
WASHINGTON, D.C. 20546

MAR 29 1979



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SALYUT-6--SOYUZ-29: OUR COMMENTARY; THE CREW AND THE STATION

V. Kravets

Assistant Director of the Flight Complex of the Salyut-6--Soyuz

At the present day stage of development of space technology, /3\* training of the cosmonauts is a question of primary importance. Why "at this present day stage"--and not 7--8 years ago this problem would have been so acute? Of course, it was, but before the flight of the first orbital Salyut station in 1971, the crew did not have to carry out so many and such complex studies in orbit. The volume and nomenclature of the work done on board orbital stations is continuously growing as the intense program of the Salyut-6 flight graphically indicates. Therefore, engineering and scientific training of the crew has acquired a more important role.

Where are the cosmonauts getting their professional training right now? Here one can separate two important stages: general training of a group of people selected at the initial level of occupational knowledge, work experience and health conditions and first-hand--as part of the crew of an actual spacecraft.

The preliminary or general stage includes studying theoretical disciplines--astronomy, ballistics, dynamics of flight, separate applied sections of mathematics, physics, the basis for operation and design of typical onboard systems of the spacecraft. Then one begins a study of the behavior of radio communication from the Flight Control Center and the search equipment after landing and landing on dry land and on water is treated.

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Medical and biological training at this period includes

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training for increasing resistance of the organism to acceleration  $g$ , weightlessness and operation in conditions of an enclosed space with increased psychological load. A good deal of attention is given to the general physical condition of future crews.

General training takes about 2 years. After taking examinations on the theoretical course, training of the crew begins taking into account the individual qualities of the cosmonauts and an analysis of their psychological and physiological characteristics from the point of view of combining them in flight. The program of studies at this stage is the same for several crews (main and back-up). A large amount of time, more than 70%, is taken up in developing habits of controlling the onboard systems of the spacecraft and then the orbital complex, control of the scientific equipment, testing, experimental systems of the spacecraft and stations, completion of assembly and disassembly and repair work on the scheduled equipment and scientific instruments, the behavior of the onboard telereporting, movie and still photographs.

Thus, 2--4 persons are trained for the functions of experimenter, scientist, highly qualified repair worker and finally teleoperator. A good deal of attention particularly for crews with long-term expeditions on orbital stations, is devoted to medical and biological training. The crew is trained to carry out self examination in orbit using medical equipment; equipment from the onboard first aid kit is used and the necessary analyses are made independently.

The stage of direct training usually takes one to one and one-half years. In this time, the crew participates in ground testing of the spacecraft and station systems and the creation of onboard documentation, the leading scholars and engineers, workers in space engineering are consulted, one becomes acquainted

with the system on actual spacecraft and on test stands of the enterprises where the spacecraft are designed and manufactured; "ground flights are made on complex training units at the Center for Training Cosmonauts; final training and fitting is done at the cosmodrome. During the period of mastery of new space equipment, training is particularly thorough by specialists at the Training Center because theirs is the main load for providing daily studying and training of the cosmonauts.

Before final determination of the preparedness of the crews for flight, they take their own type of "qualifying examination" which is, if you please, the most serious testing of all which is given to any other candidates for completing complex technical work. The examination commissions made up of scientists and engineers are specialists at the Training Center.

Each theoretical examination is a two to three hour test of knowledge on all the basic and reserve operating procedures of the onboard systems. The practical examination includes a "flight" on the space training unit for 8--12 hours with completion of a large set of operations on a background of artificially introduced barriers in the equipment. The examination commissions are strict: they test the knowledge of persons who will be responsible for the work of many thousands of collectives of scientific researchers at Institutes and design bureaus.

The effectiveness of the systems developed in the Soviet Union for training cosmonauts is outstanding during operation with international crews. The candidates for space flight from Czechoslovakia and Poland were trained for little more than a year before the launch. Particular attention was devoted in their training to the Soyuz spacecraft and when studying the orbital station, efforts were concentrated mainly on the systems of life support, communication and the scientific equipment.

The efforts of all of the collectives who train cosmonauts have not been in vain. Programs of our flights on the Salyut-6, the crews of the Soyuz-26, Soyuz-27, Soyuz-28 and Soyuz-30 have been successfully completed. Right now, V. Kovalenok and A. Ivanchenkov are continuing work on the scientific research Salyut-6--Soyuz complex.