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50TH ANNIVERSARY OF THE 1ST SPACE WALK BY SOVIET COSMONAUT ALEXEI LEONOV

Abstract

The paper describes the 1st space walk done by Soviet Cosmonaut Alexei Leonov during his mission that was launched on the 18th of March 1965 at Voskhod2 spacecraft together with Pavel Belyaev. The paper gave the overview of history of preparation of the main crew (Belyaev, Leonov) with the back up crew (Chrunov, Zaekin) as well as gives detailed description of the Voshod 2 mission that had number of very dramatic offnominal situations that can lead to the death of cosmonauts and loss of the mission. During the EVA on 18th of March 1965 the spacesuit of Alexei Leonov did not stand properly space vacuum and increased significantly in the volume. Leonov decided not to wait discussion of this situation with the mission control center and made decision on his own to return back to the spacecraft and changed by himself pressure in the spacesuit to the mode 2 . He returned back to the spacecraft by violating EVA procedure because he returned back by putting his head first into the hatch and helping with his hands to fit his body into the spacecraft unpressurised compartment and that was nearly impossible. However due to the EVA procedure he should returned back to the spacecraft by putting his feet first. After he closed the hatch he was forced to turn upside down and follow EVA procedure to enter the spacecraft main/pressurized compartment and that was not the end of the offnominal situations. The landing was offnominal too, they landed in the inhabited forest area in the middle of nowhere at far East of the Soviet Union. Cosmonauts Leonov and Belyaev were rescued only on the 3rd day after landing and they spent 2 days in spacesuits in the spacecraft totally wet. Not to be frozen to death on the 2nd day they took the spacesuits off and cut the thermal isolation material from the spacecraft interior. Alexei Leonov and Pavel Belyaev covered themselves with 9 layers of thermal isolation foil plus parachutes and in this way they were able to wait for the rescue team and stay alive.