

Spaceflight

THE SOYUZ 1 ACCIDENT

The Soviet spacecraft Soyuz 1, carrying Col Vladimir Komarov, was launched from the Baykonour site in Kazakhstan at 0035 GMT on April 23. The object of the flight was, according to Tass, "to test the new piloted spaceship, to check the ship's systems and elements in conditions of spaceflight, to hold extended scientific and physical/technical experiments and studies in conditions of spaceflight and to continue medical and biological studies of the influence of various factors of spaceflight on the human organism."

No details of the spacecraft or its launcher were given, but a Moscow report suggests that the third-generation capsule measured 10ft dia and 30ft long, and was capable of carrying between four and six astronauts, and up to 65,000lb of payload. The spacecraft is a development of the earlier Vostok and Voskhod.

After completing his fifth orbit at 0700 GMT on April 23 Col Komarov reported that the programme was being fulfilled successfully and that he was feeling well. According to telemetry data, the pressure and temperature in the spacecraft remained normal at 16°C and 750mm of mercury, and radio communication was stable. During the period between 10.30 GMT and 1830 GMT, the spacecraft was outside the range of communication from Soviet territory, and the period was used for rest purposes.

A signal was received after re-acquisition of the spacecraft, reporting that the astronaut was proceeding with the flight programme, and that he was in normal health.

At 0150 GMT on April 24, according to Tass, a further communication was received from the spacecraft, the astronaut again stating that he was feeling well and was continuing to carry out experiments in accordance with the schedule.

No further communiques were issued until, at 1427 GMT, Tass and Moscow Radio simultaneously put out identical reports: "Cosmonaut Vladimir Komarov has perished while completing the test flight of the spacecraft Soyuz 1." This was followed by two more reports, the second of which stated "The Soviet astronaut Vladimir Komarov perished today when landing the spacecraft Soyuz 1. Today, when the programme was completed, Col Komarov was told to stop the flight and land. After carrying out all the operations connected with transferring to landing procedure, the spacecraft safely passed the most difficult braking phase in the dense layers of the atmosphere and had fully decelerated from orbital speed. However, when the main capsule of the parachute opened at an altitude of seven kilometres the straps of the parachute, according to preliminary reports, got twisted and the spacecraft descended at a great speed which resulted in Komarov's death."

"During the test flight, which lasted for more than 24 hours, the astronaut fulfilled the testing of the systems of the new ship and carried out the planned scientific experiments. He manoeuvred the spaceship and tested its main systems in different régimes and estimated technical characteristics of the new ship."

An unofficial report earlier from Moscow had suggested that a second spacecraft would be launched at about 0313 GMT on April 24, at which time the Soyuz 1 would be overhead at Baykonour. The spacecraft (went on the report) would carry two astronauts, Pavel Belyaev and Valery Bykovsky (both these astronauts have flown on space missions; Belyaev as one



Col Vladimir Mikhailovitch Komarov

of the two pilots on the Voskhod 2 flight of March 18, 1965, and Bykovsky as pilot of the Vostok 5 flight of June 14, 1963).

The report gained credence when the three astronauts failed to appear at the Moscow celebration of Cosmonauts Day on April 12—the sixth anniversary of Yuri Gagarin's flight in Vostok 1.

No second launch was made, however, either because of trouble with the second spacecraft or (more probably) because of difficulties with Soyuz 1.

American officials in Washington believe that Col Komarov had been in trouble for some time. One said "We have established that the spacecraft encountered difficulties throughout the flight, particularly in the latter phase. We think that Col Komarov tried to bring it down on the 16th orbit and was unsuccessful, and that re-entry actually occurred on the 18th orbit. The very probable reason for the trouble with the parachute was tumbling."

A Japanese communications laboratory monitored radio signals from Soyuz 1 as it passed over Japan between 0030 GMT and 0100 GMT but failed to pick any up during the spacecraft's next transit.

It was later revealed that Soviet astronauts no longer have means of ejecting during descent. This is a major change from the situation in the earlier Vostok and Voskhod spacecraft, in which (according to an article by astronaut Valentina Tereshkova-Nikolayeva in *Aviation and Cosmonautics* earlier this year) every Soviet astronaut so far has had the option of abandoning his capsule after re-entry. As far as is known, only one crew (that of Voskhod 2) had chosen to remain in their spacecraft during the landing.

Reports from Russia indicate that at least four unmanned test vehicles (comprising some of the Cosmos series) had been flown from March 10 onwards as part of the spacecraft development programme.

Early on April 25, Tass reported that the CPSU Central Committee and the Soviet Council of Ministers had decided to set up a government commission to investigate all the circumstances leading to the accident.

Col Komarov's ashes were interred in the Kremlin Wall in Moscow during a burial ceremony on April 26 with full military honours. A joint telegram from America's 47 astronauts expressed their sympathy and condolences to both the Soviet astronauts and the family of Col Komarov.

Colonel Vladimir Komarov

Vladimir Mikhailovitch Komarov was born in Moscow in 1927. He joined a flying school in 1942, afterwards going to a Soviet Air Force College. His flying included over 1,500hr on jet aircraft and he was also a parachute instructor. He spent four years at the Zhukovsky Air Force Engineering Academy and, after graduation, was assigned in 1959 to test air force equipment. His studies continued up until the time of his death. Although troubled by a heart condition for some 18 months before his Voskhod 1 flight in October 1964, after a six months' rest and an operation he satisfied his medical board that he was sufficiently fit to undertake the flight.

He was the first Soviet astronaut to take part in more than one spaceflight. He leaves a wife, a son and a daughter.