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# Kosmos-557: A Civilian Salyut Failure

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## Summary.

Soviet documentary evidence now confirms that Kosmos-557 was a civilian Salyut failure, as deduced earlier from optical and radio tracking.

## The Military and Civilian Salyuts

The missions of Salyuts 3 and 5 have always been mysterious. In contrast to other crewed Salyut stations, no pictures have ever been released of these craft. Relatively few scientific experiments were reported to have been carried out. At the end of each station's mission, a capsule was detached from the station to return data to Earth, confirming that the design of these stations was different from other Salyuts which had no provision for such a capsule. Further, the telemetry from the stations was different from the other Salyuts, and the operational orbit was lower. On the basis of the telemetry it is believed that Salyut 2 was also a station of this military type; Salyut 2 failed early in its mission and was never crewed. Recently, it has been revealed that Salyuts 2,3 and 5 were designed by the Chalomei bureau, a completely separate orgranization from the bureau which designed Salyuts 1,4,6 and 7 (the civilian Salyuts).

## Kosmos-557

Kosmos-557 was launched on 1973 May 11.02 from Baykonur by a three-stage Proton carrier rocket. Its initial orbit was 214 km by 249 km with an inclination of 51.61 degrees and a period of 89.13 min. The spacecraft slowly decayed and reentered on May 22. The final orbit released by NORAD, on May 21, was 163x178 km. Telemetry monitoring by the Kettering Group (Spaceflight, vol 16, p 39) showed that its radio signals were similar to those of the first Salyut. The Sheldon report concluded that Kosmos 557 was a failed civilian Salyut station.

## New Information

A pair of short papers in the Soviet journal Kosmicheskiye Issledovaniya (Space Research) report radiation measurements from Salyut stations. These papers are Belyaev et al, 1984, K.I. vol 22, p 471, and Shavrin, 1984, KI vol 22, p. 473. They are not included in the corresponding English translation journal. The first paper discusses the Ryabina-2 radiation measurements on board Salyut-6 from 1977 to 1982. It says that similar apparatus was carried

on Salyut and Salyut-4, and on a Molniya satellite, and on Kosmos-557. No mention is made of Salyut-2,3 or 5.
The second paper discusses similar measurements carried out on Salyut and on the artificial satellite Kosmos-557. A diagram is included showing one orbit of data obtained from K 557 on 13 May 1973, two days after launch. This diagram is reproduced below. Although the paper does not explicitly identify K557 as a Salyut station, the fact that it carried an experiment that was also carried on Salyuts 1,4, and 6 but not on Salyuts 2,3 or 5 leads to the conclusion that it was intended as a civilian Salyut station.

Fig 1 Introduction to Belyaev et al. (1984)

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## ИССЛЕДОВАНИЯ ПРОНИКАЮЩЕЙ РАДИАЦИИ НА ОРБИТАЛЬНОЙ СТАНЦИИ «САЛЮТ-6» В 1977—1982 гг.

На борту орбитальной станции «Салют-6», запущенной 29.IX 1977 г. на близкую к круговой орбиту высотой ~350 км и наклонением 52°, была установлена аппаратура «Рябина-2» для исследования проникающей радиации в околоземном космическом пространстве. Указанная аппаратура является дальнейшей модификацией аналогичных приборов, использовавшихся в экспериментах на орбитальных станциях «Салют», «Салют-4», ИСЗ «Молния-1» и «Космос-557» [1].

Fig 2. Diagram from Shavnn (1984)

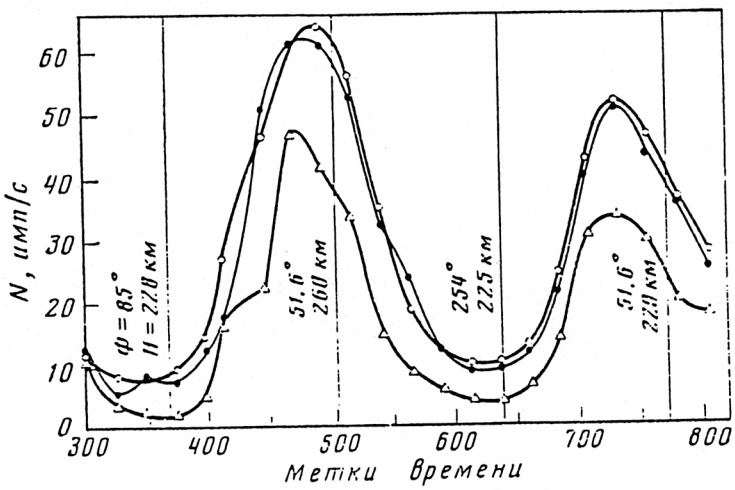


Рис. 1. Показания аппаратуры на ИСЗ «Космос-557» (13.V 1973 г.) Темные кружки — канал *1*, светлые — канал *2*, треугольники — канал *3* (нейтроны).
По оси ординат — темп счета *N* (для канала 3 масштаб умножен на 10).
По оси абсцисс — метки бортового времени