= Salyut 6 =

Salyut 6 (Russian : ????? @-@ 6 ; lit . Salute 6) , DOS @-@ 5 , was a Soviet orbital space station , the eighth flown as part of the Salyut programme . Launched on 29 September 1977 by a Proton rocket , the station was the first of the ' second @-@ generation ' type of space station . Salyut 6 possessed several revolutionary advances over the earlier Soviet space stations , which it nevertheless resembled in overall design . These included the addition of a second docking port , a new main propulsion system and the station 's primary scientific instrument , the BST @-@ 1M multispectral telescope . The addition of the second docking port made crew handovers and station resupply by unmanned Progress freighters possible for the first time . The early Salyut stations had no means of resupply or removing accumulated garbage (aside from the limited amount that cosmonauts could carry in their Soyuz spacecraft) , nor could the propulsion system be refueled once it exhausted its propellant supply . Consequently , once the consumables launched with the station were used up , its mission had to be concluded and as a result , manned missions had a maximum duration of three months . Progress spacecraft could now bring fresh supplies and propellant and also be used to dispose of waste , which was then destroyed once the spacecraft was deorbited .

Five crew residencies took place over the station 's lifespan , in late 1977 @-@ early 1978 , late 1978 , mid @-@ 1979 , mid @-@ 1980 , and early 1981 , including cosmonauts from Warsaw Pact countries as part of the Intercosmos programme . These crews were responsible for carrying out the primary missions of Salyut 6 , including astronomy , Earth @-@ resources observations and the study of the effect of spaceflight on the human body . Following the completion of these missions and the launch of its successor , Salyut 7 , Salyut 6 was deorbited on 29 July 1982 , almost five years after its launch .

= = Description = =

Salyut 6 , launched on a Proton 8K82K rocket on 29 September 1977 , marked the switch from engineering development stations to routine operations , and united the most effective elements from each of the previous stations . Its navigation system , made up of the Delta semi @-@ automatic computer to depict the station 's orbit and the Kaskad system to control its orientation , was based on that used on Salyut 4 , as was its power system , which consisted of a trio of steerable solar panels together producing a peak of 4 kilowatts of power over 51 m ² . The station 's thermal regulation systems , which made use of a sophisticated arrangement of insulation and radiators , was also derived from that used on Salyut 4 . In addition , Salyut 6 made use of environmental systems first used on Salyut 3 , and controlled its orientation using gyrodynes first tested on that station .

The most important feature on Salyut 6 , however , was the addition of a second docking port on the aft end of the station , which allowed two spacecraft to be docked at once . This , in turn , allowed resident crews to receive shorter , ' visiting ' expeditions whilst they remained on board , and for crew handovers to take place . In addition , it allowed Soyuz spacecraft that had exceeded their operating lifespan to be returned to Earth and replaced by fresh ones (the Soyuz 7K used from 1972 @-@ 81 had a maximum operating lifespan of three months) . Such handovers , with one expedition vacating the station only after the next had arrived , permitted the long sought @-@ after aim of continuous occupation to move a step closer . The very first long @-@ duration crew to visit the station broke a long @-@ standing endurance record set on board the American Skylab station , staying 96 days in orbit , whilst the longest expedition lasted 185 days . Some of the visiting expeditions were flown as part of the Intercosmos programme , with non @-@ Soviet cosmonauts visiting the station . Vladimír Remek of Czechoslovakia , the first space traveller not from the US or USSR , visited Salyut 6 in 1978 , and the station hosted cosmonauts from Hungary , Poland , Romania , Cuba , Mongolia , Vietnam , and East Germany .

The rearward of the two ports was fitted with plumbing to allow the station to be refueled by unmanned Progress spacecraft . These freighters , which brought supplies and extra equipment to

keep the station replenished , helped ensure that the crew were always able to carry out useful scientific work aboard the station . In all , twelve Progress flights delivered over 20 tonnes of equipment , supplies and fuel .

The addition of the extra docking port caused the adoption of the Almaz @-@ derived twin @-@ chamber propulsion system first used on Salyut 3 and 5 , with the two engine nozzles ? each producing 2 @.@ 9 kilonewtons of thrust ? mounted peripherally on either side of the aft port . Salyut 6 introduced a Unified Propulsion System , with both the engines and the station 's control thrusters running on unsymmetrical dimethylhydrazine and nitrogen tetroxide , drawn from a common set of pressurized tanks , allowing the refueling capabilities of the visiting Progress tankers to be exploited to the maximum effect . The entire engine and fuel storage assembly was contained within an unpressurized bay at the rear of the station , which was the same diameter as the main pressurized compartment . However , the replacement of the Soyuz engine used on previous stations with the bay meant that the station kept a similar overall length to its predecessors . The main engines could not be fired if the rear docking port was in use , hence any orbital maneuvers during this time had to be performed by the visiting spacecraft .

Salyut 6 's propulsion system experienced a serious malfunction during the second crew residency in 1978 and was not usable again for the remainder of the station 's lifespan . As a consequence , it was limited to firing its attitude control thrusters and visiting spacecraft had to perform orbital adjustments . After each crew residency ended , it was necessary for Progress and TKS spacecraft to boost the station into a high orbit so it wouldn 't decay until the next residency began .

To enable spacewalks , Salyut 6 was equipped with an inward @-@ opening EVA hatch on the side of the forward transfer compartment , which could be used as an airlock in a similar way to the system used on Salyut 4 . This compartment contained two new semi @-@ rigid spacesuits which allowed much greater flexibility than earlier suits , and could be donned within five minutes in case of an emergency . Finally , the station offered considerable improvements in living conditions over previous outposts , with machinery being soundproofed , the crews being provided with designated ' cots ' for sleeping and the equipping of the station with a shower and extensive gymnasium .

= = = Instruments = = =

The primary instrument carried aboard the station was the BST @-@ 1M multispectral telescope , which could carry out astronomical observations in the infrared , ultraviolet and submillimetre spectra using a 1 @.@ 5 metre @-@ diameter mirror which was operated in cryogenic conditions at around ? 269 ° C. The telescope could be operated only when Salyut 6 was on the night side of the Earth , and had its cover closed for the rest of the time .

The second major instrument was the MKF @-@ 6M multispectral camera , which carried out Earth @-@ resources observations . An improved form of a camera first tested on Soyuz 22 , the camera captured an area of 165 × 220 kilometres with each image , down to a resolution of 20 metres . Each image was captured simultaneously in six bands in 1200 @-@ frame cassettes , which required regular replacement due to the fogging effects of radiation . Salyut 6 also featured a KATE @-@ 140 stereoscopic topographic mapping camera with a focal length of 140 milimetres , which captured images of 450 × 450 kilometres with a resolution of 50 metres in the visible and infrared spectra , which could be operated either remotely or by the resident crews . The photographic capabilities of the station were , therefore , extensive , and the Soviet Ministry of Agriculture had planted a number of specifically selected crops at test sites to examine the capabilities of the cameras .

To further expand its scientific capabilities , Salyut 6 was equipped with 20 portholes for observations , two scientific airlocks to expose equipment to space or eject rubbish , and various pieces of apparatus to carry out biological experiments . Later on during the flight , a Progress spacecraft delivered an external telescope , the KRT @-@ 10 radio observatory , which incorporated a directional antenna and five radiometers . The antenna was deployed on the rear docking assembly , with the controller remaining inside the station , and was used for both astronomical and meteorological observations .

= = Support craft = =

Salyut 6 was primarily supported by the manned Soyuz spacecraft , which carried out crew rotations and would also have been used in the event of an emergency evacuation . The ferries docked automatically to the station , making use of the new Igla automatic docking system , and were used by departing crews to return to Earth at the end of their flight .

The station was the first to be able to be resupplied by the newly developed unmanned Progress freighters , although they could only dock at the rear port , as the front port lacked the plumbing used to refuel the propulsion system . The freighters docked automatically to the station via the Igla , and were then opened and emptied by the cosmonauts on board , whilst transfer of fuel to the station took place automatically under supervision from the ground .

In addition to the Soyuz and Progress spacecraft , after the final crew had left , Salyut 6 was visited by an experimental transport logistics spacecraft called Kosmos 1267 in 1982 . The transport logistics spacecraft , known as the TKS , was originally designed for the Almaz programme , and proved that large modules could dock automatically with space stations , a major step toward the construction of multimodular stations such as Mir and the International Space Station .

= = Resident crews = =

The station received 16 cosmonaut crews , including six long @-@ duration crews , with the longest expedition lasting 185 days . Resident crew missions were identified with an EO prefix , whilst short @-@ duration missions were identified with EP .

On 10 December 1977 the first resident crew , Yuri Romanenko and Georgi Grechko , arrived on Soyuz 26 and remained aboard Salyut 6 for 96 days .

On 15 June 1978 , Vladimir Kovalyonok and Aleksandr Ivanchenkov (Soyuz 29) arrived and remained on board for 140 days .

Vladimir Lyakhov and Valery Ryumin (Soyuz 32) arrived on 25 February 1979 and stayed 175 days .

On 9 April 1980 Leonid Popov and Valery Ryumin (Soyuz 35) arrived for the longest stay on Salyut 6 , 185 days . While aboard , on 19 July , they sent their greetings to the Olympians and wished them happy starts in the live communication between the station and the Central Lenin Stadium , where the opening ceremony of the 1980 Summer Olympics was held . They appeared on the stadium 's scoreboard and their voices were translated via loud speakers .

A repair mission , consisting of Leonid Kizim , Oleg Makarov , and Gennady Strekalov (Soyuz T @-@ 3) worked on the space station for 12 days starting on 27 November 1980 .

On 12 March 1981 the last resident crew , Vladimir Kovalyonok and Viktor Savinykh , arrived and stayed for 75 days .

= = Station operations = =

= = = Docking operations = = =

Dates and times are 24 @-@ hour Moscow Time . Source :

= = = Station crews = = =

Dates and times are 24 @-@ hour Coordinated Universal Time .

= = = Spacewalks = = =

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