

# MIR Space Station

The modular space station Mir was the last major Soviet space project. Its central core, derived from the Salyut program, was equipped with docking ports for additional research modules, whose delivery was significantly delayed due to funding shortages following the dissolution of the USSR, and was later largely financed by the United States.

The station consisted of the main module DOS-7 (Dolgovremennaya Orbitalnaya Stanziya), the Kvant-1 and Kvant-2 modules, the Kristall and Spektr modules, a docking module for US Space Shuttles, and finally the Priroda module, which completed the station with its docking on April 26, 1996.

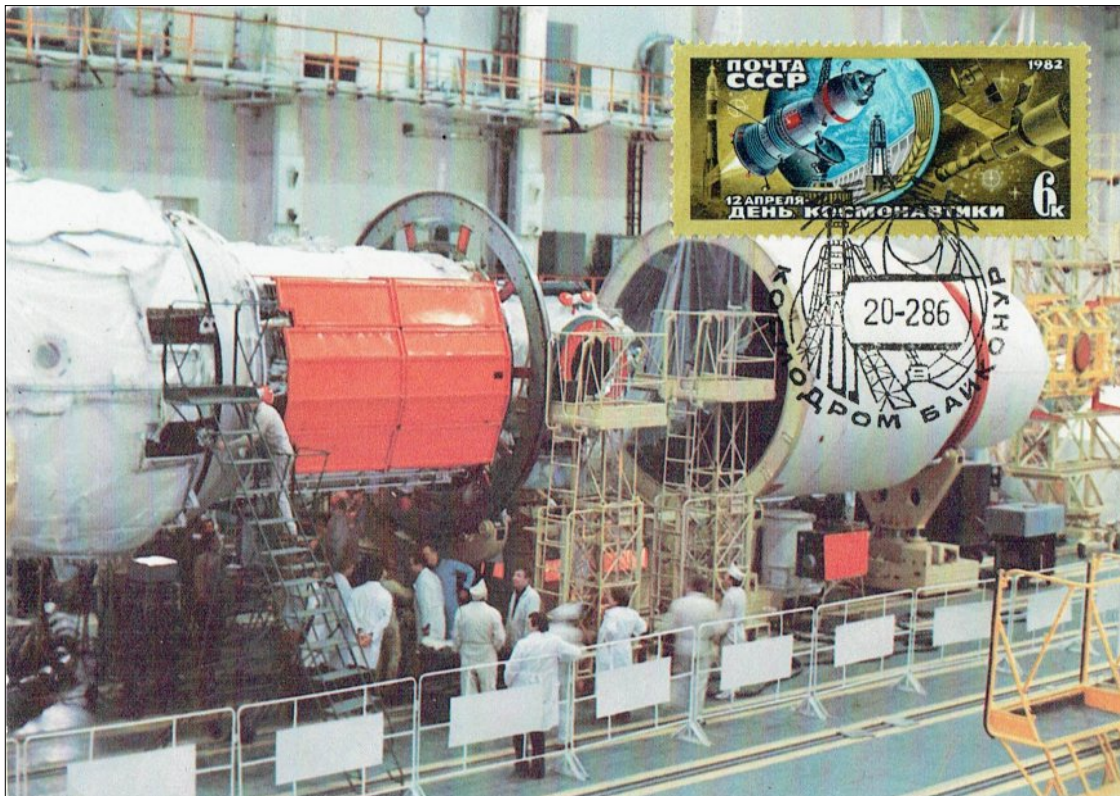
Designed for a five-year lifetime in space, it remained in orbit for just over fifteen years. Supplies were delivered by Progress cargo spacecraft (uncrewed versions of Soyuz not designed for atmospheric reentry). Crews were transported by Soyuz spacecraft (Soyuz T-15 and later Soyuz TM), and from June 27, 1995, to June 12, 1998, also by US Space Shuttle missions, alternating with Soyuz TM flights.

Research results were returned to Earth aboard Soyuz spacecraft together with the crews, while waste, loaded onto Progress spacecraft, burned up during atmospheric reentry. During Space Shuttle dockings, these operations were also carried out by the Shuttle itself.

Mir was docked with 30 crewed and one unmanned Soyuz capsules, 9 crewed US shuttles, eighteen Progress 1st series cargo ships and 43 cargo Progress M.

Mir was visited by 66 different people (5 Women, 61 Men) for 98 missions, from 11 different nations, including 42 Russians (a woman and 41 men), 8 American (two women and six men), a French woman and four men, 4 Germans, an Afghan, an Austrian, a British woman, a Bulgarian, a Japanese, a Syrian, and a Slovak.

The Exhibit presents commemorative covers with manual, ordinary, and mechanical cancellations, of the manned flights of the Soyuz and the US shuttles that reached the space station, and personal correspondence of the cosmonauts.



**February 20, 1986: launch of main body of the Mir**, first modular space station from a Proton K rocket. In the beginning it was located at height between 172 and 301 km from Earth. It was equipped with 6 docking devices to receive the Soyuz, Progress and expansion modules, it took 10 years to complete. *Postcard with postmark Baikonur Cosmodrome 20/02/86 (day of the launch), of the type used in Moscow for commercial use, which differs from the cosmodrome's for the globe closest to the date bridge for the missing tie rod above the letter M of the right scaffold supporting the rocket, and for other small details.*

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March 13, 1986: launch of Soyuz T 15 to the MIR. Once it reached it, it hooked onto it and the cosmonauts Kyzym and Solovov moved onto it and started the activation of all the structure. Once the Mir was operational, after installing critical equipment brought by the Progress 25 and 26, moved to the Salyut in order to finish the work program interrupted by the previous crew. There they recovered the signed covers left behind by the Soyuz T 14 crew and took them to MIR where they added the MIR pentagonal seal to that of Salyut 7.



July 16, 1986: Soyuz T-15 Landing – After completing all installations, they activated the station's automatic operation system, then boarded the Soyuz for reentry, took place 55 km northeast of Arqalik. Cover with a manual postmark from the civil post office of Arkalik, Turgaisk Oblast.



**July 30, 1987: Landing of Soyuz TM-2**, launched on February 5th with the first crew aboard for MIR, consisting of Yuriy Romanenko and Aleksandr Lavejkin, who carried out the first EVA on MIR to facilitate the docking of the Kvant module. Cover brought into space by Soyuz TM-3, with: bilingual Syrian postmark issued to Faris, Soviet "International Space Flight USSR-Syria-Cosmic Mail-MIR Station," and from the Baikonur Cosmodrome post office, dated 30.07.87 (all in black).



**June 22, 1987- Launch of Soyuz TM-3**, was the second crewed spacecraft, carrying to the Mir space station, the first Syrian cosmonaut, Mohammad A. Faris, along with Soviet cosmonauts Romanenko and Lavejkin, to the MIR space station. A commemorative cover with a postmark for the "50th anniversary of Gagarin's birth" was flown into space. It features additional circular postmarks with interchangeable dates: the bilingual Anglo-Syrian "Syrian Aerospace Post Office" dated 07.22.87, and the Soviet "International Space Flight USSR-Syria - Cosmic Post-MIR Station." An pentagonal Mir board seal with 16 mm sides, labeled "MIR Space Station Board," is also included, all stamped in black ink.

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June 9, 1988: Soyuz TM 5 docked with the hatch of the MIR Kvant module with Soviet cosmonauts Solov'ev and Savinykh and Bulgarian A. Ale-Alexandrov on board. Space cover with postmark dedicated to the 2nd Soviet/Bulgarian flight and octagonal rubber postmark, MIR blue board seal.



June 17, 1988 - Re-entry of Soyuz TM 4 carrying the crew that had arrived on Mir on Soyuz TM 5. Cover flown into space, with the cancellations of the 2nd Soviet/Bulgarian flight dated 06/09/88, the cancellation of the Baikonur Cosmodrome on the day of re-entry and the octagonal Mir board seal in blue.

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**August 31, 1988: Soyuz TM-6 reaches the MIR**, bringing on board Commander Lyakhov, researcher Polyakov, and the Afghan Abdul Momand. Cover with a special postmark featuring an interchangeable date for the Soviet-Afghan mission, dated 8/31/88, the day of the docking with MIR, along with the pentagonal and octagonal MIR rubber board seals, all in black.



**November 28, 1988: Soyuz TM-7 brings the 4th primary crew to MIR**, including French astronaut Jean-Loup Chrétien, who will return to Earth on 21/12/1988 aboard Soyuz TM-6. An cover flown into space features the MIR octagonal board seal, the octagonal official board postmark with 10 mm sides and a movable date for regular use on MIR, both in light blue, as well as a round French seal with a diameter of 39 mm. The French seal includes the mission emblem in the center and the inscription "CNES GLAVKOSMOS 1988" on the outer edge, in black.

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February 1, 1990: the crew of Soyuz TM 8 performs a 5-hour EVA. Cover flown in space, commemorating the EVA, with postmarks: octagonal on board the MIR, with interchangeable date display; pentagonal and octagonal board seals, all in ultramarine blue.



February 11, 1990: Launch of Soyuz TM 9. Cover taken into space aboard Progress 42, with the postmarks: "Rocket on transport trolley" from the Baikonur Cosmodrome on the day of the launch, in black; in ultramarine blue, the octagonal onboard MIR postmark with the date of 12/04/90, Cosmonautics Day; pentagonal and octagonal onboard MIR rubber seals.

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December 4, 1990: Docking of Soyuz TM 11 with the MIR, on which it carried the first space tourist, Japanese journalist Akiyama, whose newspaper paid 28 million dollars for the flight. Cover flown into space onboard MIR, featuring an octagonal postmark with an interchangeable-date and pentagonal on board rubber seal, both in black.



December 10, 1990: "Return of the Soyuz TM-9 crew, consisting of G.M. Manakov and G.M. Strelakov, along with the first Japanese journalist Toyohiro Akiyama, who were involved in geophysical and astrophysical research, biological and biotechnological experiments, and space materials science. The cover flown into space, cancelled on the day the 7th base crew's mission ended, had pentagonal and octagonal rubber on board seal affixed to it, and was brought back to Earth aboard Soyuz TM-9-

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April 12, 1991: Cosmonautics Day, cover carried into space aboard Soyuz TM 12, which carried the first British astronaut. On the front of the cover, there are the post office cancellations from Star City dated 12/4/91 (ordinary and two special pictorial ones for the 30th anniversary of Gagarin's flight in black), a pentagonal MIR seal in ultramarine blue, and on the reverse, an octagonal postmark with an interchangeable date display dated 26/05/91, marking the end of the work of the 8th crew.



October 4, 1991: Docking of Soyuz TM 13 with MIR, on which it carried the first Austrian cosmonaut. Cover with pentagonal and octagonal Mir onboard seals, and two additional octagonal postmark with movable date bridge, dated 04/10/91, the day of the docking, and 10/10/91, the day the 9th base crew finished their mission, all in black.

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Mars 19,1992: docking of Soyuz TM 14 (with Russian-German crew) at Kvant rear port of the MIR. Cover with self-inking plastic stamp with the mission emblem and writing in German (brought on board by the Progress M-11), pentagonal and octagonal Mir board seal, octagonal board postmark 19/03/92, docking day.



July 29, 1992: manually piloted docking of Soyuz TM-15 with Russian-French crew at MIR. Cover with special black pictorial postmark "Cosmonautics day 1992" of Stars City, pentagonal and octagonal board seal and on board postmark with date: 29/07/92 day of docking in ultramarine blue and 10/08/92 (in red) day of the return of the Soyuz TM-14 with the Frenchman Tognini on board.

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January 26, 1993: docking of the Soyuz TM-16 with the 13th base crew for the MIR on board. The Soyuz carried the APA (Androgynous Docking System) instead of the usual probe system. Cover with pentagonal and octagonal board seal and usual board octagonal postmark 26/1/1993, docking day.



July 1, 1993: launch of the Soyuz TM-17, with the 14th basic crew and the French J-P. Haigneré. As part of the Altair mission, the Frenchman continued the medical experiments started a year ago by Tognini during the Antares mission. Cover with postmarks: octagonal on board 22/07/93 Work completinon of EO-13, pentagonal and octagonal on board seal all in violet, French round seal by CNES for the Altair mission, in black.

9 - The MIR [15]



January 8, 1994: Launch of Soyuz TM-18 towards MIR with the 15th base crew on board, including Dr. V. Polyakov, who will remain in orbit for 427 days to conduct research and experiments aimed at interplanetary flights. Space-flown cover, postmarked with an octagonal postmark dated 14/1/94, the day the base crew's mission ended, along with pentagonal and octagonal MIR on board seals.



July 3, 1994: Soyuz TM-19, with the 16th crew on board, consisting of Russian Y. Malenchenko and Kazakh T. Musabaev, docked at the rear port of the Kvant module (which had been vacated by Progress M-23 on July 2). The cover, flown into space, features octagonal on-board postmarks from the day of docking and from 4/11/94, the day of the return to Earth and octagonal Mir board seal. On the reverse, there are the two personal seals of the cosmonauts.

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**October 10, 1994:** The Soyuz TM-20 docks at the forward hatch of MIR with the 17th crew on board, consisting of Russians Viktorenko, Kondako-Kondakova, and the German Ulf Merbold. On September 19, 1994, Merbold spent half an hour explaining life in space to 45 students at the ESA ESTEC research center in the Netherlands. Commemorative cover with octagonal on-board postmark, pentagonal and octagonal MIR board seals.



**September 5, 1995:** The Soyuz TM-22 docks with the MIR, and the crew includes the German astronaut Thomas Reiter, who, during his stay on board, conducts 14 biological experiments, 5 astrophysical experiments, 10 technological experiments, and 8 materials science experiments. Commemorative docking cover with an octagonal on-board postmark, and pentagonal and octagonal Mir board seal.



**August 17, 1996: Soyuz TM-24 was launched** with Claudie André-Deshays on board, the first French woman in space, the future Mrs. Haignerè, the only European woman to have visited two space stations. A cover flown into space with two on-board octagonal postmarks: 26/08/96 (50th Anniversary of the RKK "Energy" Enterprise) and 02/09/96 (completion of the EO 21 work program); pentagonal and octagonal MIR on-board rubber seals.



**September 2, 1996: Return of the Soyuz TM-23** with the 21st primary crew, consisting of the Russians Onufrienko and Usachev, who during six spacewalks installed a telescopic mast, solar panels, a multispectral scanner, exchanged containers of materials, and deployed a radar antenna (French astronaut Claudie Haignerè was aboard during the return flight). Commemorative undocking cover with an octagonal cancellation from the Russian segment post office of MIR, with a certificate of authenticity signed by Usachev on the reverse

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February 12, 1997: Soyuz TM-25 docked with Mir. The crew installed a second air generator (to double its output) inside the Kvant-1 module, where a fire broke out on February 23, caused by a lithium perchlorate canister used in the oxygen production system. Commemorative cover with double octagonal on-board postmarks dated 12.02.97 (day of docking) and 02.03.97 (end of the Base Crew 22 work program), and pentagonal and octagonal Mir on-board seals.



May 17, 1997: STS 84 Atlantis docks with the MIR, with NASA astronauts Precourt, Collins, Noriega, Lu, Foale on board, along with French astronaut Clervoy and Russian astronaut Kondakowa. In the cargo hold, there are supplies, a new air generator, and research equipment and materials. Commemorative cover with octagonal postmarks for 17/05/97 (Docking day) and 22/05/97 (Undocking day), and a new pentagonal on-board seal with 16.5 mm sides and the Russian coat of arms (in red), along with an octagonal MIR on board seal.



**June 2, 1998: Launch of STS 91 Discovery**, the last mission to the MIR. The astronauts studied combustion processes in zero gravity. The AMS (Alpha Magnetic Spectrometer) searched in vain for antimatter in the high radiation. This experiment led to two surprises: four times as many positrons as electrons were detected in near-Earth space. These particles should look identical. Slow-moving protons from the Sun are held for a long time in a 2,000 km magnetic field around the equator before flying towards the poles. *Commemorative flight cover, postmarks from the Kennedy Space Center post office: special Shuttle cancellation for the launch and large 4-stripe cancellation for the landing.*



**August 15, 1998: The Soyuz TM-28 docks with the MIR.** Baturin, in his capacity as security advisor to the Russian president, inspects the MIR. During their only spacewalk on September 15, 1998, Padalka and Avdeev repaired the solar panel connections on the Spektr module. A private postcard marking the 175th anniversary of the Dzerzhinsky Military Academy, canceled on land with triangular postmarks from the Polevaya post office; onboard MIR with official octagonal postmarks dated 15.08.98, the docking day, and 28.08.99, the day of undocking from MIR and the return of Soyuz TM-29 with which it was brought back to Earth, after 378 days in space; two pentagonal rubber MIR seals from the NPO "Energy" enterprise with the Soviet and Russian state emblems, and an octagonal MIR onboard postmark.

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22 February 1999: The Soyuz TM-29 docks with the MIR, with Russian cosmonaut Afanas'ev, French astronaut Haigneré, and Slovakian cosmonaut Bella on board. Bella completes the Stefaniak program and returns to Earth on February 28th. Haigneré deploys the amateur satellite Sputnik-99. Afanas'ev and Awdeev, during 2 EVAs, install a 6-meter antenna, set up experiments outside the MIR, and retrieve previous experiments. A cover commemorating the docking with an octagonal on-board postmark, an octagonal MIR on board seal, a pentagonal MIR on board seal, featuring the unofficial Soviet emblem, and a square MIR seal from RKK "Energy" Enterprise.



April 6, 2000: Soyuz TM-30 performs the final docking with MIR, carrying Sergei Zalyotin and Alexander Kaleri. After reactivating the station, they proceed with unloading the supplies from Progress M1-1, which docked with MIR on February 3, and M1-2, which arrived on April 27. After carrying out a series of repairs and experiments, on June 16 the crew undocked Soyuz from MIR and returned to Earth near Arkalik. Commemorative cover for the last crew on MIR with octagonal on-board postmarks: dated 06.04.00, the docking day, in black; dated 16.06.00, the undocking day, in red; pentagonal and octagonal MIR on-board seals; and the round postmark from RKK "Energy" Enterprise in blue.