

Glossary of Institutions of the Soviet Space Program

by Slava Gerovitch, MIT <slava@mit.edu>

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Academy of Sciences: an elite research society that controls a vast network of research institutes, including the Institute of Space Research. The Russian Academy of Sciences was established in 1724. In 1925, it was renamed the USSR Academy of Sciences. In 1991, the Russian Academy of Sciences was reestablished as the highest scientific institution of Russia. In 1967 the Academy formed its own group of cosmonauts, currently defunct.

Air Force Academy: founded in 1940 as the Military Academy of Command and Navigator Cadres of the Air Force in Monino near Moscow, on the basis of a division of the Zhukovskiy Air Force Academy. It functioned as the Air Force Academy (1946-1968) and the Gagarin Air Force Academy (1968-2008). In 2008 the Gagarin Academy merged with the Zhukovskiy Air Force Engineering Academy to form the Zhukovskiy and Gagarin Air Force Academy in Monino near Moscow.

Air Force Engineering Academy (Moscow): founded in 1920 as the Zhukovskiy Institute of Engineers of the Red Air Fleet. It functioned as the Zhukovskiy Air Fleet Academy (1922-1923), the Zhukovskiy Air Force Academy (1925-1946), the Zhukovskiy Air Force Engineering Academy (1946-1998), the Military Aviation Engineering University (1998-2002), the Zhukovskiy Air Force Engineering Academy (2002-2008). In 2008 the Zhukovskiy Academy merged with the Gagarin Air Force Academy to form the Zhukovskiy and Gagarin Air Force Academy in Monino near Moscow. In 2009, the Military Center for Education and Research of the Air Force was formed on the basis of the Academy, located both in Moscow and in Monino.

Baykonur Cosmodrome: The first Soviet spaceport was established in 1955 as the Scientific-Research Testing Range No. 5 (NIIP-5) near Tyuratam railway station in Kazakhstan. To mask the location of the cosmodrome, in 1961 Soviet officials claimed that it was located near the settlement of Baykonur, 370 km northeast of the actual launch site. In 1958, the spaceport town, originally called Zarya, was renamed Leninsk. In 1995, it was renamed Baykonur.

Central Aerohydrodynamic Institute: the leading center for aviation research, founded in 1918 by the Russian aviation pioneer Nikolay Zhukovskiy on the basis of the Aerodynamics Laboratory of the Moscow Higher Technical School and the Aviation Calculation-Testing Bureau in Moscow. In 1935 the Institute was relocated to an area near Moscow, later named Stakhanovo (1938), since 1947 the town of Zhukovskiy. Various divisions of the Institute later formed separate organizations, such as Andrey Tupolev's design bureau (1936) and the Gromov Flight-Research Institute (1941).

Central Scientific-Research Institute No. 2 of the Ministry of Defense (2 TsNII): a research center for theoretical and practical issues of air defense, including missile defense, early warning systems, and space weapons. The Institute was founded in 1957 in Kalinin (now Tver) on the basis of the Scientific-Research Anti-Aircraft Artillery Institute of the Air Defense. In 1960 the Institute was appointed the lead organization for air defense research at the Ministry of Defense. It also functioned under the name the Scientific-Research Institute of the Air Defense (NII PVO). In 1980 all research on early warning systems and space defense systems was transferred to the Special Scientific Research Institute No. 45 (45 SNII) of the Ministry of Defense in Moscow.

Central Scientific-Research Institute No. 4 of the Ministry of Defense (4 TsNII): a leading center of rocketry research at the Ministry of Defense. It was founded in May 1946 as the Scientific-Research Reactive Institute of the Chief Artillery Directorate (the Scientific-Research Institute No. 4, or NII-4). In August 1946 a large group of Institute researchers was sent to Germany to study rocket technology. The Institute worked on issues of missile defense, navigation and ballistics for tactical, mid-range, and intercontinental ballistic missiles, test range telemetry systems, ground tracking stations, tracking ships, and an early concept of the Earth satellite (Sputnik). In 1957 the Institute created a Coordination-Computation Center for ballistics research supporting ICBM testing and space launches. In late 1959 the Institute was transferred to the Strategic Missile Forces. In 1961 it served as the lead organization for ballistics studies supporting Gagarin's flight. Later the Institute focused on the development of mid-range and intercontinental ballistic missiles complexes. In 1968 the space-related departments formed a separate branch, which in 1972 was transformed into the Central Scientific-Research Institute of Space Assets No. 50 (50 TsNIIKS), later the Tikhonravov Central Scientific-Research Institute No. 50 of the Military-Space Forces (50 TsNII VKS). In 1997, 4 TsNII was reorganized to include 45 TsNII and 50 TsNII.

Central Scientific-Research Institute No. 50 of the Ministry of Defense (50 TsNII): established in 1972 as the Central Scientific-Research Institute of Space Assets No. 50 (50 TsNIIKS) on the basis of the military space research branch of the Central Scientific-Research Institute No. 4 (4 TsNII) in Bolshevo (now Yubileynyy) near Moscow. Later 50 TsNIIKS became the Tikhonravov Central Scientific-Research Institute No. 50 of the Military-Space Forces (50 TsNII VKS). In 1997, 50 TsNII was incorporated back into 4 TsNII.

Central Scientific-Research Institute of Machine Building (TsNIIMash): The leading Soviet/Russian rocketry research institution, established in 1946 as the Scientific Research Institute No. 88 of the Ministry of Armaments. In 1956 its design department formed a separate Experimental Design Bureau No. 1, led by Sergey Korolev, while the Institute focused on research and experimental testing. In 1967 the Institute was renamed the Central Scientific Research Institute of Machine Building under the Ministry of General Machine Building. Currently it is subordinated to the Federal Space Agency (Roskosmos). The Mission Control Center is part of the Institute. The Institute is located in the town of Korolev (formerly Podlipki, later Kaliningrad) near Moscow.

Central Specialized Design Bureau (TsSKB): The lead organization responsible for the design of reconnaissance satellites. It was set up in 1959 as Branch No. 3 of OKB-1 in Kuybyshev (now Samara), at the missile plant that manufactured R-7 ICBMs and later produced booster rockets

Vostok, Molniya, and Soyuz (later named Progress plant). In 1974 the Bureau became a separate organization. In 1959-2003, it was led by Chief Designer Dmitriy Kozlov. In 1996 the Bureau and the Progress plant formed the State Scientific-Production Rocket-Space Center TsSKB-Progress.

Chief Directorate of Space Assets (GUKOS): established in 1964 as the Central Directorate of Space Assets (TsUKOS) of the Strategic Missile Forces to direct the development and deployment of military space assets, including spaceports and tracking stations. In 1970 TsUKOS was transformed into the Chief Directorate of Space Assets (GUKOS). In 1981 GUKOS was pulled from the Strategic Missile Forces and subordinated directly to the General Staff of the Ministry of Defense. In 1992 the Military Space Forces formed a separate service branch, but in 1997 they were re-subordinated to the Strategic Missile Forces. In 2001 the Space Forces again separated from the Strategic Missile Forces and formed a separate service branch.

Cosmonaut Training Center: the main cosmonaut research and training facility and the base of the largest cosmonaut unit in Russia. The Center was secretly established in 1960 near Shchelkovo in the Moscow region. In 1969, after Gagarin's death, the Center was renamed Yu. A. Gagarin Scientific Research Center for Cosmonaut Training. In 1995 the Center merged with an Air Force test and training regiment and formed Yu. A. Gagarin Russian State Scientific Research and Testing Center for Cosmonaut Training. Initially subordinated to the Ministry of Defense, in 2009 the Center was transferred under the jurisdiction of the Federal Space Agency (Roskosmos) and the area around the Center was officially designated as Star City.

Federal Space Agency (Roskosmos): the central government agency responsible for the Russian space program and aerospace research. Established in 1992, it oversees the Cosmonaut Training Center, the Central Scientific Research Institute of Machine Building, the Energia Space-Rocket Corporation, and many other design and production organizations.

Flight-Research Institute: established in 1941 on the basis of several departments of the Central Aerohydrodynamic Institute in Zhukovskiy near Moscow. In 1947 the Institute organized a test pilot school. The first group of cosmonauts trained on spacecraft simulators created at the Institute. In 1965 the Institute developed a flying microgravity laboratory on board a Tu-104 aircraft for experiments and cosmonaut training. In 1977 the Institute set up a group of test pilots for the Buran shuttle program. In 1981-2002 the Institute housed its own group of cosmonauts.

Granit-Elektron Business Group: a developer of defense radio-electronics. In 1939 the Institute of Naval Remote Control and Automatics (the Scientific-Research Institute No. 49, or NII-49) was created in Leningrad (now St. Petersburg) to develop radio control systems for the Navy and the Air Force. In 1947 the Institute was appointed the lead developer of radar systems for submarines. In 1956 the Institute started working on control systems for anti-ship cruise missiles. In 1947-1968 the Institute developed command gyroscopic devices for ground-based and naval missiles. In 1966 the Institute was renamed the Central Scientific-Research Institute of Instruments of Automatics (TsNIIPA). In 1971 TsNIIPA was renamed the Central Scientific-Research Institute Granit. In 2006 Granit was reorganized into the Granit-Elektron Business Group.

Institute of Applied Mathematics: a leading applied mathematics institution for solving problems of nuclear physics, rocket engineering, and space exploration. It was established in 1953 as the Division of Applied Mathematics of the Mathematical Institute of the Soviet Academy of Sciences, led by Academician Mstislav Keldysh. In 1966 the Division separated from the Mathematical Institute and formed the Institute of Applied Mathematics. The Division/Institute performed trajectory calculations for Sputnik and later Soviet spacecraft. In 1966 the Institute set up the Ballistics Center for calculating optimal and actual trajectories, correcting burns, rendezvous and landing maneuvers, and spacecraft stabilization operations.

Keldysh Research Center: a leading research center for rocket engines and space power systems. In 1933 the Reactive Scientific-Research Institute (RNII) was established in Moscow as the result of a merger between the Moscow Group for the Study of Reactive Motion (GIRD), headed by Sergey Korolev, and the Leningrad Gas Dynamics Laboratory (GDL), in which Valentin Glushko led work on liquid-propellant engines. The Institute developed Katyusha multiple rocket launchers. In 1938 RNII was renamed the Scientific-Research Institute No. 3 (NII-3) and conducted research on cruise missiles, jet aircraft engines, and ballistic rockets. In 1944 NII-3 was transferred under the People's Commissariat of Aviation Industry and renamed the Scientific-Research Institute No. 1 (NII-1). The Institute focused on the development of engines for ballistic rockets, cruise missiles, and a rocket plane (stratospheric bomber aircraft). NII-1 was later renamed the Scientific-Research Institute of Thermal Processes (NII TP). In 1946-1978 the Institute was headed by Academician Mstislav Keldysh. In 1995 the Institute was renamed the Keldysh Research Center.

Military-Space Academy: founded in 1922 as the Military-Technical School of the Red Air Fleet in Petrograd (later Leningrad, now St. Petersburg). It functioned as the Leningrad Air Force Academy of the Red Army (1941-1946), the Leningrad Air Force Engineering Academy (1946-1955), the Mozhayskiy Air Force Engineering Academy (1955-1972), the Mozhayskiy Military Engineering Academy (1972-1973), the Mozhayskiy Military Engineering Institute (1973-1990), the Mozhayskiy Military Engineering-Space Institute (1990-1993), the Mozhayskiy Military Engineering-Space Academy (1993-1998), the Mozhayskiy Military Engineering-Space University (1990-1993), and the Mozhayskiy Military-Space Academy (1998-present).

Ministry of General Machine Building: the central agency overseeing all ballistic missile and space programs in the Soviet Union. The Ministry was established in 1965 on the basis of the Seventh Chief Directorate of the State Committee for Defense Technology. In 1991 it was abolished; some of its functions related to space were assumed by the Federal Space Agency (Roskosmos).

Mission Control Center: established in 1965 as the Coordination-Computation Center on the basis of the Computation Center of the Scientific Research Institute No. 88 in Kaliningrad (now Korolev) near Moscow. In 1973-1977 it was reorganized into the Mission Control Center for piloted programs. The Center controlled the 1975 mission of the Apollo Soyuz Test Project and since 1977 served as the main control center for all Soviet/Russian piloted and robotic space missions. Currently the Center is subordinated to the Central Scientific Research Institute of Machine Building and controls the Russian segment of the International Space Station.

OKB-1: the organization that designed the first Soviet ballistic missiles, ICBMs, Sputnik, Vostok, Voskhod, Soyuz, and Salyut spacecraft, and Vostok, Soyuz, N-1, and Energiya launchers. It was formed in 1946 as the Experimental Design Bureau No. 1 (OKB-1), led by Sergey Korolev, under the Scientific Research Institute No. 88. In August 1956 it became a separate institution under the State Committee for Defense Technology. In 1966, after Korolev's death, it was renamed the Central Design Bureau of Experimental Machine Building (TsKBEM) under the Ministry of General Machine Building and led by Vasiliy Mishin. In 1966 the Bureau formed its own group of civilian engineer cosmonauts. In 1974 it was renamed the Scientific-Production Association Energiya and led by Valentin Glushko. In 1994 it became the Rocket-Space Corporation Energiya. The Corporation is located in the town of Korolev (formerly Podlipki, later Kaliningrad) in the Moscow region.

OKB-23: currently a leading aerospace company, the producer of the Proton rockets and the developer of the Angara rocket. In 1951 Vladimir Myasishchev became the chief designer of the Experimental Design Bureau No. 23 (OKB-23) at the Aviation Plant No. 23 (after 1961 the Khrunichev Machine Building Plant) in Fili (in Moscow). OKB-23 designed bomber aircraft. In 1960 the factory and its bureau were subordinated to the Experimental Design Bureau No. 52 as its Branch No. 1 and switched to the design of space launchers and spacecraft. In the late 1970s OKB-23 became a separate design bureau named Salyut. In 1981-1988 Salyut was subordinated to the Scientific-Research Association Energiya. In 1988 Salyut again became a separate design bureau. In 1993 the Salyut Design Bureau and the Khrunichev Machine Building Plant formed the Khrunichev State Space Scientific-Production Center.

OKB-52: the developer of cruise missiles, UR-500K Proton and other UR-series rockets, and the Almaz space station. In 1955 the Joint Design Bureau No. 52 (OKB-52) of the Ministry of Aviation Industry was established in Reutov near Moscow on the basis of a special design group for navy cruise missiles led by Vladimir Chelomey. In 1958 the Scientific Research Institute No. 642 (NII-642) became Branch No. 2 of OKB-52. In 1960 the Experimental Design Bureau No. 23 (OKB-23) became Branch No. 1 of OKB-52. In 1962-1965 the Experimental Design Bureau No. 301 (OKB-301) was briefly included in OKB-52 as Branch No. 3. In 1965 OKB-52 was transferred from the State Committee on Aviation Technology to the Ministry of General Machine Building and renamed the Central Design Bureau of Machine Building (TsKBM). In 1983 it formed the Scientific-Production Association of Machine Building. In 1972-1987 the Bureau/Association housed its own group of test cosmonauts.

OKB-276: founded in 1946 as a design bureau at the State Union Experimental Plant No. 2 in Kuybyshev (now Samara). Later designations: the Experimental Design Bureau No. 276 (OKB-276) (1953-1967), the Design Bureau Trud (1967-1981), the Scientific-Production Association Trud (1981-1991), and the State Scientific-Production Company Trud (1991-1994). Currently it is called the Samara Scientific-Technical Complex. OKB-276 designed jet engines for aircraft; in the late 1950s it started working on rocket engines for ICBMs and space launchers. In particular, it designed engines for the N1 lunar rocket. In 1949-1994, this bureau was led by Nikolay D. Kuznetsov.

OKB-301: founded in 1939 as the Experimental Design Bureau, led by the Chief Designer Semyon Lavochkin, at the Aviation Factory No. 301 in Khimki near Moscow. The Bureau

(OKB-301) developed fighter aircraft, jet fighters, air-to-air and surface-to-air missiles, and *Burya* supersonic strategic cruise missile. In 1962-1964 the Lavochkin Machine Building Factory functioned as Branch No. 3 of the Experimental Design Bureau No. 52, led by the Chief Designer Vladimir Chelomey, and developed missiles for the Navy. In 1965 the factory and its design bureau were transferred to the Ministry of General Machine Building and assigned the development and production of military satellites and robotic spacecraft for missions to Mars, Venus, and the Moon. In 1965-1971, the Lavochkin Experimental Design Bureau was led by the Chief Designer Georgiy Babakin. The factory and the design bureau later formed the Lavochkin Scientific-Production Association.

OKB-456: the leading developer of liquid propellant rocket engines. In 1946 the Experimental Design Bureau of Special Engines, led by the Chief Designer Valentin Glushko, was relocated from Kazan to Khimki near Moscow and reorganized into the Experimental Design Bureau No. 456 (OKB-456). The Bureau developed the engines for the first Soviet ballistic missiles, ICBMs, and space launchers Vostok, Soyuz, Proton, Zenit, and Energiya. In 1967, OKB-456 was renamed the Design Bureau of Power Machine Building (Design Bureau Energomash). In 1974, as Glushko became the head of the Scientific-Production Association Energiya, Energomash became part of the Energiya Association. In 1990 Design Bureau Energomash with its factory and branches separated from Energiya and formed the Scientific-Production Association Energomash.

Scientific-Production Association Khartron: a leading organization for the design, production, and support of control systems for missiles, launchers, and spacecraft. It was founded in 1959 in Kharkov, Ukraine, as the Special Design Bureau No. 692 and led by the Chief Designer Boris Konoplev, soon succeeded by Vladimir Sergeev. The Bureau was created to design autonomous control systems for missiles developed at the Experimental Design Bureau No. 586 led by the Chief Designer Mikhail Yangel. The Bureau later functioned under the names the Design Bureau of Electrical Instrument Building (the code name P.O. Box 67), the Scientific-Production Association Elektropribor, and the Scientific-Production Association Khartron. It developed control systems for SS-18 and SS-19 ICBMs, for research and service modules of the Mir space station, for the Energiya booster, and for the Zarya cargo module of the International Space Station.

Scientific-Production Association of Automatics: a leading developer of control systems for ballistic missiles. In 1952 the Special Design Bureau No. 626 (SKB-626) was established in Sverdlovsk (now Yekaterinburg). The Bureau was staffed with a group of specialists from the Scientific-Research Institute No. 885. Nikolay Semikhatov served as the Bureau's Chief Designer from 1953-1992. In 1956 SKB-626 was reorganized into the Scientific-Research Institute of Automatics. The Institute developed control systems for submarine-based missile complexes and for the SS-1 Scud tactical ballistic missile. In 1976 the Institute became part of the Scientific-Production Association of Automatics.

Scientific-Production Association of Measuring Technology (NPO IT): a leading developer of sensor and telemetry systems for rocketry and spacecraft. The Scientific-Research Institute of Measuring Technology (NII IT) was established in Kaliningrad (now Korolev) in 1966 on the basis of Scientific-Research Division 5 of the Central Scientific-Research Institute of Machine

Building (TsNIIMash). In 1978 NII IT formed the Scientific-Production Association of Measuring Technology (NPO IT).

Scientific-Production Center for Automatics and Instrument Building (NPTs AP): a leading center for the design of autonomous control systems (inertial guidance systems) for missiles, space launchers, and spacecraft. In 1963 Division 1 of the Scientific-Research Institute No. 885 (NII-885) separated from the Institute and formed the Scientific-Research Institute for Automatics and Instrument Building (NII AP) in Moscow, led by the Chief Designer Nikolay Pilyugin. In 1992 NII AP and its experimental factory formed the Scientific-Production Association of Automatics and Instrument Building (NPO AP). In 1997 the Association was reorganized into the Pilyugin Scientific-Production Center for Automatics and Instrument Building (NPTs AP).

Scientific-Research Center for Electronic Computer Technology (NITsEVT): a leading developer of computer hardware and software. In 1948, part of the Scientific-Research Institute No. 885 formed a separate Special Design Bureau No. 245 (SKB-245) in Moscow to develop electronic digital computers. SKB-245 designed some of the first Soviet computers: Strela, Ural-1, M-20, and the M-111 computer complex. In 1958 SKB-245 was transformed into the Scientific-Research Institute of Electronic Mathematical Machines (NIEM). NIEM developed general purpose computers M-205 and M-220, specialized models 5E61, Radon, and Klen, and the first onboard computer Argon. In 1968 NIEM was included in the newly formed Scientific-Research Center for Electronic Computer Technology (NITsEVT), created for the development of the Unified Series of computers (ES EVM) for the socialist bloc. NITsEVT developed hardware, peripherals, and software for the Unified Series, and the onboard computers of the Argon series. In 1986 the onboard computer division of NITsEVT formed a separate institution, the Scientific-Research Institute Argon.

Scientific-Research Institute of Applied Mechanics (NII PM): a leading developer of gyroscope devices for missiles, space launchers, and spacecraft. In 1946 the Scientific Research Institute No. 10 of the Ministry of Ship Building Industry was established to develop gyroscopes for the first Soviet ballistic missiles. In 1955 it formed the Scientific-Research Institute No. 944 (NII-944). In 1962 it was transferred to the State Committee on Radio-Electronics and in 1965 to the Ministry of Radio (Engineering) Industry. In 1965 NII-944 was reorganized into the Scientific-Research Institute of Applied Mechanics (NII PM) of the Ministry of General Machine Building. In 1978-1991 the Institute was part of the Rotor Scientific-Production Association. Viktor Kuznetsov served as the Institute's Chief Designer from its inception until 1991. In 1992 the Institute became the Kuznetsov Scientific-Research Institute of Applied Mechanics of the Committee on Defense Branches of Industry. In 1994 the Institute was subordinated to the Russian Aerospace Agency, now Federal Space Agency (Roskosmos). In 2006 the Institute became a branch of the Center for Ground-Based Space Infrastructure (TsENKI).

Scientific-Research Institute of Micro-Instruments (NII MP): a leading developer of electronic equipment for communications and reconnaissance satellites and onboard computers for spacecraft. The Institute was created in 1962 as the Scientific-Research Institute No. 335 (NII-335), the lead organization of the Scientific Center for Micro-Electronics in Zelenograd near Moscow. In 1966 the Institute was renamed the Scientific-Research Institute of Micro-

Instruments (NII MP). The Institute later joined the ELAS Scientific-Production Association. The Institute developed the Salyut series of onboard computers for spacecraft.

Scientific-Research Institute of Precision Technology (NII TT): a leading developer of integrated circuits for electronic equipment, including onboard computers for spacecraft. The Institute was created in 1963 as the Scientific-Research Institute No. 336 (NII-336), part of the Scientific Center for Micro-Electronics in Zelenograd near Moscow. The Institute was later renamed the Scientific-Research Institute of Precision Technology (NII TT). The Institute developed Tropa, Posol, and other types of integrated circuits, produced at Angstrom Factory.

Scientific-Research Institute of Precision Instruments (NII TP): founded in 1952 as the Scientific-Research Institute No. 648 (NII-648) on the basis of a group of specialists from the Scientific-Research Institute No. 885 (NII-885) and Factory No. 449 in Babushkin near Moscow to develop radio control systems for aviation and naval missile weaponry. In 1956 the Institute began space-related research on radio control systems for ground control and docking. In 1957 the Institute was transferred to the State Committee on Radio-Electronics, in 1965 – to the Ministry of General Machine Building. In 1966 the Institute was renamed the Scientific-Research Institute of Precision Instruments (NII TP). The Institute developed *Igla* rendezvous system and later *Kurs* rendezvous system for spacecraft rendezvous and docking.

Scientific-Research Institute of Space Instrument Building (NII KP): a leading developer of ground-based and onboard control systems for missiles, space launchers, and spacecraft. The Scientific-Research Institute No. 885 (NII-885) of the Ministry of Communications Equipment Industry was established in Moscow in 1946 on the basis of the Krasnaya Zarya factory, evacuated from Leningrad during World War II. The chief designer of the control system for the R-1 ballistic rocket Mikhail Ryazanskiy was appointed Chief Engineer of the Institute. He subsequently served as the Institute's Director (1955-1965) and Chief Designer (1955-1986). NII-885 gave birth to several separate institutions: the Special Design Bureau No. 245 (SKB-245) was formed in 1948 to develop electronic digital computers, the Scientific-Research Institute No. 648 (NII-648) separated from NII-885 in 1952 to develop radio control systems for aviation and naval missile weaponry. In 1963 Division 1 of NII-885 separated from the Institute and formed the Scientific-Research Institute for Automatics and Instrument Building (NII AP) to work on autonomous control systems (inertial guidance systems) for missiles, space launchers, and spacecraft. NII-885 focused on the development of ground-based radio control systems. In 1978 NII-885 and the Radiopribor Factory formed the Radiopribor Scientific-Production Association. In 1985 the Scientific-Research Institute of Space Instrument Building (NII KP) was formed under the Ministry of General Machine Building.

Special Scientific-Research Institute No. 45 of the Ministry of Defense (45 SNII): established in 1961 on the basis of the Special Computation Center No. 4 (SVTs-4) of the Fourth Chief Directorate of the Ministry of Defense in Moscow, which was created to support the development of telemetry, computational, and firing systems for the A-35 missile defense system. The Institute also created the Center for Control of Outer Space. In 1980 all research on early warning systems and space defense systems was transferred to the Institute from the Central Scientific-Research Institute No. 2 of the Ministry of Defense (2 TsNII) in Kalinin.

Specialized Experimental Design Bureau of Space Technology (SOKB KT): a leading developer of spacecraft control panels and simulators. Sergey Darevskiy's laboratory at the Zhukovskiy branch of the Flight Research Institute (LII) near Moscow developed the first control panels, instrument boards, and simulators for Soviet spacecraft. In 1967 this laboratory formed the Specialized Experimental Design Bureau within the Institute. In 1971 the Bureau split off from LII and formed a separate organization. In 1983 the Bureau again merged with the Flight Research Institute branch to become part of the Scientific-Research Institute of Aviation Equipment (NIIAO). In 1997 the Bureau was reestablished within NIIAO as the Specialized Experimental Design Bureau of Space Technology. The Bureau designed information display and manual control systems for the Vostok, Voskhod, Soyuz, Almaz, Salyut, and Buran programs.

State Flight-Testing Center: established in 1926 as the Scientific-Testing Institute of the Air Force (NII VVS RKKA) on the basis of the Scientific-Experimental Airfield of the Air Force on the Khodynka field in Moscow. In 1935 the Institute moved to Shchelkovo near Moscow. It functioned as the State Red-Banner Scientific-Testing Institute of the Air Force (GK NII VVS, 1944-1965), the State Scientific-Testing Red-Banner Institute of the Air Force No. 8 (8 GNIKI VVS, 1965-1967), the Chkalov State Scientific-Testing Red-Banner Institute of the Air Force No. 8 (8 GNIKI VVS, 1967-1990), Chkalov State Flight-Testing Center of the Ministry of Defense (GLITs, 1990-present). The Center's headquarters is in Akhtubinsk near Astrakhan; various branches are located on the Chkalovskiy Airfield in Shchelkovo, in Volsk near Saratov, and in Nalchik (Kabardino-Balkariya). In 1978 the Institute set up a group of test pilots for the Buran shuttle program. In 1987-1996 the Institute/Center housed its own group of cosmonauts.

Zvezda Scientific-Production Company: a leading developer of life support systems, space suits, ejection seats, and crew and passenger rescue systems for aircraft and spacecraft. In 1952 the Ministry of Aviation Industry set up the Experimental Factory No. 918 with a design bureau in Tomilino near Moscow to develop safety equipment for the crews of high-speed and high-altitude aircraft. In the 1960s the factory and the bureau began developing space suits for Soviet cosmonauts, starting with Yuriy Gagarin. Factory No. 918 later functioned under the code names P.O. Box 1052, P.O. Box A-3927, and Zvezda Machine Building Factory. In 1994 the factory and its bureau became Zvezda Scientific-Production Company. This organization was headed by the Chief Designer Semyon Alekseev in 1952-1964 and by the Chief Designer Gay Severin in 1964-2008.