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APOLLO SOYUZ TEST PROJECT
FIRST INTERNATIONAL MANNED SPACE FLIGHT

July 15-24, 1975



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The Crews

Apollo Commander -- Thomas P. Stafford, Maj. Gen. USAF
Command Module Pilot -- Vance D. Brand
Docking Module Pilot -- Donald K. Slayton

Soyuz Commander -- Alexey A. Leonov, Brig. Gen. Soviet Air
Force
Flight Engineer -- Valeriy N. Kubasov

Mission Duration -- Nine days, eight hours, 18 minutes
from Soyuz launch to Apollo landing



Objective of Mission

The Apollo Soyuz Test Project mission was planned to accomplish spacecraft rendezvous, docking, undocking, crew transfer, interaction of control centers, and interaction of spacecraft crews.

The development of the compatible docking systems enhances the safety of manned flights in space and provides the opportunity for conducting joint experiments in the future. The new docking system also provides the basis for a standardized international system for docking of manned spacecraft.

Soyuz and Apollo Launch to Orbit

The Soyuz spacecraft with Cosmonauts Leonov and Kubasov aboard was launched from the Baikonur Cosmodrome near Tyuratam in the Kazakh, Soviet Socialist Republic, at 8:20 am Eastern Daylight Time (EDT) on July 15, 1975. The spacecraft was inserted into a 186.3 x 221.9 kilometer (km) [100.6 x 119.8 nautical mile (nm)] orbit having an inclination of 51.78 degrees and a period of 88.52 minutes.

The Apollo Astronauts Stafford, Brand, and Slayton arrived at the Kennedy Space Center Launch Complex 39B and entered the Apollo spacecraft at 1:20 pm EDT, 5 hours Soyuz ground elapsed time (SGET).

The first of two maneuvers to circularize the Soyuz orbit was begun near the end of the fourth orbit with a resulting parameter of 192.4 x 231.7 km (103.9 x 125.1 nm).

The Apollo spacecraft was launched from Launch Complex 39B, Kennedy Space Center, Florida, on July 15 at 3:50 pm EDT (7½ hours after the Soyuz launch). Apollo was inserted into a 154.7 x 173.3 km (83.5 x 93.6 nm) orbit with an inclination of 51.75 degrees and a period of 87.63 minutes.

Orbital Operations

The transposition, docking, and extraction of the docking module (DM) from the S-IVB/instrument unit (IU) occurred as planned; some of these events were video taped and played back to Earth. Quality of the television (TV) signal via the Applications Technology Satellite 6 (ATS-6) was excellent.

The Apollo circularization maneuver of 5.5 meters per second (mps) [18 feet per second (fps)] was performed at 7:35 pm EDT and produced an orbit of 172.0 km (93.0 nm).

Following the Apollo crew rest period on July 16, the crew received instructions to remove the docking probe which had stuck and they successfully removed it. However, approximately one revolution was devoted to this effort and making up for the lost time occupied crew and flight controllers for the rest of the day.

The Soyuz circularization maneuver took place at 8:43 am EDT, July 16, and resulted in a near circular orbit of 229 km (124 nm). All systems in the Soyuz were functioning normally. TV camera operation was checked and live TV was received on Earth.

Docking Module (DM) activation was accomplished with live TV of the activities. An Apollo phasing burn was accomplished at 4:10 pm EDT, changing orbital parameters slightly from 237.2 x 173.7 km (128.2 x 93.9 nm) to 234.7 x 172.6 km (124.7 x 93.3 nm). Apollo crew rest began on schedule at 9:20 pm EDT.

Rendezvous and Docking

On July 17, the rendezvous was carried out with a series of Apollo maneuvers and final braking maneuvers placed the spacecraft in an approximate 229.4 km (124.0 nm) circular orbit.

At 12:03 pm EDT, excellent quality TV was received of the Soyuz vehicle prior to locking. Soyuz and Apollo contact and docking occurred at 12:09 pm EDT (about 650 miles from Portugal over the Atlantic Ocean) with retraction completed at 12:12 pm EDT.

Joint Activities

At 2:23 pm EDT Soviet Premier Brezhnev relayed a message to the crews complimenting them on their achievements.

Upon opening DM hatch 2, the astronauts noticed a glue or acetate odor. Following scrubbing of the odor, the first transfer was initiated. Hatch 3 was opened at 3:17 pm EDT and the first handshake between Astronaut Stafford and Cosmonaut Leonov occurred at 3:19 pm EDT (approximate Earth location over Amsterdam).

President Ford then talked with the Apollo and Soyuz crew members. National flags were exchanged and the international certificates in the Soyuz spacecraft were signed. Total transfer time was approximately 7 hours and 29 minutes.

The crew was awakened at 3:59 am EDT, July 18. Earth observation passes over the Himalayan mountains, Africa, and Arabian peninsula were conducted on schedule.

Following preparations for the remaining crew transfers, the Command Module Pilot Brand and Apollo Commander Stafford entered the DM at 5:05 am EDT, July 18. Brand entered the Soyuz spacecraft and Stafford escorted Leonov to the Apollo spacecraft. During his visit to the Soyuz spacecraft, Brand completed the signing of the joint Flight Certificate. The third transfer was accomplished with Stafford entering the Soyuz spacecraft and Brand escorting Kubasov to the Apollo spacecraft. The fourth transfer began with Kubasov and Slayton entering the Docking Module. Kubasov returned to the Soyuz spacecraft and Slayton and Stafford returned to the Apollo spacecraft. With the closure of hatch 3 at 5 pm EDT, the joint activities were terminated for the day. Total time for the last three transfers was about 11 hours and 55 minutes. Total time for the four transfers was approximately 19 hours and 24 minutes. Additional major crew activity included joint experiments, TV tours of each spacecraft, a joint press conference, and various activities symbolic of this first international space flight. TV and voice communication during the press conference were excellent.

The Apollo crew was awakened at 4:16 am EDT, July 19, and preparations were commenced for Soyuz and Apollo first undocking. The Apollo spacecraft was undocked from the Soyuz spacecraft at approximately 8:02 am EDT, July 19 when the spacecraft were not in communications with the ground stations or ATS-6. With acquisition of signal, TV transmission showed the spacecraft a short distance apart and in a station-keeping mode. Quality of TV coverage of Soyuz during the first undocking varied from poor to excellent.

Following undocking, the simulated Solar Eclipse was performed with the Apollo spacecraft blocking the sun from the Soyuz spacecraft. The crew through the simulated eclipse went very well.

The second docking of the two spacecraft was accomplished at 8:34 am EDT with the Soyuz docking system active. Reaction Control System (RCS) propellant utilization during the second docking was higher than predicted. Good quality TV was transmitted during the docking operations.

Final undocking was completed at 11:26 am EDT. Prior to the separation maneuver, the Soyuz crew obtained photographs of the Apollo spacecraft.

The separation maneuver of 1.9 feet per second was performed at 2:47 pm EDT.

Soyuz Deorbit and Landing

The Soyuz deorbit maneuver occurred at approximately 6:11 am EDT, July 21.

The Soyuz Descent Vehicle landed safely within 11 km (6 nm) of the target point at Kazakhstan, northeast of the Baikonur Cosmodrome at 6:51 am EDT, July 21.

Following the successful landing, the Soyuz crew members were returned to the Baikonur Cosmodrome where they were pronounced in good health.

Apollo Orbital Operations

The Apollo spacecraft continued in orbit with the crew performing experiment operations following crew wake-up at 7:07 am EDT, July 21.

In preparation for Docking Module jettison, an RCS trim burn of 2.3 mps (7.4 fps) was performed. The resultant orbital parameters were 223.6 x 216.1 km (120.9 x 116.8 nm).

At approximately 5:01 pm EDT, July 22, a leak was reported in Electrophoresis Experiment, MA-011, sample No. 7. Sample No. 7 is a duplicate of sample No. 3 which was processed earlier without incident. Sample No. 7 was wrapped in a towel, placed in a fecal bag, and stowed in Command Module locker A-6 for return to Earth and subsequent engineering evaluation.

The Command Module tunnel was vented at 3:45 pm EDT, July 23 in preparation for Command Module/Docking Module undocking. Undocking occurred at 3:45 pm EDT. Docking Module orbital life was estimated at approximately 18 days.

The first Docking Module separation maneuver was performed at 4:20 pm EDT. The 1.0 sec SPS engine firing produced a velocity change of 31.1 fps and a resultant orbit of 232.2 x 219.0 km (125.5 x 118.4 nm). Docking Module separation maneuver number 2 occurred at 8:32 pm EDT. The SPS burn of 0.9 sec changed the velocity by 26.7 fps and produced spacecraft orbital parameters of 223.1 x 211.1 km (120.6 x 114.1 nm).

Docking Module separation and post separation motion went as planned. The crew reported the Docking Module motion was as desired for the MA-089 Doppler experiment.

Deorbit and Landing

The deorbit maneuver was made at 4:38 pm EDT. Command Module/Service Module separation occurred at about 4:51 pm EDT. Drogue and main chutes were manually deployed; landing occurred at 5:18 pm EDT in the Pacific Ocean at approximately 163 degrees west longitude and 22 degrees north latitude about 500 km (270 nm) west of Honolulu. The Command Module landed in a stable 2 position (inverted) about 7.4 km (4 nm) from the prime recovery ship, USS New Orleans.

Recovery

Following landing, the recovery helicopter dropped swimmers who installed the flotation collar and attached a life raft. The crew and Command Module were transferred to the prime recovery ship USS New Orleans by crane. After flight deck ceremonies, it became evident from crew interviews and medical examinations that they were experiencing eye and lung discomfort and had breathed smoke or some other irritant during the latter portions of descent. Subsequent discussions with the crew and spacecraft data indicated that the Earth Landing System (ELS) logic and automatic switches which enable the ELS circuits had not been activated on time. As a result, the Apex cover and drogues did not jettison as scheduled and were operated manually without first disabling the RCS thrusters. With the Command Module oscillating on the drogues, the still-enabled RCS system began firing rapidly for about 30 seconds to correct the Command Module rates. During this time, RCS combustion products, including a small amount of nitrogen tetroxide entered the spacecraft through the cabin pressure relief valves which are configured at this altitude to permit outside air flow into the cabin to equalize the inside and outside pressure. The gas ingestion caused the reported cloud in the cabin. The automatic system was then commanded by the two ELS switches disabling the RCS. Once the RCS was off, fresh air was drawn into the cabin until landing. The main chutes were manually deployed at about 9,000 ft., about 6 seconds before the late automatic sequence would have commenced. Once the spacecraft was on the water the crew donned oxygen masks. The post landing vent system was activated when the spacecraft uprighted itself, and the side hatch opened. With the cabin cleared by these actions, the crew remained inside for normal recovery. Following ship-board ceremonies which included a telephone call from President Ford, the crew was kept under observation in the ship's sick bay. After leaving the ship they were transferred to Tripler General Hospital for further observation. Although their general health was good, the crew remained in Hawaii until August 8 before flying to Washington for a visit to the White House and a press conference.

Apollo Soyuz Test Project Objectives and Experiments

Primary Objectives

The following were the ASTP primary objectives that were achieved:

- Perform spacecraft rendezvous;
- Perform spacecraft docking and undocking;
- Conduct intervehicular crew transfer;
- Demonstrate the interaction of US and USSR control centers;
- Demonstrate the interaction of US and USSR spacecraft crews.

Experiments

The following experiments were performed:

MA-083	Extreme UV Survey
MA-088	Helium Glow
MA-059	UV Absorption
MA-048	Soft X-Ray
MA-014	Electrophoresis Experiment - German
MA-010	Multipurpose Furnace
MA-060	Interface Marking in Crystals
MA-085	Crystal Growth from the Vapor Phase
MA-011	Electrophoresis Technology
MA-106	Light Flash
MA-136	Earth Observations and Photography
MA-041	Surface Tension Induced Convection
MA-150	U.S.S.R. Multiple Material Melting
AR-002	Microbial Exchange
MA-089	Doppler Tracking
MA-070	Zero-G Processing of Magnets
MA-131	NaCl-LiF Eutectic
MA-028	Crystal Growth
MA-007	Stratospheric Aerosol Measurement
MA-107	Biostack
MA-128	Geodynamics
MA-147	Zone Forming Fungi
MA-044	Monotectic and Syntectic Alloys
MA-148	Artificial Solar Eclipse
	Lower Limb Volume Measurement
	Crew Height Measurement
	Orbital Navigation via Synchronous Satellite Relay Data
MA-161	Killifish

Passive Experiments

MA-031	Cellular Immune Response
MA-032	Polymorphonuclear Leukocyte Response
MA-151	Crystal Activation

Apollo Crew Biographies

NAME: Thomas P. Stafford (Major General, USAF), Apollo
Commander
NASA Astronaut

BIRTHPLACE AND DATE: Born [REDACTED], in [REDACTED].
[REDACTED]. His mother, Mrs. Mary Ellen Stafford,
is a resident of Weatherford.

PHYSICAL DESCRIPTION: Black hair; blue eyes; height: 6 feet
(183 centimeters); weight: 175 pounds (79.4 kilograms).

EDUCATION: Graduated from Weatherford High School, Weather-
ford, Oklahoma; received a Bachelor of Science degree
from the United States Naval Academy in 1952; recipient
of an Honorary Doctorate of Science from Oklahoma City
University in 1967, an Honorary Doctorate of Laws from
Western State University, College of Law in 1969, an
Honorary Doctorate of Communications from Emerson
College in 1969, and an Honorary Doctorate of Aeronau-
tical Engineering from Embry-Riddle Aeronautical
University in 1970.

MARITAL STATUS: Married to the former Faye L. Shoemaker of
Weatherford, Oklahoma. Her parents, Mr. and Mrs.
Earle R. Shoemaker, reside in Thomas, Oklahoma.

CHILDREN: Dionne, [REDACTED]; Karin, [REDACTED].

RECREATIONAL INTERESTS: His hobbies include handball,
weight lifting, and swimming.

ORGANIZATIONS: Fellow of the American Astronautical Society
and member of the Society of Experimental Test Pilots
and the Explorers Club.

SPECIAL HONORS: Awarded a second NASA Distinguished Service
Medal by President Ford August 9, 1975, two NASA
Exceptional Service Medals, the JSC Certificate of
Commendation (1970), the Air Force Command Pilot Astro-
naut Wings, and the Air Force Distinguished Flying
Cross; and co-recipient of the AIAA Astronautics
Award, the 1966 Harmon International Aviation Trophy,
the National Academy of Television Arts and Sciences
Special Trustees Award (1969), and an Honorary Life-
time Membership in the American Federation of Radio and
Television Artists.

Stafford:2

EXPERIENCE: Stafford, an Air Force Major General, was commissioned in the United States Air Force upon graduation from Annapolis. Following his flight training, he flew fighter interceptor aircraft in the United States and Germany and later attended the USAF Experimental Flight Test School at Edwards Air Force Base, California.

He was Chief of the Performance Branch at the USAF Aerospace Research Pilot School at Edwards and responsible for the supervision and administration of the flying curriculum for student test pilots. He was also an instructor in flight test training and specialized academic subjects -- establishing basic textbooks and directing the writing of flight test manuals for use by the staff and students. He is co-author of the Pilot's Handbook for Performance Flight Testing and the Aerodynamics Handbook for Performance Flight Testing.

He has logged more than 6,200 hours flying time, which includes more than 5,100 hours in jet aircraft.

CURRENT ASSIGNMENT: General Stafford was selected as an astronaut by NASA in September 1962. He served as backup pilot for the Gemini 3 flight.

On December 15, 1965, he and command pilot Walter M. Schirra were launched into space on the history-making Gemini 6 mission which performed the first rendezvous in space with the already orbiting Gemini 7 crew. Gemini 6 returned to Earth on December 16, 1965, after 25 hours, 51 minutes, and 24 seconds of flight.

Stafford made his second flight as command pilot of the Gemini 9 mission. During this 3-day flight which began on June 3, 1966, the crew performed three different types of rendezvous with the previously launched Augmented Target Docking Adapter; and pilot Eugene Cernan logged two hours and ten minutes outside the spacecraft in extravehicular activities. The flight ended after 72 hours and 20 minutes with a perfect reentry and recovery as Gemini 9 landed within .64 kilometers (0.4 miles) of the designated target point and .9 kilometers (1½ miles) from the recovery ship USS WASP. (This is the closest entry and touchdown of any manned flight.)

Following Gemini 9, Stafford served as backup commander for Apollo 7.

Stafford:3

He was spacecraft commander of Apollo 10, May 18-26, 1969, the first comprehensive lunar-orbital qualification and verification flight test of an Apollo lunar module. Stafford was accompanied on the flight to the Moon by John W. Young (command module pilot) and Eugene Cernan (lunar module pilot). In accomplishing all mission objectives, Apollo 10 confirmed the operational performance, stability, and reliability of the command/service module/lunar module configuration during translunar coast, lunar orbit insertion, and lunar module separation and descent to within 12.8 kilometers (8 miles) of the lunar surface.

The latter maneuver employed all but the final minutes of the technique prescribed for use in an actual lunar landing and permitted critical evaluations of the lunar module propulsion systems and rendezvous and landing radar devices during completion of the first rendezvous and re-docking maneuvers in lunar orbit. In addition to demonstrating that man could navigate safely and accurately in the Moon's gravitational fields, Apollo 10 photographed and mapped tentative landing sites for future missions.

In his four space flights, Stafford has completed six rendezvous and logged 514 hours and 33 minutes in space.

As Chief of the Astronaut Office from August 1969 through May 1971, he was responsible for the coordination, scheduling, and control of all activities involving NASA astronauts. General Stafford was named Deputy Director of Flight Crew Operations in June 1971. He held this management position, assisting with overseeing the activities of the Astronaut Office, the Aircraft Operations Office, the Flight Crew Integration Division, the Crew Training and Simulation Division, and the Crew Procedures Division until February 1974.

General Stafford was commander of the United States flight crew for the Apollo Soyuz Test Project (ASTP) mission, a joint United States-Soviet Union Earth-orbital mission.

NAME: Vance DeVoe Brand (Mr.), Apollo command module pilot
NASA Astronaut

BIRTHPLACE AND DATE: Born in [REDACTED], [REDACTED], [REDACTED]. His parents, Dr. and Mrs. Rudolph W. Brand, reside in Longmont.

PHYSICAL DESCRIPTION: Blond hair; gray eyes; height: 5 feet 11 inches (180 centimeters); weight: 175 pounds (79.4 kilograms).

EDUCATION: Graduated from Longmont High School, Longmont, Colorado, received a Bachelor of Science degree in Business from the University of Colorado in 1953, Bachelor of Science degree in Aeronautical Engineering from the University of Colorado in 1960, and a Master's degree in Business Administration from the University of California at Los Angeles in 1964.

MARITAL STATUS: Married to the former Joan Virginia Weninger of Chicago, Illinois. Her parents, Mr. and Mrs. Ralph D. Weninger, reside in Chicago.

CHILDREN: Susan N. [REDACTED]; Stephanie [REDACTED]; Patrick R. [REDACTED]; Kevin S. [REDACTED].

RECREATIONAL INTERESTS: Enjoys running to stay in condition, skin diving, skiing, and canoeing.

ORGANIZATIONS: Member of the Society of Experimental Test Pilots, the American Institute of Aeronautics and Astronautics, Sigma Nu, and Beta Gamma Sigma.

SPECIAL HONORS: NASA Distinguished Service Medal presented by President Ford on August 9, 1975; JSC-Certificate of Commendation (1970) and NASA Exceptional Service Medal (1974).

EXPERIENCE: Military. Brand served as a commissioned officer and naval aviator with the U.S. Marine Corps from 1953 to 1957. His Marine Corps assignments included a 15-month tour in Japan as a jet fighter pilot. Following release from active duty, he continued in Marine Corps Reserve and Air National Guard fighter squadrons until 1964; and he still retains a commission in the Air Force Reserve.

Civilian. From 1960 to 1966, Brand was employed as a civilian by the Lockheed Aircraft Corporation. He worked first as a flight test engineer on the P3A "Orion" aircraft and later transferred to the experimental test pilot ranks. In 1963, he graduated from the U.S. Naval Test Pilot School and was assigned to Palmdale, California, as an experimental pilot on Canadian and German F-104 development programs.

Brand:2

Immediately prior to his selection to the astronaut program, Brand was assigned to the West German F-104G Flight Test Center at Istres, France, as an experimental test pilot and leader of a Lockheed flight test advisory group.

He has logged more than 4,600 hours of flying time, which include more than 3,800 hours in jets and 390 hours in helicopters.

CURRENT ASSIGNMENT: Mr. Brand is one of the 19 astronauts selected by NASA in April 1966. He served as a crew member for the thermal vacuum testing of the prototype command Module and was an astronaut support crewman for the Apollo 8 and 13 missions. He was the backup command module pilot for Apollo 15.

Brand served as backup commander for the Skylab 3 and Skylab 4 missions.

Brand was command module pilot for the Apollo Soyuz Test Project (ASTP) mission launched July 15, 1975. This was Brand's first space flight.

NAME: Donald K. Slayton (Mr.), Apollo docking module pilot
NASA Astronaut

BIRTHPLACE AND DATE: Born [REDACTED], in [REDACTED].

PHYSICAL DESCRIPTION: Brown hair; blue eyes; height: 5 feet 10½ inches (179 centimeters); weight: 165 pounds (74.8 kilograms).

EDUCATION: Graduated from Sparta High School; received a Bachelor of Science degree in Aeronautical Engineering from the University of Minnesota, Minneapolis, Minn., in 1949; an Honorary Doctorate in Science from Carthage College, Carthage, Illinois, in 1961; and an Honorary Doctorate in Engineering from Michigan Technological University, Houghton, Michigan, in 1965.

MARITAL STATUS: Married to the former Marjory Lunney of Los Angeles, California. Her parents, Mr. and Mrs. George Lunney, reside in Los Angeles.

CHILDREN: Kent, [REDACTED].

RECREATIONAL INTERESTS: His hobbies are hunting, fishing, and shooting.

ORGANIZATIONS: Associate fellow of the Society of Experimental Test Pilots; fellow of the American Astronautical Society; member of the American Institute of Aeronautics and Astronautics, the Experimental Aircraft Association, the Space Pioneers, and the Confederate Air Force; life member of the Order of Daedalians and the National Rifle Association of America; and honorary member of the American Fighter Aces Association.

SPECIAL HONORS: Awarded a third NASA Distinguished Service Medal by President Ford on August 9, 1975; the NASA Exceptional Service Medal; the Collier Trophy; the SETP Iven C. Kinchloe Award; the General Billy Mitchell Award; and the SETP J. H. Doolittle Award for 1972.

EXPERIENCE: Slayton entered the Air Force as an aviation cadet and received his wings in April 1943 after completing flight training at Vernon and Waco, Texas.

As a B-25 pilot with the 340th Bombardment Group, he flew 56 combat missions in Europe. He returned to the United States in mid-1944 as a B-25 instructor pilot at Columbia, South Carolina, and later served with a unit responsible for checking pilot proficiency in the B-26.

Slayton:2

In April 1945, he was sent to Okinawa with the 319th Bombardment Group and flew seven combat missions over Japan. He served as a B-25 instructor for one year following the end of the war and subsequently left the Air Force to enter the University of Minnesota.

He became an aeronautical engineer after graduation and worked for two years with the Boeing Aircraft Company at Seattle, Washington, before being recalled to active duty in 1951 with the Minnesota Air National Guard.

Upon reporting for duty, he was assigned as maintenance flight test officer of an F-51 squadron located in Minneapolis, followed by 18 months as a technical inspector at Headquarters Twelfth Air Force, and a similar tour as fighter pilot and maintenance officer with the 36th Fighter Day Wing at Bitburg, Germany.

Returning to the United States in June 1955, he attended the USAF Test Pilot School at Edwards Air Force Base, California. He was a test pilot there from January 1956 until April 1959 and participated in the testing of fighter aircraft built for the United States Air Force and some foreign countries.

He has logged more than 5,200 hours flying time, including 3,255 hours in jet aircraft.

CURRENT ASSIGNMENT: Mr. Slayton was named as one of the Mercury astronauts in April 1959. He was originally scheduled to pilot the Mercury-Atlas 7 mission but was relieved of this assignment due to a heart condition which was discovered in August 1959. The MA-7 mission was subsequently flown by M. Scott Carpenter in May 1962.

Slayton became Coordinator of Astronaut Activities in September 1962 and was responsible for the operation of the astronaut office. In November 1963, he resigned his commission as an Air Force Major to assume the role of Director of Flight Crew Operations. In this capacity, he was responsible for directing the activities of the Astronaut Office, the Aircraft Operations Office, the Flight Crew Integration Division, the Crew Training and Simulation Division, and the Crew Procedures Division.

Slayton:3

In March 1972, following a comprehensive review of his medical status by NASA's Director for Life Sciences and the Federal Aviation Agency, Mr. Slayton was restored to full flight status and certified eligible for future manned space flights.

Slayton was named subsequently to the United States flight crew for the Apollo Soyuz Test Project (ASTP) and, in February 1974, relinquished his position as Director of Flight Crew Operations to concentrate efforts on preparations for that flight. He was docking module pilot in the joint United States-Soviet Union Earth-orbital mission launched July 15, 1975.

Soyuz Crew Biographies

Commander -- Leonov Alexey Arkhipovich

Brigadier General Alexey Arkhipovich Leonov, USSR space-pilot, Hero of the Soviet Union was born in [REDACTED] in the village of [REDACTED].

After World War II the Leonovs moved to the city of Kaliningrad. In 1953 a Komsomol member Leonov A.A. entered an aviation school. He graduated from it with an honors diploma and became a professional military pilot.

In 1957 he joined the Communist Party of the Soviet Union. The Headquarters highly appreciate Alexey Arkhipovich's skill, self-control, discipline. He is a well-trained parachutist -- performed more than 100 parachute jumps of varying degrees of difficulty.

In 1960 with the first group of Soviet cosmonauts he began training for a space flight.

On March 18, 1965 he made a space flight in Voskhod-2 spacecraft (with Pavel Belyayev as the commander). On that flight Leonov went outside the ship. His walk into open space opened a new chapter in the history of space exploration.

All the subsequent years the cosmonaut continued his studies and training. He participated in preparation for all Soviet space flights. In 1968 he graduated from the Zhykovskiy Air Force Academy.

A. A. Leonov is a member of the Young Communist League Central Committee (YCLCC), and a deputy to Moscow Regional Soviet. He is a vice-president of the USSR-Italy Friendship Society, the Chairman of the Constituent Council of the Press and News Agency. He is an honorary citizen of towns: Kemerovo, Kaliningrad, Vologda, Kremenchug, Nalchik, Belgorod, Drogobych, Sochi, Chuguev, Termez, Kapsukas, Sofia (PRB), Perm, Ust-na-Labe (Czechoslovakia), Altenburg, (GDR), Houston (USA).

A. A. Leonov has a passion for painting. He is a member of USSR painter's union. His paintings were exhibited in Moscow, Orel, Simferopol, Bratislava, Prague, Ottawa, Helsinki and in the Bjenal annual show. He is also keen in filming, hunting, water skiing, track and field athletics, parachute sport.

Leonov:2

Rewards: Hero of the Soviet Union
Hero of the DRV
Hero of the PRB
18 orders and medals, including 8 orders and
medals of other countries and:

Tsiolkovskiy Gold Medal, Great Gold
Medal of FAI, 1st degree diploma,
Great Gold Medal of Ch.SSR Academy of
Sciences (for services to Mankind).

Gold damask blade

Leonov's wife, Svetlana Petrovna, graduated from a
Teacher's Institute. She is an editor. They have two
daughters: Victoria, 13 and Oksana, 7.

Flight Engineer -- Kubasov Valeriy Nikolaevich

Valeriy Nikolaevich Kubasov, USSR space pilot, Hero of the Soviet Union was born in the town of Vyazniki, Vladimir region.

In 1952 Valeriy graduated from a secondary school with a silver medal and entered S. Ordzhonikidze Moscow Aviation Institute. After the graduation from the Institute Valeriy began working at a design bureau where he revealed comprehensive knowledge and aptitude for scientific research. In 1969 Kubasov received a candidate's degree in science. He is an author of a number of papers on computation of flight vehicle motion.

In 1966 V. Kubasov was named to the cosmonaut corps. He underwent a comprehensive flight preparation program. In 1968 he joined the CPSU. In January 1969 V. Kubasov was cosmonaut Yeliseev's backup for Soyuz-4 and Soyuz-5 flight. In October, 1969 he was flight-engineer for the Soyuz-6 mission (the spacecraft commander -- Georgiy Shonin). During the flight along with a number of other scientific experiments the first metal-welding experiment was conducted.

V. Kubasov is an honorary citizen of towns: Karaganda, Kaluga, Vladimir, Vyazniki, Houston.

Rewards: Hero of the Soviet Union
Tsiolkovskiy Gold Medal (USSR Academy of Science), medal "For valiant labour in commemoration of V. I. Lenin centenary"
Emblem "For active participation in Komsomol activities"
Gold Medal of Yugoslavian Academy of Science
Medal "For development of virgin lands", and
a number of medals of other countries

V. Kubasov has a passion for filming, hunting, fishing, skiing, water skiing.

Kubasov's wife, Lyudmila Ivanovna, graduated from Moscow Aviation Institute; she is an engineer at a machine-building plant. The Kubasovs have two children: Katya is 8 and Dima is 3.