



Space Log

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SPACE SHUTTLE STATUS

With a target date of September 28, 1979, for the first manned orbital flight of NASA's Space Shuttle, fabrication and testing of components continue at various locations throughout the U. S.

Measures have been taken to accelerate production and installation of the Thermal Protection System (TPS) tile for Orbiter 102. Staffing has been increased at both the Rockwell International facility at Palmdale, California and at the Lockheed plant at Sunnyvale, California, where the tiles are made. New tile inspection equipment has been obtained to improve productivity of the tile.

Testing of the Space Shuttle Main Engine (SSME) continues at NASA's engine test facility near Bay St. Louis, Mississippi. Between September 10 and October 12, thirteen firings were conducted on two engines for a total of 3,794 seconds. Ten of those tests reached rated power level (RPL), accumulating 3,096 seconds.

Three of the tests were prematurely shut down, two for instrumentation problems and one (first test on engine 0006) when propellant priming of the engine oxidizer system occurred out of sequence and caused damage to a fuel turbopump turbine and the main injector of the engine.

Results of an extensive hardware inspection of engine 0005, after a series of 16 test firings in August and September, have been described as very satisfactory by project engineers at NASA's Marshall Space Flight Center, Huntsville, Alabama.

Total engine testing through October 11, shows 350 engine test firings for a total time of 26,530 seconds, including 8,969 seconds at RPL. Full duration testing of the complete main propulsion system, a cluster of three engines, is scheduled for early 1979 when the first manned orbital flight configuration engines become available.

The third static test firing of a solid rocket booster (SRB) motor was conducted October 19 at the Thiokol Chemical Corp.'s test site near Brigham City, Utah. Early data indicates a successful test firing.

Meanwhile, all elements of a Space Shuttle have been mated for the first time -- two SRBs, an external tank, and an orbiter (101) for vertical vibration testing at the Marshall Center. The testing is to verify that the Space Shuttle structure will perform during various stages of the flight as predicted.

TARGET LAUNCH DATE....As mentioned, the new target date of the launch of the first Space Shuttle mission is now set for September 28, 1979, six months behind schedule for the important mission. John Yardley, associate NASA administrator, gave the tentative launch date in testimony to a House subcommittee reviewing the status of the nation's next major space endeavor. "If unforeseen problems arise or the tests are not entirely successful, this schedule could be further delayed." Yardley said. "However, NASA believes there is a good probability of flying the first shuttle flight during 1979". Yardley said the new schedule aims toward a February 1981 date for the first operational Shuttle mission. That means NASA hopes to carry out six orbital test flights in 16 months. The initial test flight will be piloted by astronauts John Young and Joe Engle.

SHUTTLE LAUNCH SITE....The General Accounting Office says the government could save taxpayers up to \$3.5 billion by eliminating Vandenberg Air Force Base from Space Shuttle plans and launching the rocket plane only from Cape Canaveral. This would mean, the GAO said, the Shuttle would have to fly over the United States, Canada and the Soviet Union on its climb northward into orbits that circle the poles. But the government auditors said the Shuttle could be safe enough to do that.

Current space agency plans call for Florida to be used for all civilian and military launchings into east-west orbits starting next year and California to be used for all flights into north-south polar orbits starting in 1983.

EGYPT AND THE SHUTTLE....The Egyptian government has reserved four small self-contained payloads to be flown on the Space Shuttle in the 1980's. The payloads, commonly called "getaway specials", can weigh no more than 200 pounds and be no larger than 5 cubic feet. They are flown on the Shuttle on a space available basis for scientific research and development purposes. The small payloads must require no additional Space Shuttle services such as electrical power or deployment in space. Each payload reservation requires a \$500 down payment. To date, payments have been made to NASA for some 240 small payloads.

INDIA AND THE SHUTTLE....Dr. Robert A. Frosch, NASA Administrator, and Professor S. Dhawan, Secretary, Department of Space and Chairman, Space Commission, Government of India, signed a Memorandum of Understanding (MOU) for the launch of Indian National Satellite System-1 (INSAT-1). First INSAT-1 launching on board the Space Shuttle is planned for the first quarter of 1981. This is the first MOU signed by NASA with a foreign governmental agency for provision of Space Transportation (STS) launch services on a reimbursable basis.

SECOND SPACELAB SCIENCE CREW NAMED

Four American scientists have been named by NASA to serve as Payload Specialists during the second Spacelab mission scheduled for 1981. The scientists selected are:

Dr. Loren W. Acton of Palo Alto, Calif., a research scientist at the Lockheed Palo Alto Research Laboratory.

Dr. John-David F. Bartoe of Reston, Va., a research physicist at the U. S. Naval Research Laboratory, Washington, D. C.

Dr. Dianne K. Prinz of Alexandria, Va., a research physicist at the U. S. Naval Research Laboratory, Washington, D. C.

Dr. George W. Simon of Alamogordo, N. M., chief of the solar research branch at the Air Force Geophysics Laboratory with permanent duty location at the Sacramento Peak Observatory, Sunspot, N. M.

Prior to the flight, two of these scientists will be selected to actually fly aboard the orbiting space laboratory and operate the scientific investigations planned for the mission. The other two will operate ground-based experiment equipment and assist the pair in orbit.

The Payload Specialists were selected by the Spacelab Investigators Working Group (IWG), which is composed of the Spacelab 2 Principal Investigators, who will have experiments aboard the mission. Each Payload Specialist is a Co-Investigator on one of the experiments to be flown on Spacelab 2.

The position of Payload Specialist is a new one in the space program. Payload Specialists are not professional astronauts and are not required to pilot or operate the Space Shuttle, which will carry the Spacelab on its missions. They will, instead, devote themselves to the operation of experiments just as a scientist would do in a ground-based laboratory except that their laboratory, Spacelab, is in orbit.

The Spacelab 2 Payload, managed by NASA's Office of Space Science, consists of scientific investigations primarily in the areas of astronomy, high energy astrophysics and solar physics research. Experiments also will be performed in plasma physics, botany, medicine and space technology.

Spacelab 2 is a Spacelab "pallet only" mission with the scientific instruments exposed to space in the cargo bay of the Space Shuttle Orbiter. Because there is no habitable module included in this configuration, the Payload Specialists will operate their experiment equipment from the Shuttle Orbiter's crew cabin. The mission is scheduled to be launched from NASA's Kennedy Space Center in 1981 and will orbit the Earth at an altitude of about 250 miles for nine days.

During the actual mission, the Payload Operations Control Center will be located at NASA's Johnson Space Center, Houston.

MATED VERTICAL GROUND VIBRATION TESTS

The second in the three part series of tests at the Marshall Space Flight Center in Huntsville, Alabama took place during October 6 through 20, 1978. The term "vibration" may be misleading. This is not a shaking test to learn how strong the vehicle is; it is a test where the Shuttle Orbiter "floats" in the tall test tower and engineers apply vibrations to its exterior with exciters powered by amplifiers similar to those found on home stereo sets. Sensors placed along the skin at other locations record the characteristics of the vibrations as they pass from one area to another. Information from these tests will allow the center to verify the system design and mathematical models that predict how the Shuttle's control system will react to the much more severe vibrations expected during launch and flight into orbit.

This second test configuration has the solid rocket boosters filled with inert propellants and stacked along with the orbiter and tank. This configuration simulates liftoff conditions. This will be the first stacking of all Space Shuttle components as they will appear for launch. After, the test, all components were again removed from the stand.

ASTRONAUTS RECEIVE CONGRESSIONAL SPACE MEDAL OF HONOR

President Jimmy Carter named six astronauts to receive the Congressional Space Medal of Honor, the first such medal ever awarded by the United States. Those named to receive the medal were: Neil A. Armstrong; Frank Borman; Charles Conrad, Jr.; John H. Glenn, Jr.; Virgil I. Grissom (posthumous); and Alan B. Shepard, Jr. The medals were presented October 1, 1978 by the President during a visit to Kennedy Space Center. That date marked the 20th anniversary of the foundation of the National Aeronautics and Space Administration.

The award, authorized by the Congress in 1969, is conferred "to any astronaut who in the performance of his duties has distinguished himself by exceptionally meritorious efforts and contributions to the welfare of the Nation and of mankind". The citations for the award were:

Neil A. Armstrong, for actions to overcome problems and land his spacecraft safely on the Gemini 8 mission in March 1966 and for "steady cool professionalism, repeatedly overcoming hazards" on the Apollo 11 mission in July 1969, when he became the first person to walk on the moon.

Frank Borman, who commanded the Gemini 7 mission in December 1965 and the Apollo 8 mission in December 1968, both of which "significantly hastened and facilitated achievement of the manned lunar landing objective." On Apollo 8, he commanded the first manned spacecraft to escape the Earth's gravity.

Charles Conrad, Jr., who, from August 1965 to June 1973, participated in four space flights of increasing duration, complexity, and achievement. His contribution culminated in the first manned Skylab mission in May and June 1973, when he commanded the crew which performed "lengthy, dangerous, and strenuous activities that were necessary to repair damage inflicted on the orbital workshop during launch and thereby save the two-billion-dollar program."

John H. Glenn, Jr., the first American to orbit the Earth in the third manned mission of project Mercury in February 1962, when his professional handling of extreme difficulties with the spacecraft "demonstrated the value of the human pilot in space...He returned to a nation and a world which seized on him as a major hero. This difficult role he handled with the same polite dignity that he brought to all his assignments."

Virgil I. Grissom (posthumous), the second American in space, who, from July 1961 to January 1967, participated in Mercury and Gemini space flights and lost his life during preparation for the first Apollo flight. Experience gained from the first manned Gemini flight in March 1965, which he commanded, led to "procedures necessary for the support of subsequent long-duration and rendezvous missions."

Alan B. Shepard, Jr., who was the first American in space aboard the Mercury spacecraft in May 1961, which "demonstrated that this country lacked neither the courage nor the technology to compete in the new arena of space." He was also cited for showing "the highest qualities of leadership" as commander of Apollo 14, the third lunar landing mission in February 1971.

SPACE NOTES

CHAIRMAN TEAGUE AWARDED NASA MEDAL....Rep. Olin E. Teague (D.-Texas) was awarded NASA's Distinguished Public Service Medal, October 3, 1978 at an outdoor ceremony at NASA Headquarters in Washington D. C. Teague is Chairman of the House Committee on Science and Technology.

NASA Administrator Robert A. Frosch lauded Teague's efforts in behalf of NASA and the U. S. space program saying: "For us at NASA, Chairman Teague's most outstanding asset has been his consistent and unswerving faith in the value and virtue of a dynamic and imaginative space program -- a faith which he has conveyed to all the elements of the government, industry and university team on which all progress in space depends. The single episode which best epitomized Mr. Teague's profound faith in the space effort, was the leadership he demonstrated at the time of the Apollo fire in early 1967...Undoubtedly, more than any other single individual, Chairman Teague saved the program and redirected our energies in a direction which resulted in the successful lunar landing within the decade of the '60s."

Teague is retiring from Congress after his present term, following more than 30 years of service as a member of the House of Representatives.

VENUS-BOUND CRAFT PASS CRITICAL TESTS....The two Pioneer spacecraft enroute to Venus -- the orbiter and the multiprobe -- passed major planet operations tests in October. The two Pioneers and their 30 experiments are expected to improve understanding of Venus' simple weather machine, and this in turn should help us to better understand the forces that drive Earth's weather. Virtually all experiments and systems on each of the five entry craft of the multiprobe now have been operated and are working well. These include thermal, orientation, command, communications and data return and power systems, as well as separation systems for the 200 pound smaller probes.

VOYAGER SPACECRAFT....This is a status report of the two craft on their way to Jupiter and Saturn. Voyager 1 is now (October 6, 1978) 437,875,000 miles from Earth and Voyager 2 is 415,437,000 miles from Earth. Voyager 1 has 93,816,000 miles to go to Jupiter and Voyager 2 has 125,117,000 miles to go. To Saturn the distance is 595,934,000 miles for Voyager 1 and 595,772,000 miles for Voyager 2.

TRACKING SHIP VANGUARD....After 12 years of supporting Apollo, Skylab and Apollo Soyuz manned space flight missions, the USNS Vanguard, last of an original five-ship tracking and reentry coverage flotilla, was transferred October 1 to the United States Navy for navigational and ocean survey work. Vanguard served NASA astronauts throughout 10 Apollo, 4 Skylab and one Apollo Soyuz mission as a floating tracking station carrying out assignments in the Atlantic, Indian and Pacific Oceans. Precise distances traveled and hours of mission support have not been calculated, but Space Tracking and Data Network (STDN) veterans estimate that fully half of the Vanguard's NASA lifetime was spent in a mission support status; the remainder being in port, yard repair or transit time.

NASA USES COMPUTER TO "WITNESS" COSMIC EVENTS....Using the world's most powerful computer as a miniature universe, man is now "seeing" the birth and evolution of stars and galaxies, including his own. He is compressing 200 million years into several hours computer time -- and reducing the distance light travels in 100,000 years to the length of a television screen -- to witness galaxies collide and gas clouds beget embryonic stars. These simulated cosmic events threaten to alter traditional ideas of how galaxies form, what shapes they assume and what happens when they collide.

Elliptical galaxies were thought to be oblate -- shaped like a frisbee. But computer-generated elliptical galaxies by scientists at NASA's Ames Research Center in Mountain View, Calif., reveal their three-dimensional shape to be prolate -- oblong, like a cosmic candy bar. And astronomers are lately reporting observational evidence confirming the computer's discovery.

It is beginning to appear to Ames researchers doing much of the pioneering work that computer simulation of cosmic events is an important factor in fully understanding the dynamics of the universe. The astronomer now has a "laboratory" to test his theories and to conduct experiments.

THE RUSSIAN SPACE PROGRAM

There is no let-up in the progress they are making and it looks as if they are well on their way of creating permanently manned orbital space stations.

SOYUZ 26....Cosmonauts Yuri Romanenko and Georgy Grechko quietly orbited their way into the record books on March 16, 1978. That was when they broke the previous 84-day mark established by the U. S. Skylab 4 astroanuts in 1974.

SOYUZ 31....On September 20, 1978, they broke the Soyuz 26 record of 96 days, 10 hours. The two cosmonauts on Soyuz 31 were Vladimir Kovalenok and Alexander Ivanchenkov. The two men had been living and working aboard Salyut 6 since June 17 and all systems on the lab and the attached Soyuz capsule were functioning normally.

Then on November 2, the two cosmonauts floated to a perfect landing beneath a giant red and white parachute and won their nation's highest honor after 139 days in orbit -- space history's longest manned mission. They were named Heroes of the Soviet Union a few hours after their Soyuz 31 capsule touched down on the steppes of Kazakhstan. The two landed at 2:05 p.m., 139 days, 14 hours and 48 minutes after they were first launched aboard Soyuz 31 for a docking with the orbiting Salyut 6 space station.

Helicopters circled the landing zone and the cosmonauts were met by special medical teams who drove up to their capsule in a yellow armored personnel carrier. Kovalenok and Ivanchenkov looked none the worse for their experience. They smiled broadly as they were interviewed by men who wore surgical masks during the session. Both men said they thought they could have stayed in space longer. They were flown to the Baikonur Cosmodrome where they were fired into space on June 15.

SALYUT 6....The Russian orbiting manned space station is still going strong and reportedly will be mothballed for the rest of the year. It has brought success to a Soviet space program which previously had been noted for a few bright points amid failures and tragedies. Soviet scientists claimed the success of the Salyut 6 proved that man can endure long-term space assignments without irreversible physical damage.

SOVIET SATELLITE-KILLERS

The Soviet Union can destroy space satellites near Earth and can even reach those 23,000 miles out, something the United States cannot do, a member of the American Astronautical Society says.

James E. Oberg, a Johnson Space Center computer specialist who emphasized that his opinions are not those of the center, said that the U. S. government is concerned about the Soviet Union's resumption of testing satellite-killers and has started looking for countermeasures. But, he added, space wars are such an abhorrent concept that experts don't like to think about them, leaving the field open to non-experts who "spout nonsense."

Oberg, speaking at the American Astronautical Society's 25th annual conference in Houston, said possible mechanisms for killing a satellite in space include hot metal shrapnel, sand, radiation from nuclear blasts and beam weapons. He added that space vehicles also could be crippled by electronic jamming or triggering their self-destruct systems. Oberg said scientists generally agree that other types of satellites could be classified as "aggressive."

The United States is using photographic surveillance from space to prevent a surprise attack and this is a legal activity, the judge advocate general of the U. S. Air Force told the conference. In a speech cleared by the White House, Maj. Gen. Walter D. Reed said the U. S. position is that photo-reconnaissance by satellite is equivalent to surveillance from coastal or border areas. "The U. S. position has been and continues to be that in the context of the Outer Space Treaty "peaceful" does not mean non-military, but rather non-aggressive," he said.

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March 2, 3 and 4, 1979 may be a bit chilly in Milwaukee, but it will be a hot time for space collectors to gether. Henry Kiermasz, one of the SCCS loyal supporters, sends us information about this three-day stamp exhibition. It will be the 80th anniversary exhibition by the Milwaukee Philatelic Society and will be held at the Ramada Inn.

The exhibition will be an APS "Champion of Champions" and the theme will be "Aerospace: Past, Present and Future". The Wisconsin Federation of Stamp Clubs will hold their annual convention and exhibition in conjunction with MILCOPEX '79. In addition, there will be a national meeting of the American Topical Association Space Unit. Also, there will be a regional meeting of the Scandinavian Collectors Club, and a meeting of the Wisconsin Postal History Society.

Thirty four dealers will have tables and the U. S. and U. N. will have a postal station set-up. Three multicolored cacheted covers will be available, one for each day. We don't have price information but it and further details for entering an exhibit may be had by writing MILCOPEX '79, Box 1980, Milwaukee, WI 53201. Be sure and enclose a stamped, addressed envelope with your request.

This show sounds like a winner! Why not make your plans now to be in Milwaukee over the March weekend.