SPACE CITY COVER SOCIETY

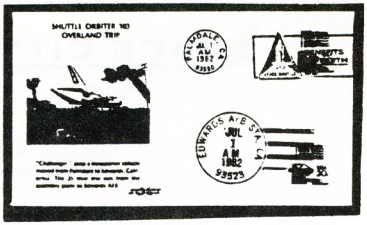
P. O. BOX 53545 HOUSTON, TEXAS 77052

First Flight Of The Challenger

SCCS

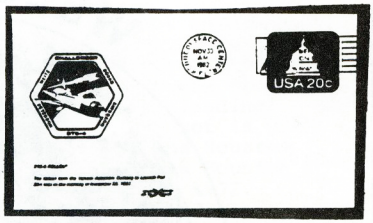
STS-6

STS-6-3

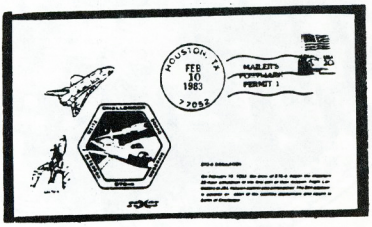


STS-6-5

STS-6-6



STS-6-11



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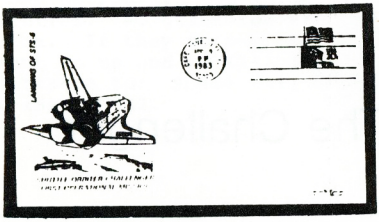

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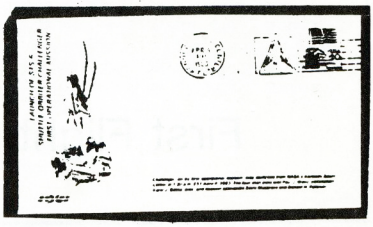
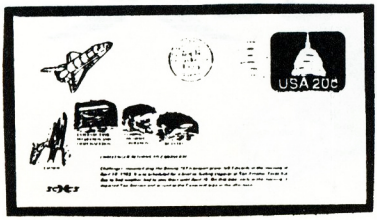
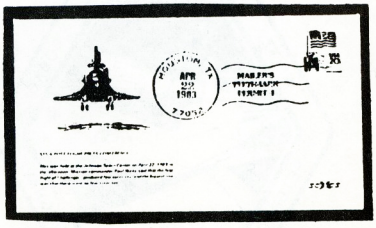


STS-6-16



STS-6-29



STS-6-31

STS-6-1	Mar 2, 1982 Crew of 4 Chosen (Houston machine cancel)	3.00
STS-6-2	Jun 30, 1982 Challenger Roll-out (Palmdale machine cancel)	3.00
STS-6-3	Jul 1, 1982 Challenger leaves Palmdale for Edwards (Palmdale machine cancel)	
STS-6-4	Jul 1, 1982 Challenger arrives Edwards Air Force Base (Edwards machine cancel)	
	(STS-6-3 and 4 sold only as a set of two . . .	5.75
STS-6-5	Jul 1, 1982 Double cancel cover overland trip (Palmdale machine, Edwards hand)	5.75
STS-6-6	Jul 2, 1982 Challenger mated to 747-carrier aircraft (Edwards machine cancel)	2.75
STS-6-7	Jul 4, 1982 Challenger departs Edwards for Canaveral (Edwards machine cancel)	2.75
STS-6-8	Jul 4, 1982 Challenger stopover in Houston (Houston MPP hand cancel)	2.75
STS-6-9	Jul 5, 1982 Challenger departs Houston (Houston MPP hand cancel)	2.75
STS-6-10	Jul 5, 1982 Challenger arrives Canaveral (Cape Canaveral machine cancel)	2.75
STS-6-11	Nov 30, 1982 Challenger Roll-out to Launch Pad (KSC machine cancel)	3.50
STS-6-12	Dec 1, 1982 NASA extends mission (Houston MPP hand cancel)	2.75
STS-6-13	Feb 10, 1983 Challenger's mission simulation (Houston MPP hand cancel)	2.75
STS-6-14	Apr 1, 1983 Crew flies to Canaveral (Houston MPP hand cancel)	2.75
STS-6-15	Apr 4, 1983 Launch of Challenger (KSC machine)	3.00
STS-6-16	Apr 9, 1983 Landing of Challenger (Cape Canaveral machine cancel)	3.00
STS-6-17	Apr 4, 1983 Launch of Challenger (Houston machine cancel)	3.00
STS-6-18	Apr 9, 1983 Landing of Challenger (Houston machine cancel)	3.00
STS-6-19	Apr 4, 1983 Launch of Challenger (Houston MPP hand cancel)	3.00
STS-6-20	Apr 9, 1983 Landing of Challenger (Houston MPP hand cancel)	3.00
STS-6-21	Apr 4, 1983 Launch of Challenger (Edwards AFB machine cancel)	3.00
STS-6-22	Apr 9, 1983 Landing of Challenger (Edwards AFB machine cancel)	3.00
STS-6-23	Apr 4, 1983 TDRS satellite launch (Houston MPP hand cancel)	2.75
STS-6-24	Apr 5, 1983 Rendezvous maneuvers (Houston (MPP hand cancel)	3.00
STS-6-25	Apr 7, 1983 First space shuttle spacewalk (Musgrave) (Houston MPP hand cancel)	3.50
STS-6-26	Apr 7, 1983 First space shuttle spacewalk (Peterson) (Houston MPP hand cancel)	3.50
STS-6-27	Apr 7, 1983 First space shuttle spacewalk (Pres Reagan cachet) (Houston MPP hand cancel)	3.50
STS-6-28	Apr 9, 1983 Crew arrives in Houston (Houston MPP hand cancel)	2.75
STS-6-29	Apr 14, 1983 Challenger leaves Edwards for Canaveral) (Edwards machine cancel)	3.00
STS-6-30	Apr 16, 1983 Challenger arrives Canaveral (Cape Canaveral machine cancel)	3.00
STS-6-31	Apr 22, 1983 Crew press conference at JSC (Houston MPP hand cancel)	2.75

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Please see page 7 for descriptions of cancels, times, and ordering instructions. Thank you.

STS-6 FIRST OPERATIONAL MISSION OF CHALLENGER

The history of Challenger really began about a year before the launch for its first mission into space. On March 2, 1982 the crew of four was chosen for Challenger's maiden space voyage. The four were: Paul J. Weitz, commander; Karol J. Bobko, pilot; and mission specialists Dr. Story F. Musgrave and Donald H. Peterson.

Then on June 30, 1982 Challenger had its roll-out at Palmdale, California. It was built by Rockwell International at its Palmdale plant and rolled out on this date to "meet the public." But before it could make its first flight, it had to get to Canaveral.

Early in the morning of July 1, mounted atop a specially-built transport vehicle, Challenger was carried on its 35-mile trip from Palmdale to Edwards Air Force Base. At Edwards, Challenger was mated atop its 747-carrier aircraft on July 2. The mated pair departed Edwards on July 4. On hand for this departure ceremony was President Ronald Reagan and a crowd of 500,000 well-wishers.

Later that afternoon, Challenger made a re-fueling stop at Ellington Air Field in Houston, near the Johnson Space Center. Departure from Houston was early morning of July 5 and just before noon of that day, the mated pair arrived at Cape Canaveral.

After arriving at Canaveral, extensive preparations had to be made before Challenger's first flight into space. It took until November 30, 1982 for all of those preparations to be completed, and on that date, Challenger was rolled-out to the launch pad.

On December 1, even though the planned launch was months away, NASA officials decided to extend the STS-6 mission by two days. This was done so that a spacewalk could be put into the flight schedule.

The crew of STS-6 began a very important 32-hour simulation on the first part of the mission on February 10, 1983. Flight controllers in JSC Mission Control also participated. Great attention was given to an "abort the satellite deployment and return to Earth for Challenger."

On April 1, 1983 the STS-6 crew of four departed from Ellington Air Field in Houston and headed for Cape Canaveral and Challenger's first flight into space.

CHALLENGER'S FIRST FLIGHT

The first flight of space shuttle Challenger did not come about easily. Originally scheduled for January 20, 1983, its launch was not made until April 4, 1983. The mission was postponed twice because of leaks in the new engines. It was originally scheduled as a two-day mission but was extended to allow a spacewalk.

But for a spacecraft not meant to fly when it was built, it managed its launch by overcoming many difficulties.

In actuality, the spacecraft Challenger was the "early bird" of America's Space Transportation System's (STS) Earth-orbiting fleet. Structural fabrication of Challenger was underway in 1975...about a year earlier than the beginning of Columbia. But Columbia flew the first five STS missions.

In several transitional periods Challenger went from structural assembly to becoming the Structural Test Article (STA)...then back into a manufacturing modification period for renovation and upgrading to "flight worthy" status...to final assembly and check out... rollout...then ferry flight to KSC and pre-launch testing.

By reworking Challenger from a test vehicle to a "flight worthy" spacecraft, about $90-million to $100-million was saved over having to build a new shuttle orbiter.

With 147 changes made in the orbiter's engines, it became 4% more powerful. The interior of Challenger was changed to carry as many as seven people and had more sophisticated flight instruments. The huge external tank weighs about 10,000 pounds less, giving the orbiter the capability to take almost that much more cargo into orbit.

The spacecraft itself weighs 2,488 pounds less than Columbia. Weight was saved by reducing the size of some metal parts, by the changing of some materials and by replacing some heat-protective

tiles with a protective blanket material. Also, the bulky and heavy ejection seats used by Columbia's crew were replaced by standard-aircraft-type seats in Challenger.

An additional 3,866 pounds were removed from the external tank which supplies liquid oxygen and liquid hydrogen to the shuttle's three main engines. Also, about 8000 pounds were cut from the casings of the two solid-fuel booster rockets.

DELAYS IN CHALLENGER'S LAUNCH

After launch acceptance testing and preparation, two flight readiness firing tests of the spacecraft's main propulsion system and engines were conducted in December 1982 and January 1983. In both instances, the test of the firing procedures, avionics and main propulsion system were excellent. One anomoly was noted in both tests..a higher than desired amount of hydrogen gas was detected in the "closed out" aft section. Following the first first test, it was generally thought that the hydrogen gas was from an external source which because of vibration and current conditions during the twenty seconds of firing had found its way back into the aft area behind the engine's dome heat shields. There was a leak near the rim of an engine nozzle (the right hand side) of the three engine cluster. Extra sensors and a higher than ambient pressurization was "installed" in the aft section for the second test. This was to prohibit any outside hydrogen to penetrate the aft section. Following the second test again a higher than desired hydrogen gas content was detected in the aft section.

All of that resulted in the replacement of the number one engine (SSME 2011). But before the replacement could be installed, it was found to have a leak in the engine's heat exchanger used to warm a small portion of the liquid oxygen into gas then directing it back to the External Tank where it was used for pressurization. A second engine was required. This engine, SSME 2017, required a "full duration" (500 seconds) firing test to complete its acceptance testing. Following the successful test firing and leak checks the engine was packaged and sent to KSC on March 3.

Here is a list of all of the delays before launch:

Dec 1	1982	Flight extended by 2 days.
Jan 4	1983	Hydrogen leak found.
Jan 7	1983	Launch postponed until late February.
Jan 14	1983	Engines fired to seek hydrogen leaks.
Jan 25	1983	Another hydrogen leak found. Launch of February delayed by "at least several weeks."
Feb 16	1983	New engine for Challenger. Launch delayed until at least mid-March.
Feb 26	1983	Another leak in engine found.
Mar 1	1983	Another delay in launch due to modifications.

LAUNCH AND LANDING OF CHALLENGER

Launch came at 1:30 p.m. Florida time on April 4, 1983 and almost exactly on schedule. Upper level winds earlier had been a threat to the launch but by launch time, they had diminished to acceptable levels. Al O'Hara, KSC launch and landing director said that Challenger's main engines worked flawlessly. However, cameras showed that insulation on the spacecraft's right orbital maneuvering system pod was damaged. Flight Director Jay Greene said that it would pose no problem to the flight.

Landing was at Edwards Air Force Base, California on April 9 at 10:53 a.m. The crew had been nick-named "the high flying men of F Troop" and had completed 80 orbits of the Earth. An estimated crowd of 100,000 was on hand at Edwards to greet the crew as Challenger made its landing. Thd crowd braved flying sand that had been whipped up by gusty winds. Challenger's had

several successes and they were significant. The crew had made a launch from the spacecraft of one of the largest communications satellites ever. They also performed the first American spacewalk in nine years. And most importantly, they added to the nation's space fleet its second vehicle...Challenger.

MISSION EVENTS

On April 4, 1983, the STS-6 crew deployed the TDRS satellite. The deployment of this large, advanced Tracking and Data Relay Satellite was the primary task of the crew on this mission. It was successfully launched and should have taken its place 22,300 miles above the equator, off the eastern tip of South America. However, hours after it was launched it began tumbling through space. It finally quit tumbling but then began an orbit ranging to about 7,000 miles below its necessary orbit of 22,300 miles above the Earth.

The TDRS system was developed following studies in the early 1970's. Those studies showed that a system of telecommunication satellites operated from a single ground station could better support the projected scientific and application mission requirements. This system could also halt the spiralling cost escalation of upgrading and operating a worldwide tracking and communications network of ground stations.

TDRS-A, launched from Challenger on STS-6, is the first of three identical ones which are planned for the TDRS system. Plans call for one satellite to be stationed over the Pacific Ocean (called TDRSS-West); one satellite to be stationed at the Equator over the northeast corner of Brazil (called TDRSS-East); and the third satellite, to be centrally located over the Equator at 79 degrees West which is referred to as an in-orbit spare. All three of the satellites are to be deployed from the Space Shuttle spacecraft.

Rendezvous maneuvers. During the afternoon of April 5, Houston time, the crew aboard Challenger fired five small jets on the spacecraft to begin a series of rendezvous maneuvers. This was a rehearsal for future missions where a space shuttle will rendezvous with satellites in orbit.

First spacewalk from space shuttle. America's first walk in space since 1974 began at just after 3:00 p.m. (Houston time) on April 7. Mission Specialists Story Musgrave and Donald Peterson performed the EVA in the cargo bay for nearly four hours. This validated the use of NASA's new type of spacesuits. During the EVA, which was televised back to the Johnson Space Center's Mission Control, and to a wide audience in America, President Reagan radioed his congratulations to the two spacewalking astronauts aboard Challenger.

The extravehicular activity (EVA) on STS-6 began by requiring the use of the airlock in the spacecraft and two extravehicular mobility units (EMU's). The airlock and airlock notches permit the EVA flight crew members to transfer from the mid-deck crew compartment into the payload bay without depressurizing the orbiter crew cabin.

The EMU's are an integrated space suit assembly and life support system which provides the capability for the flight crew to leave the orbiter pressurized crew cabin and work outside the cabin in space.

The EMU's provide the necessities for life support, such as oxygen, carbon dioxide removal, a pressurized enclosure, temperature control and meteorid portection during EVA. The EMU space suit comes in various sizes so that prior to launch, flight crew members can pick their suites "off the rack."

The life support system is self contained and contains seven hours of expendables such as oxygen, battery power for

electrical power, water for cooling, and lithium, a hydroxide for carbon dioxide removal and a 30 minute emergency life support system during an EVA.

The prime contractor to NASA for the space suit/life support system is United Technologies' Hamilton Standard Division in Windsor Locks, Conn. Hamilton Standard is program systems manager for the space suit/life support system in addition to designer and builder. Hamilton Standard's major subcontractor is ILC Dover of Frederica, Delaware, which fabricates the space suit.

Crew arrives home at Ellington. After landing earlier in the day at Edwards Air Force Base in California on April 9, the crew flew home to Houston. They arrived at Ellington Air Field, near the Johnson Space Center about 8:00 p.m. After a brief ceremony, the men of "F Troop" and their families headed home for a rest.

Challenger returns to Cape Canaveral. Challenger, mounted atop its 747-carrier aircraft, left Edwards Air Force Base in the morning of April 14, 1983. It was scheduled for just a brief re-fueling stopover in San Antonio, Texas but due to bad weather there, it had to stay overnight. In the morning of April 16, it departed San Antonio and arrived at Cape Canaveral later that afternoon.

STS-6 Post-flight press conference, This was held at the Johnson Space Center on April 22, 1983. Mission commander Paul Weitz said that the first flight of Challenger had produced few surprises but the biggest one was that there were so few surprises in space during its first mission.

STS-6 FLIGHT CREW

Paul J. Weitz was the commander. He was the pilot in the Skylab 2 mission, logging 672 hours and 49 minutes aboard the Skylab workshop, in addition to 2 hours and 11 minutes in an EVA walk in space. He retired from the Navy in 1976 with 22 years of service and remains with NASA as a civilian astronaut. He was selected as an astronaut in 1966.

Karol J. Bobko was the pilot. He was a member of the Skylab Medical Experiments Altitude Test (SMEAT), a 56-day simulation of the Skylab mission. He was also a member of the astronaut support crew for the ASTP mission. He was assigned as an astronaut in the U. S. Air Force's Manned Orbiting Laboratory program in 1966 and transferred to the NASA astronaut corps in 1969

Story Musgrave was a mission specialist on STS-6. He was selected as a scientist astronaut in 1967. He worked on the design and development of the Skylab program and was a back-up science pilot on the first Skylab mission.

Donald H. Peterson was a mission specialist on STS-6. He served on the astronaut support crew for Apollo 16. He was assigned to the U. S. Air Force's Manned Orbiting Laboratory program as an astronaut in 1966. In 1969 he transferred to NASA's astronaut corps.

PRICES...All prices in this list are for Space City Cover Society covers only. The selling price of each is determined by the number of covers we serviced on that particular issue and how many might be in stock at the time of this list being printed.

CACHETS...We do not print our cachets until after the event. This allows us to give detailed information about the event. With SCCS covers, the collector does not have to guess at what the date pertains to. Also, we try to "plan ahead". If the event appears to be one that would make a nice future double cancelled cover, then we put back an estimated number of those covers with no cachet. Should such a future event come about, we then use those covers and the cachet can detail both events.

NASA SITES FOR STS-6...Launch was made from the Cape Canaveral area. As the spacecraft cleared the launch tower, Mission Control in Houston took over completely. Landing for STS-6 was at Edwards, California. We serviced a set of two covers from all three locations (one cover for launch and one for landing). We have two different sets of two from Houston. One set is with machine cancel and the other set of two is with the Houston Mailer's Permit Postmark hand cancel. The SCCS has Houston permit #1. This permit was issued to SCCS on July 3, 1972.

HOUSTON'S MISSION CONTROL...Houston is the site of Mission Control for all U. S. manned missions. It took over this responsibility on June 3, 1965 with the launch of Gemini 4. Even with this knowledge, it has just been in the last few years that many collectors have realized the importance of Houston postmarks for U. S. manned space missions. And since 1972, with the SCCS MPP hand cancel, more and more collectors have been requesting this postmark in particular.

An article in "The American Philatelist" (publication of The American Philatelic Society, a 50,000-member organization) in the April 1985 issue was titled "Using Mailer's Postmarks to Document Important Events." We at SCCS have been doing just that for years. We feel that this is another reason why the space cover collector has more fun collecting our SCCS covers.

HOW TO ORDER...

Each cover is given an SCCS catalog number. To order, you may use any sheet of paper, but an 8½ x 11" is best. List the quantity wanted, catalog number and price. The ordered covers will then be sent to you in an appropriate size envelope, with a stuffer. We guarantee arrival of covers in the best of condition. If they do not arrive in good condition, return the shipment to us and we will replace them. Send your orders and remittance to: Space City Cover Society, P. O. Box 53545, Houston Texas 77052.