



Space Log

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NASA SELECTS 35 ASTRONAUT CANDIDATES

A selection of 35 new astronaut candidates for the Space Shuttle program was announced on January 16, 1978 by NASA Administrator Dr. Robert A. Frosch. This group of candidates for the Shuttle program will report to Johnson Space Center, Houston on July 1, 1978. There they will join the astronauts currently on flight status.

In making the announcement, Dr. Frosch said: "The long and difficult task of selecting the most qualified candidates for the Space Shuttle program has been concluded and we are very pleased with the results. We have selected an outstanding group of women and men who represent the most competent, talented and experienced people available to us today.."

The 35 new astronauts are in several ways the most diverse group ever selected for space missions. They include the first women, the first blacks, one man of Japanese descent and the first mother. Members of this new group should be ready for assignment as soon as the Shuttle becomes operational in mid-to-late 1980. Frosch said the six women and three black candidates were selected as a result of "a strong affirmative action program to get as wide a selection as possible." No formula required their selection, he said. However, he noted there was an attempt to strike a balance among the professions and backgrounds of mission specialists.

No further selections for astronaut pilot or mission specialist are expected before the Shuttle missions begin. But since the program is scheduled to run for 12 years, Frosch said additional selections probably would be needed sometime in the future.

NASA received 8,079 applications during a year-long recruiting period which ended June 30, 1977. The selection board considered 657 to be qualified pilots and interviewed 80. Fifteen pilots, one a civilian, were selected. Also considered were 5,680 applicants to be initially qualified for mission specialist roles and NASA interviewed 128. Twenty were selected. Frosch said most of the rejections on medical grounds were because of eye problems. He added "We may learn in the future that these standards are more stringent than necessary."

This is the eighth group of astronaut candidates selected by NASA, dating back to the original seven Mercury astronauts picked in April 1959. There are 27 astronauts on active flight status, including 17 pilots and 10 scientists.

After two years of training and evaluation at the Johnson Space Center, successful candidates will become astronauts and enter the Shuttle training program leading to selection on a Space Shuttle flight crew. Pilots will operate the Space Shuttle Orbiter, maneuvering it in Earth orbit and flying it to Earth for a runway landing.

Mission specialist astronauts will have the overall responsibility for the coordination, with the commander and pilot, of Space Shuttle operations in the areas of crew activity planning, consumables usage, and other Space Shuttle activities affecting experiment operations. They may participate in extravehicular activities (space walks), perform special payload handling or maintenance operations using the Space Shuttle remote manipulator system, and assist in specific experiment operation at the discretion of the experiment sponsor.

ASTRONAUT CANDIDATES FOR POSITION OF PILOT

Brandenstein, Daniel C.
Coats, Michael L.
Covey, Richard O.
Creighton, John O.
Gibson, Robert L.
Gregory, Frederick D.
Griggs, Stanley D.
Hauck, Frederick H.

McBride, Jon A.
Nagel, Steven R.
Scobee, Francis R.
Shaw, Brewster H., Jr.
Shriver, Loren J.
Walker, David M.
Williams, Donald E.

ASTRONAUT CANDIDATES FOR POSITION OF MISSION SPECIALIST

Bluford, Guion S.
Buchli, James F.
Fabian, John M.
Fisher, Anna L.
Gardner, Dale A.
Hart, Terry J.
Hawley, Steven A.
Hoffman, Jeffrey A.
Lucid, Shannon W.
McNair, Ronald E.

Mullane, Richard M.
Nelson, George D.
Onizuka, Ellison S.
Resnik, Judith A.
Ride, Sally K.
Seddon, Margaret R.
Stewart, Robert L.
Sullivan, Kathryn D.
Thagard, Norman E.
van Hoften, James D.

WELCOME "HOME"

The Johnson Space Center and the Houston area is not home to all of these wonderful people yet, but we do wish them "Welcome" and we look forward to their being here soon. We also wish them each and every one the best of everything in their new endeavor. And to be honest...we sure do envy them. What a feeling it must be to be associated with a group that will join others who get that chance to be on the "threshold of space."

ORBITER/747 CLEARED FOR FERRY FLIGHT

Captive flight tests of the Space Shuttle Enterprise atop its Boeing 747 carrier aircraft have cleared the Orbiter/747 combination for a ferry flight in mid-March from Edwards, Calif., to NASA's Marshall Space Flight Center in Huntsville, Ala. Once at the Huntsville facility, it will undergo a series of ground vibration tests with its external tank and solid rocket boosters.

During November, at the Dryden Flight Research Center at Edwards, a total of four "Pre-Ferry Flight Tests" were flown. Their success cleared the way for the flight to Marshall Space Flight Center, a distance of about 1,790 miles from Edwards. During these four test flights, the Orbiter was set atop the carrier 747 at a 3-degree angle of incidence to the 747 in the ferry configuration for the tests instead of the 6-degree angle used for the captive and free flight phases of the Approach and Landing tests. After the tests, Fitzhugh L. Fulton, Jr., commander of the carrier aircraft crew at Dryden said there was no noticeable changes in the 747's handling characteristics with the Enterprise mated in the ferry configuration. However, the 3-degree forward tubular strut that supports the orbiter created a high-frequency noise at altitudes above 10,000 feet, Fulton said.

Here is detailed information on the four test flights:

- (1) Flown on November 15, 1977 a.m. with Fitz Fulton and Tom McMurtry as the crew.
- (2) Flown on November 16, 1977 a.m. with Fitz Fulton and Joe Algranti as the crew. Combined takeoff weight of the Orbiter/747 for this flight was 710,000 lb., the heaviest gross weight at which the combination had been flown. Heaviest operating gross weight prior to this was 630,000 lb. at taxi and about 626,000 lb. at takeoff. Cruise performance data were collected during this flight along with some additional sideslip data at the higher operating weights. The forward strut fairing was installed for the flight and the noise mentioned earlier was not heard again.
- (3) Flown on November 17, 1977 a.m. with Fitz Fulton and A. J. Roy as the crew. This flight involved additional high gross weight takeoffs and landings and cruise performance tests.
- (4) Flown on November 18, 1977 a.m. with Fitz Fulton, A. J. Roy and Joe Algranti as the crew.

These tests were important not only for the ferry flight to Huntsville, but to future flights with the Orbiter/747 combination. Subsequent ferry flights will transport future Orbiters to NASA's Kennedy Space Center in Florida where they will be launched into space following their construction at the Rockwell International facility in Palmdale, Calif. After the first four orbital flights, which will be recovered at Dryden Center, the Orbiter used in those tests will also be returned to Kennedy atop the SCA (Shuttle Carrier Aircraft).

FLIGHT TO MARSHALL SPACE FLIGHT CENTER

The schedule calls for the Orbiter/747 to depart NASA's Dryden Flight Research Center at about 11 a.m. EST. March 10. That afternoon at about 2 p.m. CST., the mated pair will land at Ellington Air Force Base, Houston, near NASA's Johnson Space Center. It will stay there on view to the general public until early Monday morning March 13 and should arrive at Marshall Space Flight Center at 11 a.m. EST.

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SPACE SHUTTLE APPROACH AND LANDING TESTS

The year 1977 was important in the development of the Space Shuttle and October 26 was the day that one phase of it drew to a successful conclusion. On that day the Shuttle Orbiter "Enterprise" passed its fifth and final manned free flight -- and after a short, steep glide came to a bumpy yet safe landing on a concrete desert runway.

The series of test flights go by the name of Approach and Landing Tests (ALT) and are divided into three phases. All of them were made with the OV101 mounted atop the NASA 747 Carrier Vehicle.

PHASE I In this phase, the Orbiter was unmanned and systems inactive.

TAXI TESTS...Three taxi tests assessed the mated capability of the Shuttle Orbiter piggyback atop the 747 in ground handling and control characteristics up to the flight takeoff speed. The tests also validated the 747 steering and braking. The crew during these tests, which were made on February 15, 1977, was Fitz Fulton and Tom McMurtry. The first run was 78 knots (no lift-off), the second run was 122 knots (no lift-off) and the third run was 137 knots (nose wheel lift-off).

CAPTIVE INERT FLIGHTS...Consisted of five different flights.

Flight #1 February 18, 1977

Objective was to obtain evaluation of low speed performance and handling qualities. The flight duration was 2 hours 5 minutes, maximum speed 287 mph and maximum altitude of 16,000 feet. Crew was Fitz Fulton and Tom McMurtry.

FLIGHT #2 February 22, 1977

The objective accomplished a series of flutter and stability control tests. During this flight, the two right engines of the 747 were reduced to idle thrust. Flight duration was 3 hours 13 minutes, maximum speed 328 mph and maximum altitude was 22,600 feet. Crew was Fitz Fulton and Tom McMurtry.

FLIGHT #3 February 25, 1977

This flight concluded the flutter tests and concentrated on stability/control/flight evaluation and airspeed calibration. Stability and control were evaluated by idling the #4 engine of the 747 to simulate an engine failure. Flight duration was 2 hours 28 minutes, maximum speed 425 mph and maximum altitude 26,600 feet. Crew was Fitz Fulton and Tom McMurtry.

FLIGHT #4 February 28, 1977

This flight simulated emergency descent of the mated vehicles and a missed landing approach, as well as maneuvers required of the 747 when the mated vehicles enter the separation flight phase. Flight duration was 2 hours 11 minutes, maximum speed 425 mph and maximum altitude 28,565 feet. Crew was Fitz Fulton and Tom McMurtry.

FLIGHT #5 March 2, 1977

This flight objective was to fly two simulated Orbiter launch profiles. Flight duration was 1 hour 39 minutes, maximum speed 474 mph and maximum altitude 30,000 feet. Crew was Fitz Fulton and A. J. Roy.

PHASE II In this phase, the Orbiter was manned and systems active.

CAPTIVE ACTIVE FLIGHTS... Consisted of three different flights.

Mission Aborted June 17, 1977

Due to computer problems, this first flight was aborted.

Flight #1 June 18, 1977

Spacecraft Commander Fred Haise and Pilot Gordon Fullerton were at the controls of the Orbiter during this first manned captive flight. This flight was a once around a race-track-like flight path which measured approximately 78 statute miles and the "straight-aways" with 10 statute mile curves. The 747 crew was Fitz Fulton, Tom McMurtry, Vic Horton and Skip Guidry. Flight duration was 55 minutes 46 seconds.

Flight #2 June 28, 1977

Spacecraft Commander Joe Engle and Pilot Dick Truly were at the controls of the Orbiter during this second manned captive flight. This flight consisted of a modified racetrack like trajectory as well as a "Grand Prix" roadrace-like trajectory. The 747 crew was Fitz Fulton, Tom McMurtry, Ray Young and Skip Guidry. Flight duration was 1 hour and 2 minutes.

Flight #3 July 26, 1977

Spacecraft Commander Haise and Pilot Fullerton were at the controls of Enterprise during this third and final captive flight. It was a full dress rehearsal of the planned first manned free flight. A maximum altitude of 27,992 feet was reached at which time pitch over was performed. The carrier aircraft landing gear was deployed to simulate the free flight approach and landing profile. A practice separation run was normal and "abort separation" was performed one minute after pushover. Enterprise landing gear was deployed for the first time after the SCS landed on runway 22. The final approach profile was identical to that planned for the first free flight. The 747 crew was Fitz Fulton and Tom McMurtry. Flight duration was 59 minutes 53 seconds.

PHASE III This was the free flight series.

Flight #1 August 12, 1977

The Shuttle Orbiter "Enterprise" solo flight lasted 5 minutes 22 seconds with astronauts Fred Haise and Gordon Fullerton at the controls. It was released from an altitude of 24,000 feet. The crew of the 747 was Fitz Fulton, Tom McMurtry, Vic Horton and Skip Guidry. Complete flight time for entire mission was 53 minutes 51 seconds.

Flight #2 September 13, 1977

This solo flight of the Orbiter lasted 5 minutes 31 seconds with Joe Engle and Dick Truly at the controls. It was released from an altitude of 24,000 feet. The crew of the 747 was Fitz Fulton, Tom McMurtry, Vic Horton and Skip Guidry. Complete flight time for entire mission was 56 minutes 10 seconds.

Flight #3 September 23, 1977

This solo flight of the Orbiter lasted 5 minutes 34 seconds with Fred Haise and Gordon Fullerton at the controls. It was released from an altitude of 21,400 feet. The crew of the 747 was Fitz Fulton, Tom McMurtry, Vic Horton and Skip Guidry. Complete flight time for entire mission was 50 minutes 36 seconds.

Flight #4 October 12, 1977

This solo flight of the Orbiter lasted 2 minutes 34 seconds with Joe Engle and Dick Truly at the controls. It was released from an altitude of 20,536 feet. The crew of the 747 was Fitz Fulton, Tom McMurtry, Vic Horton and Skip Guidry. In this flight on October 12, three simulated Orbiter main engines replaced the smooth tailcone and closely resembled a landing the actual Shuttle Orbiter will experience upon its return from space in 1979.

Flight #5 October 26, 1977

This solo flight lasted 1 minute 55 seconds with Fred Haise and Gordon Fullerton at the controls. It was released from an altitude of 19,900 feet. The crew of the 747 was Fitz Fulton, Tom McMurtry, Vic Horton and Skip Guidry. In this flight the tailcone was again off and the landing was the first made by the Enterprise on a hard surface runway.

WHERE TO NOW?

The Shuttle Orbiter will now be prepared for a series of ferry verification flights atop the NASA 747 and then will be ferried to NASA's Marshall Space Flight Center in Huntsville, Alabama in March 1978. There it will undergo a year-long series of ground vibration tests and then will be returned in 1979 to the Rockwell International Space Division facility at Palmdale, Calif. There it will be readied for space flight.

And what about Engle, Haise, Fullerton and Truly? Well, all four have their eyes on orbital flights aboard the future space shuttle missions. Those start in March 1979 at Cape Canaveral with six orbital tests planned. Then in 1980, operational missions will begin. It is truly a new era of space that we are now entering.

HIGHLIGHTS OF 1977 UNMANNED LAUNCHES

NASA attempted 16 launches during 1977 and three of these were unsuccessful. Two of the failures resulted in the spectacular destruction of the launch vehicles and spacecraft about a minute after liftoffs from Cape Canaveral. One was a Delta rocket, the other an Atlas-Centaur. A third failure resulted when the upper stage of the Delta launch vehicle did not operate properly with the result that the spacecraft was not put into the desired geosynchronous orbit.

Of the 16 launches, an even dozen, including the three failures, were in the reimbursable category--the payload sponsor paid NASA for the launch and launch support operations costs. Under this plan NASA makes "a best effort" and is paid even if the launch is a failure.

Two of the launches sent NASA Voyager payloads on missions to Jupiter and Saturn. One launch, ISEE 1 and 2 was a joint NASA-European Space Agency mission. Ten of the 1977 launches were by Delta launch vehicles, two by Titan III Centaurs, three by Atlas-Centaurs and one by the Scout rocket. The 1977 launch record brings to 345 the successful launches since NASA was established in 1958. During this period there were 58 failures.

LIST OF THE 1977 LAUNCHES

January 27	NATO-3B (Cape Canaveral)	Second communications satellite in synchronous orbit to perform communications relay for NATO. Reimbursable.
March 10	Palapa-2 (C. Canaveral)	Back-up satellite for Indonesian domestic communications network. Reimbursable.
April 20	GEOS/ESA (C. Canaveral)	ESA spacecraft to conduct scientific investigation of waves and particles in magnetosphere. Reimbursable (Failed to correct orbit.)
May 26	Intelsat IVA-C (C. Canaveral)	Improved communications satellite for Comsat. Reimbursable.
June 16	GOES/NOAA (C. Canaveral)	Second operational satellite to provide continuous daytime and nighttime global cloud cover observation for NOAA. Reimbursable.
July 14	GMS-Japan (C. Canaveral)	Geosynchronous Meteorological Satellite. Japanese portion of global network of geostationary environmental satellites. Reimbursable.
August 12	HEAO-A (C. Canaveral)	High Energy Astronomical Observatory to study energetic radiation from space.
August 25	SIRIO-I (C. Canaveral)	Italian project to investigate radio propagation, trapped radiation flux, magnetic field intensity and variation, and the primary electron energy spectrum. Reimbursable.
August 20	Voyager 2 (C. Canaveral)	Jupiter and Saturn planetary systems and the interplanetary medium out to Saturn.
September 5	Voyager 1 (C. Canaveral)	Same as above.
September 13	OTS/ESA (C. Canaveral)	Orbital Test Satellite. ESA experimental communication satellite. Reimbursable. Rocket exploded about one minute after launch.
September 29	Intelsat IVA-D (C. Canaveral)	Follow-on series of improved communications satellites for Comsat. Reimbursable. Rocket exploded 55 seconds into flight.
October 22	ISEE/A/B (C. Canaveral)	NASA's international Sun-Earth explorer (cooperative with European Space Agency.)
October 28	Navy Transat (Vandenberg AFB)	Navy navigation satellite. Reimbursable.
November 22	Meteosat/ESA Cape Canaveral	ESA meteorological satellite. Reimbursable.
December 14	CS/Japan (C. Canaveral)	Communications satellite for Japan, to cover telephone and color TV transmission, and experiments. Reimbursable.

COMMENTS

The two Voyager spacecraft were launched beginning a 10-year journey to the outer reaches of the solar system and, on Earth, two series of manned Space Shuttle Orbiter tests were successfully completed, highlighting the 1977 activities of the National Aeronautics and Space Administration.

The heaviest Earth-orbiting satellite ever launched, High Energy Astronomy Observatory, HEAO-A, also began its flight into space to study some of the most intriguing mysteries of the universe -- pulsars, quasars, exploding galaxies and black holes in space.