

JESSE COVEY

SPACE PROGRAM - B

GRANDPARENTS Horse & Buggy/Trains (Iron Horse)

PARENTS Automobile/Planes

OUR GENERATION Jets/ Early Space Travel

History lesson on beginning of Space Program

Noted by Event Covers & First Day Covers. Events cancelled at time of happening and First Day Covers cancelled later to commemorate the Event.

Envelopes are a 70 year "accumulation", not a "collection". EPIGRAM HERB SHORE

1 First U.S. postage stamp related to Space is considered to be the Fort Bliss Centennial stamp, issued on November 5, 1948. Central design is a rocket. Book 1 11-5-48

During the next 40 years (1948-1989) the Post Office Department issued 25 stamps honoring space achievements.

Advancements in Space travel depended on advancements in balloon and rocket development.

2 Aerial Steam Horse cover. Book 2 10-5-64

3 Robert H. Goddard (1882-1945) is considered the father of modern rocketry. In 1909 he began tests with solid propellants. In 1926 he launched the first liquid fueled rocket using gasoline and liquid oxygen. It traveled 184 feet at about 60 miles per hour. Many years later he launched the world's first supersonic rocket. Goddard did all the early work on the mathematics of rocket action. An Airmail stamp was issued in his honor on October 5, 1964.

Goddard was followed by Werner Von Braun. Von Braun was born in Germany in 1912. During World War II, at the age of 20, he was a rocket scientist and developed the V-2 rocket used to bomb London. Hitler took over the rocket work and Von Braun resigned. He was put in jail for the rest of the war. After the war he was invited to the United States, and one of his coworkers went to Russia. As you may remember, Russia got a slight head start on the U.S. by launching Sputnik 1 on October 4, 1957; the first artificial satellite to circle the earth.

In 1965 or 66, Von Braun presented a lecture at Austin College in Sherman, Texas. I attended the event and have a copy of his paper. Most of his talk was on the history of rocketry and the predicted future developments. However, toward the end of the presentation he gave a detailed slide show that predicted the launch, orbit, moon orbit, moon landing, exploration and return to earth. Von Braun had visions of the moon trip lasting a week with a lunar taxi, mapping a survey of a 15 mile radius from the landing spot, and drilling a 300 feet deep hole. He said that we could send equipment and expendables on an unmanned landing and personnel on another. He said this all depended on bigger rockets, more weight and more fuel.

Von Braun became director of the George C. Marshall Space Flight Center in Huntsville, Alabama. He led the team that launched Explorer 1 on January 31, 1958. This was the first U.S. satellite and it discovered the Van Allen Radiation Belt. Other early space probes involved:

- 1-A Weather information* North to South orbit
- 2-A Navigation
- 3-A Scientific satellites* 3 pound aluminum ball
- 4-A Space probes
- 5-A Communications* ECHO 1
(handout) MID 60's

ATTACHMENTS
HAND OUTS

- 4- Echo 1 was the first passive communications satellite and involved an aluminum coated mylar balloon that inflated to 100 feet in diameter in space. It was launched on August 12, 1960 and on December 15, 1960, the U.S. Postal Service issued a stamp to commemorate the event.

Man made his own first journey into space on April 12, 1961. On that date, a Russian Air Force Officer, Yuri Gagarin became the first man to circle the earth in a spaceship. The next month, U.S. astronaut Alan B. Shepard made a 15-minute suborbital space flight.

SPACE PROGRAM #

- May 5, 1961 Mercury III "Freedom 7" Alan Shepard First American in space. 4-hours of delay, but perfect launch. Was able to control spacecraft in space. Used small jets of hydrogen to pitch, yaw, and roll the craft in a suborbital flight. Splashdown in Atlantic Ocean, picked up by USS Lake Champlain. 116.5 miles H₂O
- July 21, 1961 Mercury IV "Liberty Bell 7" Virgil (Gus) Grissom Second suborbital flight. After landing in the ocean, the capsule hatch was blown off and sea water poured in. Grissom struggled to stay afloat and was picked up by helicopter, however the million dollar spacecraft was lost. Recovery ship was USS Randolph. FLOTATION COLLAR
- 5 Feb 20, 1962 Mercury VI "Friendship 7" John Glenn First American to orbit the earth. 3 orbits, view was "tremendous", could see the coast of Africa and American shoreline. Splashdown was at 3:30 pm and he was picked up by U.S. Destroyer NOA. Before this date, the Postal Service had secretly printed and distributed a Project Mercury stamp to 305 post offices. They were all given strict orders not to release any stamps until notified. All went on sale at 3:30 pm, the time of John Glenn's landing in the ocean. Stamps cancelled earlier in the day were not cancelled "First Day of Issue". Also, no covers have been reported from about 10% of the original 305 post offices that had the stamps on hand.
- Glenn was 41 years old at this time and he returned to space again after 36 years, at the age of 77. Both, the Kennedy Space Center in Florida, and the Mission Control Station in Houston, provided pictorial cancellations for this last flight.
- May 24, 1962 Mercury VII "Aurora 7" Scott Carpenter Second American orbital flight. Main mission was to control craft with hydrogen peroxide jets. The tests went well, however, when the retro-rockets fired there was not enough fuel left to obtain the estimated re-entry path. So the splash down was about 250 miles downrange. However, after drifting for about 3 hours, Carpenter and his capsule were rescued and transferred to the USS Intrepid.
- Oct 3, 1962 Mercury VIII "Sigma 7" Walter Schirra 6 earth orbits. Main mission was to try to conserve fuel by not continuous maneuvering. Was allowed to drift freely for 99 minutes with all controls switched off. Only a slight increase in spacesuit temperature. Landed in the Pacific Ocean, about 250 miles from Midway Island.
- 6 Dec 3, 1962 United Nations issued 2 stamps honoring the U.N. Commission on peaceful uses of Outer Space.
- 7 May 7, 1963 Telstar 2, a communications satellite, was launched from Cape Canaveral. It had radiation protection and added to the useful life of communication equipment. It was operated by the Bell System's earth station at Andover, Maine.
- May 15-16, 1963 Mercury IX "Faith 7" Gordon Cooper 22 orbits. Long term medical studies under weightlessness, and various food experiments. Splashdown clearly visible from carrier Kearsarge. Last and most successful mission of the Mercury series.

- 8 Dec 11, 1964 Cape Canaveral sent a "Moon Ship Model" into orbit by Atlas-Centour rockets. A test of the durability of the odd shaped vehicle in space.
- 9 Dec 21, 1964 Cape Canaveral sent a "Radiation Explorer" probe into space before sending manned flights to the moon.
- 10 Feb 3, 1965 Cape Canaveral sent a "Sun-Snooping Observatory" into Earth orbit where it could have a clear view of the Radiation that both sustains and threatens man.
- 11 March 23, 1965 Gemini III Virgil Grissom & John Young. First American 2-man flight. Second trip for Grissom. They tested two types of thrusters; one to change the orbit, the other to alter the path of flight. Success was vital if man was to ever rendezvous in space. All maneuvers went as planned. For splashdown, they used maneuvering capability to get closer to recovery ship near Grand Turk Island.
- June 3-7, 1965 Gemini IV James McDivitt & Edward White. First space walk. Reduced pressure in spacecraft to zero, opened the hatch and White stepped out into space; 20-minute Space-walk. Maneuvered with aid of Space Gun that ejected jets of Oxygen. He was connected to the spacecraft by only a slender 25 foot long "umbilical" or life line. After passing across the United States, he got back into capsule for 3 more work-filled days. Flight lasted about 98 hr.
- 12 July 30, 1965 Cape Canaveral launched a meteoroid detection satellite. This was to find what protection would be needed for men going to the moon.
- 13 Aug 11, 1965 Cape Canaveral launched a "Surveyor" spacecraft. This was the first successful test of a dummy surveyor space vehicle weighing 2100 pounds. This was in preparation for a soft-landing for the manned moon flights.
- Aug 21-29, 1965 Gemini V Gordon Cooper & Pete Conrad. First 8-day mission, the amount of time needed for a trip to the moon and back; endurance test to see if man could live and work in space. Initial rendezvous tests were voided as the radar target to be used was lost in space. However, ground control arranged a rendezvous involving a "phantom" target. Astronauts demonstrated that they could arrive at a given point with accuracy. Computer errors from ground crew caused spacecraft to land 103 miles of target.
- 14 Aug 30, 1965 Cover cancelled aboard the "pick-up" ship, Port Washington.
- Oct 25, 1965 Gemini VI Walter Schirra & Thomas Stafford were aboard Gemini VI in preparation for rendezvous practice in space when they learned that the Agena target had been lost into the Atlantic Ocean. Flight was cancelled.
- Dec 4-18, 1965 Gemini VII Frank Borman & James Lovell Jr. Longest space flight of 2 weeks, with extensive bio-medical examination. Astronauts were able to operate without space suits. Also their space ship became the target for a retry of rendezvous for Gemini VI.
- Dec 15-16, 1965 Gemini VI Walter Shirra & Thomas Stafford rescheduled. First rendezvous in space. They flew in formation for 6 hours with Gemini VII. (1 foot apart) Returned to earth.

- 14 1/2 March 16 at 10AM, Atlas Agena lifts off pad 14 at Cape Canaveral to await rendezvous by Gemini VIII.
- March 16, 1966 Gemini VIII Neil Armstrong & David Scott. First docking in space with just launched Agena target vehicle. However, the two vehicles began tumbling end over end and rolling because of a short-circuited thruster rocket. The astronauts were able to reduce the rolling and undock the Agena target. They landed safely in the Pacific, about 500 miles east of Okinawa, and had proved docking with unmanned target was possible.
- June 3-6, 1966 Gemini IX Thomas Stafford & Eugene Cernan Rendezvous with target sent up on June 1 for additional docking tests. However, docking ring on target was partly shrouded and test abandoned. A space walk was begun, but Cernan's faceplate fogged over and test was abandoned. Good landing within 1 1/2 miles of Carrier USS Wasp
- July 18-21, 1966 Gemini X John Young & Michael Collins "Letter-perfect" Rendezvous with Agena target sent up 1 1/2 hours ahead of them and docked properly. Then they fired up the Agena 10's engine and sent them on up to a 475 mile orbit. Later rendezvous with an older Agena that had been in space 4 months and recovered a box of "space dust" it had collected.
- 15 Sept 12-15, 1966 Gemini XI Charles Conrad & Richard Gordon Similar to Gemini X; Rendezvous, docking, and "rocketing" to the edges of deep space (850 miles above earth). They then undocked and redocked 4 times. A space walk by Gordon found that his perspiration badly clouded his vision and had to be shortened somewhat.
- 16 Nov 11-15, 1966 Gemini XII Edwin (Buzz) Aldrin & James Lovell Caught up with an Agena target and docked. Depressurized cabin and took many valuable "open hatch" photos of the earth and stars. Extended spacewalk involved many mechanical tasks. No problem with spacesuit. Splashdown was within sight of the recovery ship, USS Wasp. Final Gemini flight.
- Jan 27, 1967 Apollo 1 Tragic fire, took the life of 3 Astronauts: Gus Grissom, Ed White, and Roger Chaffee. The manned space program was delayed for over 1 1/2 years while the Apollo spacecraft was torn apart, examined and extensively redesigned. TEST FLIGHT STIMULATION
- 17 May 5, 1967 Vandenberg AFB, Ca Launched British satellite to measure oxygen in the atmosphere, electronic density, and radiation.
- 18 May 24, 1967 Vandenberg AFB, Ca Explorer 34 launched into Polar Orbit.
- 19 July 28, 1967 Vandenberg AFB, Ca Launched a satellite to search out hidden secrets of the sun's relationship to earth and potential dangers from atmospheric radiations. The 1,000 pound structure described as having booms and wings making the satellite look like a psychedelic dragonfly.
- 20 Sept 29, 1967 U.S. Postal service issued two stamps saluting the United States achievements in Space

- Oct 11-22, 1968 Apollo VII After 6 unmanned flights, Walter Schirra, Donn Eisele, & Walter Cunningham were aboard the first manned Apollo spaceflight. Rendezvous and simulated docking with a spent Saturn upper stage. Beamed back live television pictures transmitted here and around the world. Landed within 1,800 yards of the recovery ship (USS Essex). Made 163 revolutions of the earth and covered over 4 million miles.
- 21 Oct 22, 1968 Cover from recovery ship cancelled in port, Norfolk, VA
- Dec 21-27, 1968 Apollo VIII Frank Borman, James Lovell, & William Anders. First manned orbits of the moon. Ten orbits of the moon at 70 miles above surface. Television broadcast of the loneliness of the moon, concluded with "a Merry Christmas and God bless all of you." The two-day trip back to earth was uneventful. Splashdown 1,760 miles SW of Hawaii to USS Yorktown. PHOTO
- March 3-13, 1969 Apollo IX James McDivitt, David Scott, Russell Schweickart. First manned test of lunar module. Flawless launch, then separation, rendezvous, and docking of both Command and Lunar Modules. A 46-minute EVA involved photos and thermal samples of Lunar Module. Splashdown less than 4 miles from helicopter carrier USS Guadalcanal
- 21 May 5, 1969 U.S. Postal Service issued a postage stamp saluting Apollo 8, the first manned Lunar Orbital flight. The stamp is from a photo of the earth taken from near the moon.
- May 18-26, 1969 Apollo X Thomas Stafford, John Young, & Eugene Cernan. First descent close to moon. Lunar Module undocked and dropped down to 50,000 feet above surface. Close inspection of the Sea of Tranquility area. Problems with Lunar Module and had to hand-control back to Command Module. Successful redocking and return flight home. Splashdown was within sight of the recovery ship: carrier Princeton.
- 13 May 30, 1969 Cover cancelled on USS Chilton of the U.S. Navy recovery force for Apollo 10.
- July 16-24, 1969 Apollo XI Neil Armstrong, Michael Collins, & Edwin Aldrin. First moon landing - Perfect flight into lunar orbit. A few tense seconds just before touchdown on moon, but all went well. "That's one small step for a man, one giant leap for mankind". (July 20, 1969.) - Recovery ship: USS Hornet. The "master stamp die" used later to print the 10-cent "First Man on The Moon" stamp actually went to the moon and back. FDC on Sept 9, 1969 (later).
- 23 + 20 years later, this event was commemorated with a \$2.40 priority mail stamp with First Day of Issue on July 20, 1989 (both covered well by Bill Pry).
- 31 NOV 19 Also, on the 25th anniversary, the U.S. Postal Service honored the event with a 29 cent on July 20, 1994. Ceremonies were held in Washington, DC plus 10 NASA centers. These had no cachets, but large pictorial cancels. In addition, 5 different simple cachets were available from the DC Post Office. Envelopes were sent and received by regular mail to all eleven sites.
- 24 July 20, 1969 Cover cancelled on the day man first walked in the moon.
- 25 July 24, 1969 Cover cancelled on splashdown of Apollo 11. Mission complete.

- Sept 6, 1969 ✓ Armstrong given special "Welcome Home" In Wapakoneta, Ohio.
- 26 Sept 9, 1969 U.S. Postal service issued a new stamp commemorating "First Men on the Moon", using the master die that had actually been on the moon. Some covers also included a July 20 cancel to denote the landing date pictured on the stamp.
- Nov 14-24, 1969 Apollo XII Charles (Pete) Conrad, Richard Gordon, & Alan Bean. 2nd moon landing. Smooth entry into lunar orbit and touchdown on moon (Ocean of Storms, Nov 19)
 - Two astronauts spent 2, 4-hour EVAs on the lunar surface with about 12 hour break between shifts. Return went smoothly with splashdown about 4-miles from recovery ship, USS Hornet.
- 27 Nov 24, 1969 Cover cancelled on USS Strauss, on standby in the Pacific.
- April 11-17, 1970 Apollo XIII James Lovell, Fred Haise, & John Swigert. First Space Rescue. Lift-off went well, but when about 200,000 miles out in space, disaster struck. An explosion in the Command Module made it uninhabitable. The crew scrambled into the small Lunar Module and used it as a "life-boat" to get back to earth. Prime recovery ship was USS Iwo Jima.
- 28 April 11, 1970 "Lift-Off" covers from Kennedy Space Center and Titusville, Florida
- 29 April 21, 1970 Covers from Recovery Ships posted in both the Atlantic and Pacific Oceans.
- 30 April 11-17, 1970 Four covers from Germany Tracking Station cancelled with a moon landing date, which didn't happen.

COLUMBIA
CHALLENGER
DISCOVERY
ATLANTIS
ENDAVOUR

More than 350 people flew on the shuttle missions. In accidents lost their lives.

Charles Duke (walked on the moon): 1 of the residents of the world today, were not present when the Apollo Missions were made.

July 1997 a test of Soviet N-1 rocket ends in catastrophic explosion that destroyed the launch pad and killed more than 100 people. Ends any attempt to land Cosmonauts on the moon.

No computer information

Quarantaine 21 days after walking on moon.

Cape Canaveral/Kennedy Space Center

NASA Manned Space Center/Johnson Space Center

What If: Nixon would call wives first. Nixon would call astronauts and National TV. Fate has ordained that men who went to the moon to explore in peace will stay on the moon to rest in peace.

NASA would cut off communications and a Clergy man would take over and use the "Buried at Sea" ceremony. (Astronauts reportedly had suicide capsules with them).

Saturn V rocket: 365 feet tall, can launch 140 tons, get a speed of 7 miles per second.

6 Space Shuttles:

ENTERPRISE

COLUMBIA

CHALLENGER

DISCOVERY

ATLANTIS

ENDEAVOUR

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SPACE PROGRAM – EARLY WEATHER SATELLITES

Feb 17, 1959	VANGUARD II	First satellite to send weather information back to earth
April 1, 1960	TIROS I	First satellite to take detailed pictures of earth's weather
Nov 23, 1960	TIROS II	Took weather pictures & measured infrared rays given off by earth
July 12, 1961	TIROS III	Discovered hurricane Esther over Atlantic
Feb 8, 1962	TIROS IV	Photographed Gulf of St. Lawrence in joint U.S.-Canada project
June 19, 1962	TIROS V	Mapped ice fields & tropical storms
Sept 18, 1962	TIROS VI	Photographed weather over flight path of Astronaut Walter Schirra
June 19, 1963	TIROS VII	Took weather pictures; measured temperature & electron density in space
Dec 21, 1963	TIROS VIII	Carried special camera system that transmitted cloud pictures Automatically
Aug 28, 1964	NIMBUS I	Tracked hurricane Dora off Florida coast

NOTE: Nimbus watches the weather from a height of more than 500 miles. The satellite orbits in a North-South direction and takes a band of pictures during each orbit. But as the earth rotates, each orbit carries Nimbus over a different strip of the earth's surface. In this way, the satellite photographs the entire earth once every day.

SPACE PROGRAM – EARLY NAVIGATION SATELLITES

April 13, 1960	TRANSIT IB	First navigation satellite	Feb 17, 1959
June 22, 1960	TRANSIT IIA	Carried Canadian-built instruments to measure radio interference in space	Nov 23, 1960
Feb 21, 1961	TRANSIT IIIB	First satellite to broadcast precise information on its own position	July 17, 1960
June 29, 1961	TRANSIT IVA	First satellite to carry a nuclear power source	Feb 8, 1962
Nov 15, 1961	TRANSIT IVB	Tested method of using earth's gravity to keep satellites in proper position	Sept 18, 1962
			June 19, 1963
			June 19, 1963
			Dec 31, 1963
			Aug 26, 1964

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SPACE PROGRAM - EARLY SPACE PROGRES

Date	Event	Details
Jan 2, 1959	LUNAR I (Russia)	First lunar probe, missed moon and became the first spacecraft to orbit the sun
March 3, 1959	PIONEER IV (USA)	First U.S. probe to orbit the sun
Dec 6, 1957	Vanguard Missile	with 3-pound aluminum ball to try to reflect radio waves back to earth. It rose 4 feet, toppled over, and exploded.
Jan 31, 1958	EXPLORER I	First U.S. satellite; discovered Van Allen Radiation in space
March 17, 1958	VANGUARD I	Discovered that Earth is pear-shaped
Aug 7, 1959	EXPLORER VI	Mapped Van Allen Radiation
Aug 16, 1961	EXPLORER XII	Explored space between 180 and 47,800 miles from earth
March 7, 1962	OSO-1	First orbiting solar observatory
April 26, 1962	ARIEL (U.K. No 1)	First international satellite; carried U.S. & British Instruments
Sept 28, 1962	ALOUETTE	First Canadian satellite
Oct 31, 1962	ANNA	Carried flashing light to help map earth
April 2, 1963	EXPLORER XVII	First satellite to study atmospheric temperature, pressure, density, and composition
Sept 4, 1964	OGO-1	First orbiting geophysical observatory
Feb 16, 1965	PEGASUS I	Measured meteorite density in space
April 3, 1965	SNAP 10A	Carried nuclear-powered rocket motor
July 30, 1965	PEGASUS III	Meteoroid detection satellite
Aug 11, 1965	SURVEYOR	Dummy surveyor space craft

SPACE PROGRAM – EARLY SPACE PROBES

Jan 2, 1959	LUNIK I (Russia)	Lunar probe, missed moon and became the first spacecraft to orbit the sun
March 3, 1959	PIONEER IV (USA)	Lunar probe; first U.S. probe to orbit the sun
Sept 12, 1959	LUNIK II (Russia)	First probe to strike the moon
Oct 4, 1959	LUNIK III (Russia)	Photographed the side of the moon hidden from earth
March 11, 1960	PIONEER V (USA)	Transmitted information on conditions more than 22,000,000 miles in space
Feb 12, 1961	VENUS PROBE (Russia)	Probe launched from a Sputnik, missed Venus by 600,000 miles
April 23, 1962	RANGER IV (USA)	First U.S. probe to strike moon; failed to televise pictures to earth
Aug 27, 1962	MARINER II (USA)	Passed near Venus on Dec 14, 1962; sent scientific information to earth
Nov 1, 1962	MARS PROBE (Russia)	Possibly passed within 120,000 miles of Mars after radio contact was lost
July 28, 1964	RANGER VII (USA)	Televised 4,316 pictures of moon to the earth on July 31
Nov 28, 1964	MARINER IV (USA)	Measured interplanetary conditions during 228-day flight to Mars
Feb 17, 1965	RANGER VIII (USA)	Televised 7,137 pictures of moon to the earth on Feb 20
March 21, 1965	RANGER IX (USA)	Televised 5,814 pictures of moon to the earth, March 24

SPACE PROGRAM – EARLY COMMUNICATIONS SATELLITES

Dec 18, 1958	PROJECT SCORE	Broadcast first voice message from space
Aug 12, 1960	ECHO I	First passive communications satellite (Aluminum coated mylar balloon, inflated in orbit, to 100 feet in diameter)
Oct 4, 1960	COURIER	First active communications satellite
Dec 12, 1961	OSCAR I	Broadcast practice signals for amateur radio operators
July 10, 1962	TELSTAR I	First satellite to relay TV programs between U.S and Europe
Dec 13, 1962	RELAY I	Active relay for radio, telephone, & television
May 7, 1963	TELSTAR II	Extend life of communications satellites
May 9, 1963	WEST FORD	Orbiting ring of millions of tiny wires, reflecting radio signals
July 26, 1963	SYNCOM II	First synchronous satellite
Jan 25, 1964	ECHO II	Used in joint Russian-U.S. experiments
Aug 19, 1964	SYNCOM III	Relayed telecasts of Olympic games from Tokyo to U.S.
April 6, 1965	EARLY BIRD	First commercial communications satellite; linked Europe & U.S.