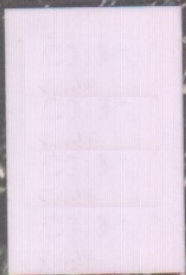
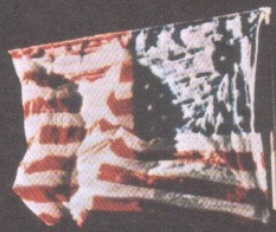


**PROJECT APOLLO**  
*... three steps and the moon*



by Donald O. Schultz

# PROJECT APOLLO

*... three steps & the moon*

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Published by  
DONALD O. SCHULTZ

## FOREWORD

As I wrote in the last paragraph of PROJECT GEMINI, Two Steps Into Space: Man will persevere, for it is written that anything a man can think of, is possible. Truly Apollo bears it out.

Robert Hutchings Goddard, Father of the Space Industry, who died in 1945 unknown and unsung except for fellow scientists is a case in point.

Rockets Goddard flew himself never went higher than 9,000 feet and yet Apollo rockets went to the Moon and back based on his theories and ideas. He asked for contributions from the public of \$50,000 or \$100,000 for his theoretical "moon ship" and never visualizing that just a few decades later, a nation would accept the challenge involving over 24 billion. This challenge represented the greatest, most intricate mobilization of science, industry and government ever attempted outside of a war. The problems and cost was so great that no single company or group of companies could handle it.

Yet in 1970 as this complication is set down, the Space Industry is already as large as the automobile industry. Its possibilities for discovery and expansion are limitless.

Columbus proved that the World was not flat with the discovery of the New World. Yet we must agree that Apollo 11's landing on the Moon is Man's Greatest Achievement - thus far - without finding lasting peace on Earth.

PROJECT APOLLO, Three Steps & The Moon, is my effort to carry the reader into America's third step in space with the climax at the Moon Landing. This does not mean that Project Apollo ends there as that is not correct. There are several more scheduled flights extending into the 1970's. It is felt this record should be written with the goal in mind and continue on in a future volume.

Each human has inner thoughts and desires that they wish to accomplish sometime during their life. This writer wanted to write these space accounts and have them copyrighted so I could leave something permanent that was not there when I was born. With this volume, there are now three toward the accomplishment.

In both previous books, I mentioned valuable assistance from various sources. However, after both were published, I found that perhaps some very important people were overlooked - my family. For without their understanding and encouragement, there would not be these efforts set down.



Sandra, Sally, Don,  
Scott, Susan, LaVerne,  
and Sheila Schultz

HOWARD BENEDICT, AEROSPACE STAFF WRITER  
ASSOCIATED PRESS



Howard Benedict, age 42 spent two years in the Army at Camp Lee, Virginia writing for the base newspaper.

In 1948, he entered Northwestern University and attended Medill School of Journalism. When the Korean War started in 1950, was recalled to active Army duty and spent a year in the Far East as a reporter for the Pacific Stars & Stripes. First he covered General MacArthur's headquarters in Tokyo and then transferred to Korea to help coordinate Stars & Stripes coverage of the War, winding up with the start of the Panmunjam Peace Talks.

Then returning to Northwestern for another year in 1952, leaving in 1953 to join The Associated Press in Salt Lake City. After 3 1/2 years there transferred to the staff of AP Newsfeatures in New York City. In 1958 transferred to Tampa, Florida, bureau and was named Cape Canaveral correspondent in May, 1959.

Mr. Benedict has covered more than 1,800 rocket launchings, including all U.S. man-in-space flights.

In 1967 Howard received a double award from the Aviation/Space Writers Association for the 1966 coverage of Gemini 11 - the writing award for news-coverage and the Robert S. Ball Memorial Award for "outstanding excellence" in space writing. In 1969 he won the same double award for Apollo 8 coverage. Then won the 1969 Associated Press Managing Editors Association award for the top AP reportorial job during the year for Apollo coverage. Credit was given Benedict for technical assistance in the Associated book, FOOTPRINTS ON THE MOON.

This writer became acquainted with Howard through correspondence on September 9, 1963 when I asked a member of Nuclear Ships Chapter, U.S.C.S. to check on some polaris submarine firings at the Cape. The member asked Mr. Benedict to write me answering my questions which he did and thus after many letters have become firm friends. From polaris missile firings, we have corresponded on many space flights since that first letter. Several of the articles in all three books were either supplied by or cross-referenced with him. It gives this writer much pleasure to read a space article in newspapers with his by-line as I can call him a real friend. It is with deep respect that I pay him credit for all considerations shown me.

JOHN STONESIFER  
NASA, Landing & Recovery Division



John Stonesifer, age 40 joined the National Advisory Committee for Aeronautics (NACA) in 1957. NACA was the predecessor to the National Aeronautics and Space Administration (NASA).

In 1961, he transferred to the Man-in-Space Program working in the Landing and Recovery Division. In Landing and Recovery, he held several positions both in operations type work and in systems evaluation and qualifications.

John is currently Chief, Recovery Systems Branch which is responsible for development of equipment and procedures utilized in manned spaceflight recovery operations.

He served as NASA Recovery Team Leader aboard the primary recovery ship for seventeen unmanned or manned Mercury, Gemini, and Apollo missions.

Early in the 1960's, this writer contacted Mr. Stonesifer about naval recoveries for early Mercury-Redstone flights. Much of the information on hand was conflicting or incomplete. John either satisfied my queries or directed me to

the scientific institution or Agency that could shed further light on the subject.

Writing a small sketch or showing a photograph of Mr. Stonesifer does not constitute endorsement of this volume by him or NASA. This writer wished to pay tribute to a fine man for his council and his sense of history.

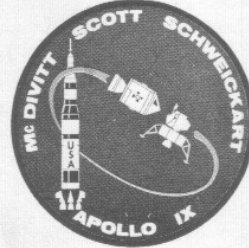


OCTOBER 11, 1968



CAPE KENNEDY, FLORIDA

MARCH 3, 1969



CAPE KENNEDY, FLORIDA

MAY 18, 1969

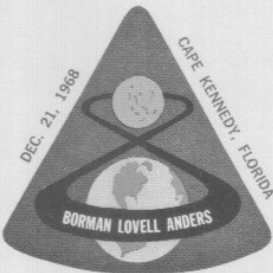


CAPE KENNEDY, FLORIDA

JULY 16, 1969



CAPE KENNEDY, FLORIDA



## APOLLO

Project Apollo was named after a Greek and Roman God of mythology, The God of music, poetry, prophecy, and medicine. Apollo is shown in pictorial maps as a handsome young man. Apollo was the son of Zeus (Jupiter) and Leto (Latona) and known also as the original sun-god.

Project Apollo did not start the next day after recovery of Gemini/Titan/Agema 12. In my opinion, the project started even before July 25, 1960 when NASA Administrator T. Keith Glennan approved the name "Apollo" for advanced manned space flight.

In March 1955, Rocketdyne Division of North American Aviation established the feasibility of a million-pound-thrust liquid-fueled rocket engine. With these ideas established, to me, this was the conception of Project Apollo.

The one broad objective for America's manned space program was stated as: To provide the capability for manned exploration of Space. Apollo's immediate goal was to land two men on the moon and bring them back safely to earth; explore the landing areas returning with samples and photographs; establish technology to meet other National interests in space; and to achieve United States pre-eminence in space.

Project Mercury pioneered technology and man's capabilities for manned space flight and Gemini extended the technology and experience gained through Mercury. Apollo called for an operational spacecraft capable of carrying astronauts safely to and from another body in the solar system.

After Apollo was selected for an advanced manned program, a number of studies were made to determine various ways a lunar landing could be done. Three methods were brought forth: A direct flight of a full-size space vehicle from earth to the moon and back; launch separate components into earth orbit, assembling them, and sending them as a single vehicle to land on the moon and take off; and launch an entire vehicle from earth to lunar orbit and landing a module on the lunar surface while the command module remained in lunar orbit waiting for the lunar module to return and dock. In July 1962, the third method, now called lunar orbit rendezvous, was chosen as the course America would travel.

Unmanned scientific programs like Ranger, Lunar Orbiter, and Surveyor contributed greatly with thousands of photographs covering almost the entire surface of the Moon indicating the most likely landing sites. Surveyor soft landed on the Moon making chemical analysis of the lunar soil which determined that the soil at those locations consisted mostly of basalt. This type of volcanic rock found also on earth contains traces of magnesium, aluminum, nickel, and other minerals. The data also revealed magnetic iron. Oxygen and silicon were the common elements as on earth, and this confirmed that lunar surface was firm and could support a landing vehicle.

Landing on the moon was chosen as a national goal because no place other than the moon is so near in space for testing equipment and men for future space travel. The moon is an excellent station for astronomical instruments without atmospheric handicaps and a relay point for communications along with being a refueling point for space travel. Achieving this goal would give impetus, order, and efficiency to America's space program. Project Apollo was the third step.

The Apollo program is under the supervision of the Office of Manned Space Flight of NASA. Under that office, Spacecraft Center, Houston, Texas is responsible for the spacecraft, picking of the crew and their training, and operational control from liftoff through recovery.

Marshall Space Flight Center, Huntsville, Alabama is in charge of the Saturn I, Saturn IB, and Saturn V launch vehicles.

Launch operations is located at John F. Kennedy Space Center, Florida.

Communications and computing is at Goddard Space Flight Center, Greenbelt, Maryland and is connected with both the Texas and Florida facilities.

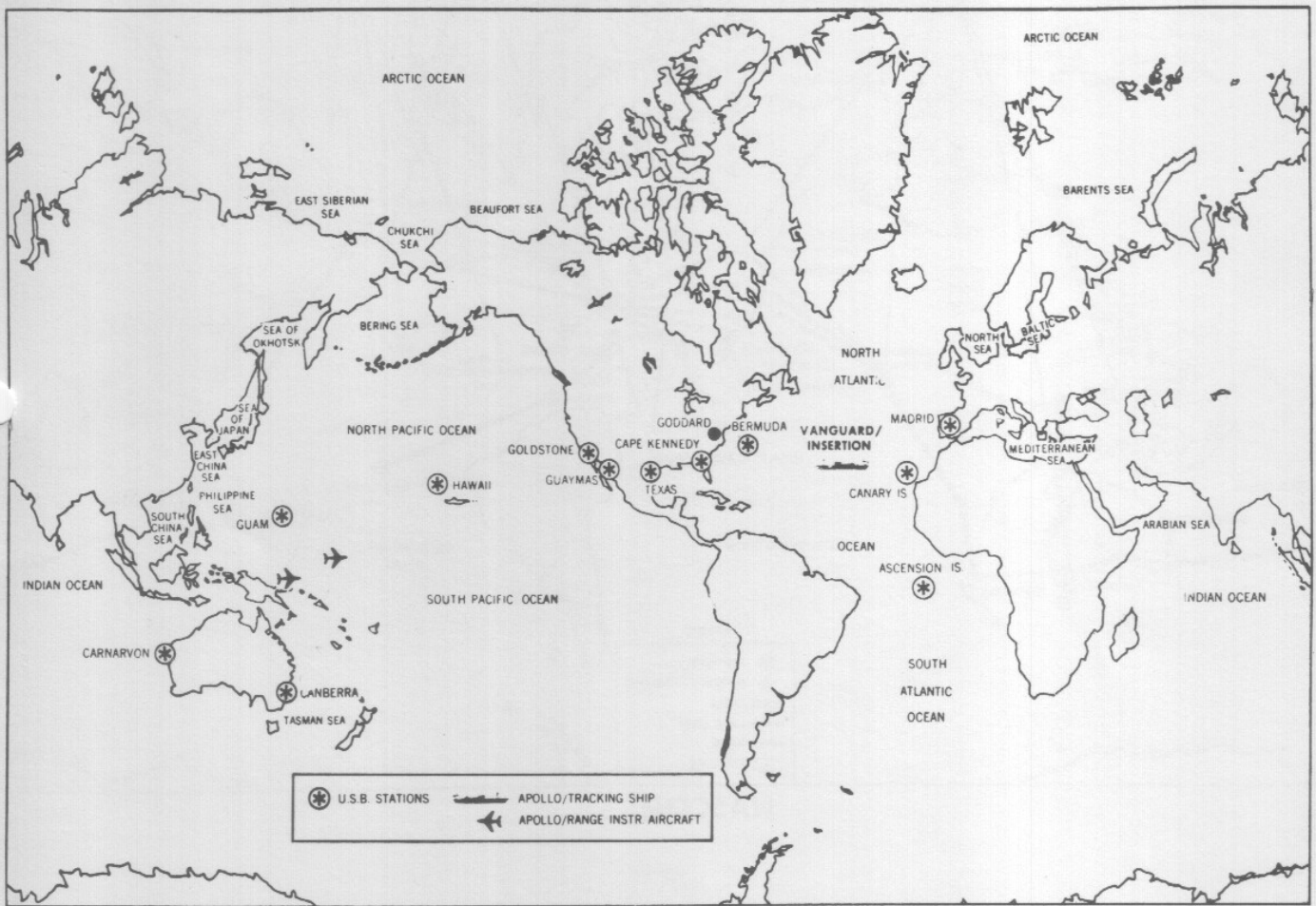
The Department of Defense played very important roles in recovery and also in early research and development.

Over 20,000 companies and contractors with 420,000 people from industry, government, and research have taken part. Some of the prime contractor's are: North American Rockwell built the command module, service module, launch escape system and lunar module adapter. Grumman Aircraft made the lunar module, M.I.T. developed the guidance and navigation system. Boeing Aircraft built the S-IC first stage. North American Rockwell the S-II second stage. McDonnell Douglas made S-IVB third stage. I.B.M. built the instrument unit.

## TRACKING & COMMUNICATION NETWORK

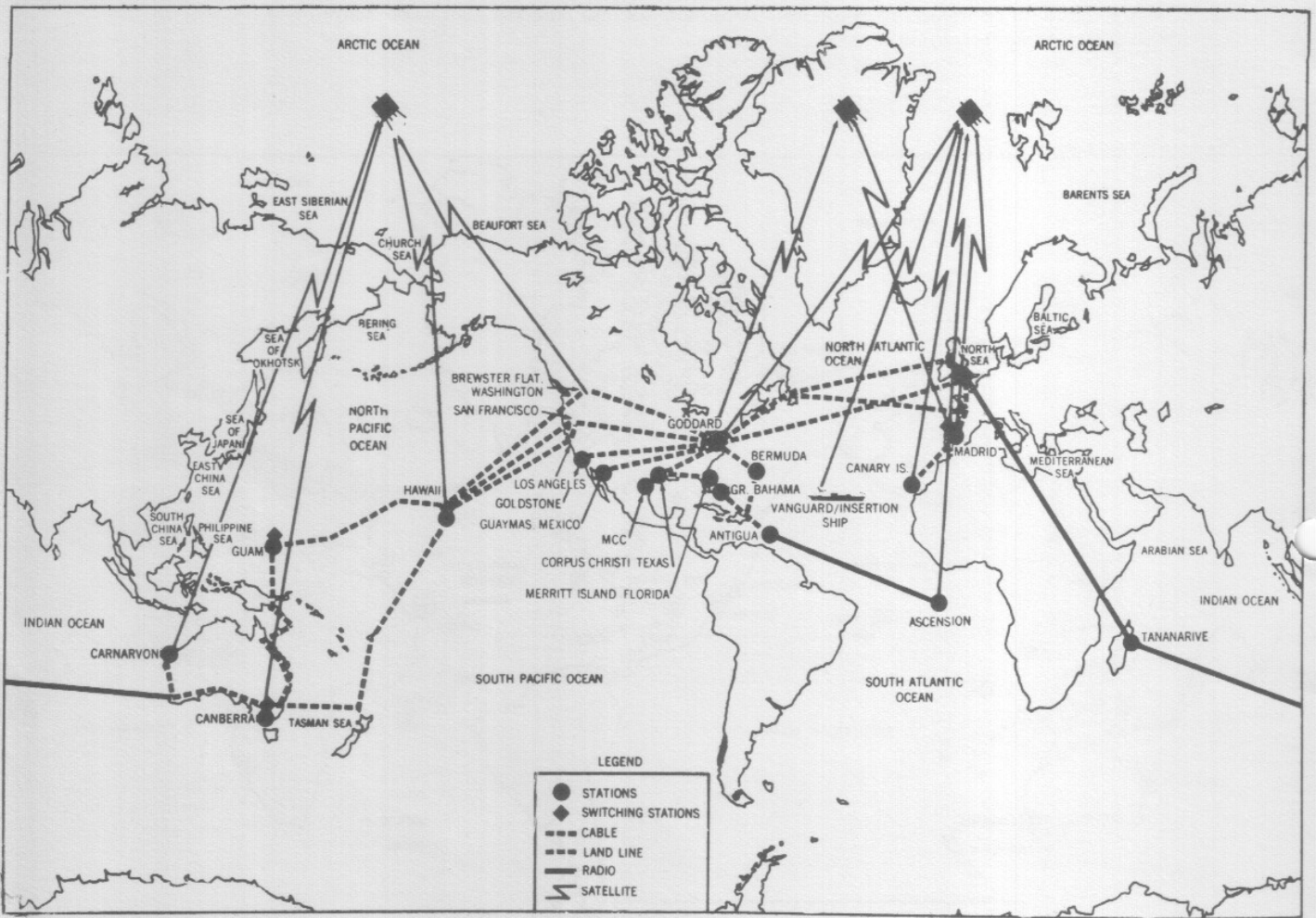
For Apollo, the Manned Space Flight Network (MSFN) with its 12 stations operated by NASA Goddard Space Flight Center; NASA Communication Network (NASCOM) with regional control centers in London, Madrid, Canberra, Honolulu and Guam; three Intelsat communications satellites; Department of Defense (DOD) tracking stations; Apollo Range Instrumentation Aircraft (ARIA); and North American Air Defense Command (NORAD) together with the instrumentation ship, VANGUARD provides the link needed between the space craft and the earth.

The DOD Network and NORAD stations are classified information so no map can be shown of these installations. The MSFN and NASCOM locations are shown on the preceding illustrations. The number of MSFN stations have been reduced from the start of Project Apollo to the present as shown in the maps. The instrumentation ships HUNTSVILLE, REDSTONE, and MERCURY have been dropped from the program as not needed. These ships will reflect in the individual mission descriptions.



### MANNED SPACE FLIGHT TRACKING NETWORK





**NASCOM**

## PATHFINDERS TO THE MOON

### A LIST OF THE UNMANNED SPACECRAFT WHICH PAVED THE WAY TO THE MOON.

RANGER 1	8-23-61	Decayed 8-30-61; attempt to reach deep space orbit failed.
RANGER 2	11-18-61	Decayed 11-20-61; attempt to reach deep space orbit failed.
RANGER 3	1-26-62	In solar orbit; lunar probe missed moon by 22,862 miles.
RANGER 4	4-23-62	Impacted on moon; timer failure, experiments inoperative.
RANGER 5	10-18-62	In solar orbit; lunar probe missed moon by 450 miles.
RANGER 6	1-30-64	Impacted on moon. Television system malfunctioned.
RANGER 7	7-28-64	Impacted on moon. First RANGER success; returned 4308 photos.
RANGER 8	2-17-65	Impacted on moon. Returned 7137 closeup lunar photos.
RANGER 9	3-21-65	Impacted on moon. Returned 5814 photos. Landed in crater Alphonsus.
SURVEYOR 1	5-30-66	Landed on moon. Transmitted 11,150 photos up to 7-13-66.
SURVEYOR 2	9-20-66	Impacted on moon. Vernier failed; crashed SE of Copernicus.
SURVEYOR 3	4-17-67	Landed on moon. Soil sampler; photo experiments until 5-3-67.
SURVEYOR 4	7-14-67	Impacted on moon, 7-16-67. Signal lost 2.5 minutes before landing.
SURVEYOR 5	9-8-67	Landed on moon. Returned 19,000 photos, soil analysis data.
SURVEYOR 6	11-7-67	Landed on moon. Performed 1st rocket takeoff from moon.
SURVEYOR 7	1-7-68	Landed on moon, 1-10-68. SURVEYOR program ends with 5th success in 7 tries.
LUNAR ORBITER 1	8-10-66	Impacted on moon 10-29-66. Photographed moon until 8-29-66.
LUNAR ORBITER 2	11-6-66	Impacted on moon 10-11-67; returned 205 lunar frames.
LUNAR ORBITER 3	2-4-67	Impacted on moon 10-9-67; returned 182 lunar frames.
LUNAR ORBITER 4	5-4-67	Impacted on moon 10-6-67; returned 163 frames.
LUNAR ORBITER 5	8-1-67	Impacted moon 1-31-68. Completed LUNAR ORBITER photographic mapping.
EXPLORER 35	7-19-67	In lunar orbit. Measures earth's magnetic tail every 29.5 days.

APOLLO FLIGHT HISTORY

MISSION (LAUNCH VEHICLE)	LAUNCH DATE SITE	PAYLOAD OR SPACECRAFT	DESCRIPTION
(SA-1)	10-27-61 C.K.	None	Launch vehicle development. Test S-1 stage propulsion; verify aerodynamics and structural design of entire Saturn I vehicle.
(SA-2)	04-25-62 C.K.	95 tons water	Launch veh. dev. Observation of water dispersion at high altitude (Project High Water).
(SA-3)	11-16-62 C.K.	95 tons water	Launch veh. dev. Second test, Project High Water.
(SA-4)	03-28-63 C.K.	None	Launch veh. dev. Demonstrate engine-out concept by in-flight engine cutoff.
PA-1	11-07-63 W.S.M.R.	BP-6	First pad abort.
(SA-5)	01-29-64 C.K.	None	Launch veh. dev. First flight operation of S-IV second stage.
A-001	05-13-64 W.S.M.R.	BP-12	Transonic abort.
AS-101	05-28-64 C.K.	BP-13	Launch veh. dev. Verify aerodynamics and structural design of Saturn I with Apollo boiler-plate. Successful insertion into orbit following premature cutoff of one stage engine.
AS-102 (SA-7)	09-18-64 C.K.	BP-15	Launch veh. dev. Demonstration of LES jettison.
A-002	12-08-64 W.S.M.R.	BP-23	Maximum dynamic pressure abort.
AS-103 (SA-8)	02-16-65 C.K.	Pegasus A BP-16	Meteoroid experiment. Determination of near earth meteoroid environment.
A-003	05-19-65 W.S.M.R.	BP-22	Low-altitude abort (planned high altitude abort).
AS-104 (SA-9)	05-25-65 C.K.	Pegasus B BP-26	Meteoroid experiment. Same determination as SA-8.
PA-2	06-29-65 W.S.M.R.	BP-23A	Second pad abort.
AS-105 (SA-10)	07-30-65 C.K.	Pegasus C	Same as SA-8 and 9.
A-004	01-20-66 W.S.M.R.	SC-002	Power-on tumbling boundary abort.

W.S.M.R. - White Sands Missile Range

C.K. - Cape Kennedy

Pegasus comes from Greek and Roman mythology and is pictured as a winged horse.

## APOLLO FLIGHT HISTORY

MISSION (LAUNCH VEHICLE)	LAUNCH DATE SITE	PAYLOAD OR SPACECRAFT	DESCRIPTION
AS-201 (SA-201)	02-26-66 C.K.	CSM-009	Launch veh. and CSM dev. Test of CSM sub-systems and of structural integrity and compatibility of the space vehicle. Unmanned, heat shield test, sub-orbital. Recovery.
AS-203 (SA-203)	07-05-66 C.K.	LH <sub>2</sub> in S-IVB	Launch veh. dev. Control of LH <sub>2</sub> by continuous venting in orbit was demonstrated. Craft purposely destroyed in 4th orbit. No recovery.
AS-202 (SA-202)	08-25-66 C.K.	CSM-011	Launch veh. and CSM dev. Test of CSM subsystems and structural integrity and compatibility of space vehicle. Propulsion and entry control by G & N system. Demonstration of entry at 28,500 ft./sec. Unmanned, orbital. Recovered.
APOLLO 4 (SA-501)	11-09-67 C.K.	CSM-017 LTA-10R	Launch veh. and spacecraft dev. Demonstration of Saturn V launch veh. performance and of CM entry at lunar return velocity. Unmanned, orbital. Recovered.
APOLLO 5 (SA-204)	01-22-68 C.K.	LM-1 SLA-7	LM dev. Verify operation of LM subsystems; ascent and descent propulsion systems (including restart) and structures. Evaluate LM staging, S-IVB/IU orbital performance. Unmanned, orbital. No recovery.
APOLLO 6 (SA-502)	04-04-68 C.K.	CM-020 SM-014 LTA-2R	Launch veh. and spacecraft dev. Unmanned, orbital. Recovered.
APOLLO 7 (SA-205)	10-11-68 C.K.	CM-101 SM-101	First manned CSM operation. Duration 10 days, 20 hours (163 orbits). Orbital, recovered.
APOLLO 8 (SA-503)	12-21-68 C.K.	CSM-103 LTA-B	First manned lunar orbital mission. Duration 6 days, 3 hours; 20 hours in lunar orbit (10 orbits). Recovered.
APOLLO 9 (SA-504)	03-03-69 C.K.	CSM-104 LM-3	Verify LM and systems in tests and maneuvers with command module as in lunar rendezvous. Verify descent and ascent engines. Manned, earth orbital. Recovered.
APOLLO 10 (SA-505)	05-18-69 C.K.	CSM-106 LM-4	Verify LM and systems in the moon gravity field. Manned, recovered.
APOLLO 11 (SA-506)	07-16-69 C.K.	CSM-107 LM-5	First manned lunar landing. Recovered.

NOTE: On January 27, 1967 at 6:31 PM, three astronauts; GRISSOM, WHITE, and CHAFFEE were killed in a command module fire on the launch pad. Their mission number if launched was AS-204. Missions after that date were revised.

MISSION: AS-201 (SA-201) (Suborbital, Unmanned)

SCHEDULED DATE OF LAUNCH: 23 February 1966  
ACTUAL DATE OF LAUNCH: 26 February 1966  
DATE OF LANDING: 26 February 1966  
LENGTH OF FLIGHT: 39 minutes  
NO. OF REVS: Suborbital  
POSIT. OF LANDING: 08-11S, 11-09W  
DIST. FROM PRS: 46 nautical miles  
TIME TO RECOVER ASTROS:  
TIME TO RECOVER S/C: 2 hrs., 20 minutes  
LAUNCHED FROM: Cape Kennedy, Florida  
RECOVERED BY: BOXER LPH 4  
ASTRONAUTS

UNITS ATLANTIC:

BOXER LPH 4 (PRS)  
KANKAKEE AO 39  
KASKASKIA AO 27  
SALINAN ATF 161  
FIDELITY MSO 443  
BEALE DD 471  
WALLER DD 466  
BORDELON DD 881  
TURNER DD 834  
WILSON DD 897  
WALDRON DD 699  
INGRAM DD 938  
VP-16  
HS-5

UNITS PACIFIC:

None

TRACKING SHIPS:

USNS ROSE KNOT T AGM 14  
USNS COASTAL CRUSADER T AGM 16

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: Mission originally scheduled for 13 January and slipped one week at a time due to weather conditions at Cape Kennedy.

MISSION DESCRIPTIONS: Unmanned suborbital flight ended near Ascension Island area. Its primary purpose was to confirm the structural integrity of the launch vehicle and spacecraft combination and to check the operation of onboard systems. Successful heat shield test at 4,000°F.

NOTES: Launched by Saturn IB at 11:12 AM EST.

MISSION: AS-203 (SA-203) (Orbital, Unmanned)

SCHEDULED DATE OF LAUNCH: 05 July 1966  
ACTUAL DATE OF LAUNCH: 05 July 1966  
DATE OF LANDING:  
LENGTH OF FLIGHT:  
NO. OF REVS: 3 plus  
POSIT. OF LANDING:  
DIST. FROM PRS:  
TIME TO RECOVER ASTROS:  
TIME TO RECOVER S/C:  
LAUNCHED FROM: Cape Kennedy, Florida  
RECOVERED BY:  
ASTRONAUTS:

UNITS ATLANTIC:

None

UNITS PACIFIC:

None

TRACKING SHIP:

USNS TIMBER HITCH T AGM 17

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: On the 4th orbit over Corpus Christi, Texas at 04:11 PM EST, venting was stopped which built up gas pressure in the S-IVB stage resulting in the stage exploding. Fragments returned over a period of two weeks.

MISSION DESCRIPTION: Control of  $LH_2$  by continuous venting in orbit was demonstrated.

NOTES: Launched by Saturn IB at 09:53 AM EST. The test was successful and there was no recovery planned.

MISSION: AS-202 (SA-202) (Suborbital, Unmanned)

SCHEDULED DATE OF LAUNCH:	25 August 1966
ACTUAL DATE OF LAUNCH:	25 August 1966
DATE OF LANDING:	25 August 1966
LENGTH OF FLIGHT:	1 hr., 36 min.
NO. OF REVS:	Suborbital
POSIT. OF LANDING:	17-52N, 171-52E
DIST. FROM PRS:	192 nautical miles
TIME TO RECOVER ASTROS:	
TIME TO RECOVER S/C:	8 hrs., 50 min.
LAUNCHED FROM:	Cape Kennedy, Florida
RECOVERED BY:	HORNET CVS 12
ASTRONAUTS:	

UNITS ATLANTIC:

OPPORTUNE ARS 41  
J. C. OWENS DD 776  
R. A. OWENS DD 827  
SALAMONIE AO 26  
CHIKASKIA AO 54\*

UNITS PACIFIC:

HORNET CVS 12 (PRS)  
O'BANNON DD 450  
SPROSTON DD 577  
BENJAMIN STODDERT DDG 22

TRACKING SHIPS:

USNS ROSE KNOT T AGM 14  
USNS COASTAL SENTRY T AGM 15  
USNS RANGE TRACKER T AGM 1  
USNS WHEELING T AGM 8

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: Anominal mission, but due to twilight effect, communications with PRS were effective only on NASA coordination circuit.

MISSION DESCRIPTION: Unmanned suborbital flight of about 14,000 nautical miles. The primary purpose was to evaluate the launch vehicle and determine the performance of the spacecraft heat shield during a high heat, long duration entry simulating the lunar return. The mission rated a success even if 4 anomalies cropped up.

NOTES: Launched by a Saturn IB at 01:16 PM EDT landing about 200 miles short southeast of Wake Island.

CHIKASKIA AO 54\* was scratched at the very last minute from the recovery force. SALAMONIE AO 26 was already at sea when reassigned to the recovery force as a replacement. Official records do not show CHIKASKIA as being scratched, but show both oilers: However, this was the case as proved out by correspondence with the P.A.O. aboard AO 54.

MISSION: AS-204 (SA-204) (Planned Manned Orbital)

SCHEDULED DATE OF LAUNCH: 20 February 1967  
ASTRONAUTS: GRISSOM, WHITE, and CHAFFEE

UNITS ATLANTIC:

ESSEX CVS 9 (PRS)  
CONY DD 508  
DUPONT DD 941  
KANKAKEE AO 39  
LORAIN COUNTY LST 1177  
SALINAN ATF 161  
PATRON 49  
HS 5

UNITS PACIFIC:

KAWISHIWI AO 146  
PHILIP DD 498  
RADFORD DD 446

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: Mission postponed as a result of the fatal command module fire on 27 January 1967.



MISSION: APOLLO 4 AS-501 (SA-501) (Orbital, Unmanned)

SCHEDULED DATE OF LAUNCH: 09 November 1967  
ACTUAL DATE OF LAUNCH: 09 November 1967  
DATE OF LANDING: 09 November 1967  
LENGTH OF FLIGHT: 8 hrs., 37 min.  
NO. OF REVS: 2 3/4  
POSIT. OF LANDING: 30-06.4N, 172-32W  
DIST. FROM PRS: 11 nautical miles  
TIME TO RECOVER ASTROS:  
TIME TO RECOVER S/C: 2 hrs., 10 min.  
LAUNCHED FROM: Cape Kennedy, Florida, Pad A, Complex 39  
RECOVERED BY: BENNINGTON CVS 20  
ASTRONAUTS: Unmanned

UNITS ATLANTIC:

JOSEPH P. KENNEDY, JR. DD 850  
AUSTIN LPD 4  
YORK COUNTY LST 1175  
SABINE AO 26  
HOIST ARS 40  
HS 11  
UDT 21  
HAP 62

UNITS PACIFIC:

BENNINGTON CVS 20 (PRS)  
CARPENTER DD 825

TRACKING SHIPS:

USNS TWIN FALLS T AGM 11  
USNS H. H. ARNOLD T AGM 9  
USNS RANGE TRACKER T AGM 1  
USNS VANGUARD T AGM 19

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: Mission slipped days at a time until date set on 2 November. A hold occurred on L-1 day, but was absorbed in the overall count down.

MISSION DESCRIPTION: Subject the unmanned spacecraft and heat shield to reentry conditions exactly as those the astronauts will experience upon return from the moon. Evaluate the launch vehicle performance and systems; and mission support facilities.

NOTES: Liftoff occurred at 07:00:01.3 EST or :01.3 after planned launch time. This mission had six extraordinary firsts: First launch of a Saturn V first stage; first flight of a hydrogen-powered second stage; a third stage restart in earth orbit; service module fired for a record 4 minutes, 40 seconds; command module operated deeper in space than any spacecraft to date; and the command module returned to earth from a height never achieved before at 24,913 miles an hour, resisting temperatures of over 5,000 degrees Fahrenheit.

UDT 21 swimmers aboard USS AUSTIN LPD 4 were assigned tasks of retrieving two camera cassetts and pieces of the burned out S-IC stage booster surviving ocean impact. Both camera cassettes and several fragments were recovered.

Touch down was 8 hours, 37 minutes, and 8 seconds after liftoff. BENNINGTON CVS 20 due to inclement weather and ship roll factors necessitated a second pass for positioning a recovery when an inhaul line parted.

MISSION: APOLLO 5 AS-204 (SA-204) (Orbital, Unmanned)

SCHEDULED DATE OF LAUNCH: 17 January 1968  
ACTUAL DATE OF LAUNCH: 22 January 1968  
DATE OF LANDING:  
LENGTH OF FLIGHT: 6 hrs., 22 min.; LM track 3 hrs. additional  
NO. OF REVS: 6  
POSIT. OF LANDING:  
DIST. FROM PRS:  
TIME TO RECOVER ASTROS:  
TIME TO RECOVER S/C:  
LAUNCHED FROM: Cape Kennedy, Florida, Pad B, Complex 37  
RECOVERED BY:  
ASTRONAUTS: Unmanned

UNITS ATLANTIC:

PAIUTE ATF 159

UNITS PACIFIC:

None

TRACKING SHIPS:

USNS REDSTONE T AGM 20  
USNS ROSE KNOT T AGM 14  
USNS COASTAL SENTRY T AGM 15  
USNS TWIN FALLS T AGM 11

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: None

MISSION DESCRIPTION: Verify operation of the descent and ascent propulsion systems including restart and lunar module structure; evaluate lunar module launch vehicle performance.

NOTES: APOLLO 5, AS-204, originally planned as a manned orbital mission, was drastically revised as a result of the fatal Command Module (CM) fire on 27 January 1967.

The command module and service module have been successfully tested in space in unmanned missions and were not included in this mission. Only the LM 1 was flown on this mission.

Liftoff took place at 05:48 PM EST after an original launch time of 2:00 PM. Two holds were caused by malfunction in ground support equipment. The vehicle was not recovered and ultimately burned up in the Earth's atmosphere.

MISSION: APOLLO 6 AS-502 (SA-502) (Orbital, Unmanned)

SCHEDULED DATE OF LAUNCH: 04 April 1968  
ACTUAL DATE OF LAUNCH: 04 April 1968  
DATE OF LANDING: 04 April 1968  
LENGTH OF FLIGHT: 9 hrs., 56 min.  
NO. OF REVS: 2 3/4  
POSIT. OF LANDING: 27-38N, 158-00W  
DIST. FROM PRS: 65 nautical miles  
TIME TO RECOVER ASTROS:  
TIME TO RECOVER S/C: 6 hrs., 01 min.  
LAUNCHED FROM: Cape Kennedy, Florida, Pad A, Complex 39  
RECOVERED BY: OKINAWA LPH 3  
ASTRONAUTS: Unmanned

UNITS ATLANTIC:

AUSTIN LPD 4  
CHIKASKIA AO 54  
YORK COUNTY LST 1175  
DUPONT DD 941  
OPPORTUNE ARS 41  
HS 5  
UDT 21

UNITS PACIFIC:

OKINAWA LPH 3 (PRS)  
CARPENTER DD 825  
UDT 11  
HS 2

TRACKING SHIPS:

USNS TWIN FALLS T AGM 11  
USNS WATERTOWN T AGM 6  
USNS REDSTONE T AGM 20

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: The mission slipped daily until finally established for a 4 April launch. Some difficulty was encountered during the days prior to launch, but these delays were absorbed within the built-in hold.

MISSION DESCRIPTION: The mission was designed to approximate the conditions expected for insertion of the lunar landing mission vehicle into a translunar trajectory. It was also to provide the conditions for a severe test of the Block II Command Module thermal protection system and evaluation of the redesigned side hatch.

NOTES: Two engines on the S-IVB were inoperative early in the mission, rendering the decision to use the Service Propulsion System solely to inject the spacecraft into an elliptical orbit. Because of the lessened power and lower elliptical orbit, the target point was calculated to be uprange. However, the CM landed closer to the target point due to the CM roll characteristics.

AUSTIN LPD 4 was to recover six camera cassettes jettisoned shortly after S-IC/S-II stage separation, but only located two which were in damaged condition. However, the films were intact.

Liftoff came at 07:00:01.5 AM EST with splash at 09:58:44 PM. All three modules were carried into space. Upon reentry, the spacecraft attained a speed of 24,886 miles per hour resulting in a temperature of 2900 degrees on the heat shield. Because of the elliptical orbit, the temperature encountered was less than on Apollo 4.

MISSION: APOLLO 7 AS-205 (SA-205) (Orbital, Manned)

SCHEDULED DATE OF LAUNCH: 11 October 1968  
ACTUAL DATE OF LAUNCH: 11 October 1968  
DATE OF LANDING: 22 October 1968  
LENGTH OF FLIGHT: 10 days, 20 hrs., 11 min.  
NO. OF REVS: 164  
POSIT. OF LANDING: 27-30N, 64-10W  
DIST. FROM PRS: 7 nautical miles  
TIME TO RECOVER ASTROS: 54 min.  
TIME TO RECOVER S/C: 1 hr., 44 min.  
LAUNCHED FROM: Cape Kennedy, Florida, Complex 34  
RECOVERED BY: Helo to ESSEX CVS 9  
ASTRONAUTS: WALTER M. SCHIRRA, JR., Capt., U.S.N.  
DONN F. EISELE, Major, U.S.A.F.  
R. WALTER CUNNINGHAM, Civilian

UNITS ATLANTIC:

ESSEX CVS 9 (PRS)  
ARNEB AKA 56 # (LKA 56)  
CAMBRIA APA 36 # (LPA 36)  
PAIUTE ATF 159  
VANGUARD T AGM 19\*  
VW 4  
HS 5  
CVSG 54  
UDT 21

UNITS PACIFIC:

NICHOLAS DD 449  
COCHRANE DDG 21  
RUPERTUS DD 851  
PONCHATOULA AO 148  
HENRY W. TUCKER DD 875

TRACKING SHIPS:

\*USNS VANGUARD T AGM 19 (dual role)  
USNS REDSTONE T AGM 20  
USNS MERCURY T AGM 21  
USNS HUNTSVILLE T AGM 7

# Navy reclassified many ships shortly before this mission. AKA changed to LKA and APA to LPA.

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: Visibility poor upon reentry which did not allow visual sighting.

MISSION DESCRIPTION: To check performance of the crew, prime and backup spacecraft systems, and mission support facilities in Earth orbit. Evaluate procedures for stabilizing systems thermal balance during the Earth-return portion of a lunar flight; rendezvous with the S-IVB stage; collect data on the heat-shield reentry.

NOTES: Liftoff occurred at 10:02:45 AM CST with splash at 07:13 AM EDT. All mission objectives were met except the navigational exercise. Mission Control termed Apollo 7 101% perfect.

USS ESSEX CVS 9 left Quonset Point, R.I. in company with ELLISON DD 864, PUTNAM DD 757, STORMES DD 780, GREENE DD 711, CUBERA SS 347, CUTLASS SS 478, and PAWCATUCK AO 108 for the purpose of conducting training exercises while carrying out recovery of the spacecraft. RUSHMORE LSD 14 was ordered to take up station in the southern part of the west Atlantic recovery zone. None of these ships mentioned as on training missions were listed on the recovery, however, they were indeed there. OZARK MCS 2 was noted in press kits to move into the east Atlantic zone did not slip anchorage and was in port according to PAO Lt.(jg) Johnson aboard OZARK. (This was Walter Schirra's last flight as he resigned on July 1, 1969.)

MISSION: APOLLO 8 AS-503 (SA-503) (Lunar Orbital, Manned)

SCHEDULED DATE OF LAUNCH: 21 December 1968  
ACTUAL DATE OF LAUNCH: 21 December 1968  
DATE OF LANDING: 27 December 1968  
LENGTH OF FLIGHT: 6 days, 3 hrs., 1 min.  
NO. OF REVS: 10 lunar (20 hrs., lunar)  
POSIT. OF LANDING: 08-07.5N, 165-01.2W  
DIST. FROM PRS: 2 1/2 nautical miles  
TIME TO RECOVER ASTROS: 1 hr., 49 min.  
TIME TO RECOVER S/C: 2 hrs., 45 min.  
LAUNCHED FROM: Cape Kennedy, Florida, Pad A, Complex 39  
RECOVERED BY: Helo to YORKTOWN CVS 10  
ASTRONAUTS: JAMES A. LOVELL, JR., Capt. U.S.N.  
WILLIAM A. ANDERS, Major, U.S.A.F.  
FRANK BORMAN, Col., U.S.A.F.

UNITS ATLANTIC:

GUADALCANAL LPH 7  
SANDOVAL APA 194 # (LPA 194)  
RANKIN LKA 103  
FRANCIS MARION LPA 249  
CHUKAWAN AO 100  
SALINAN ATF 161  
VANGUARD T AGM 19\*  
UDT 21  
VW 4  
HS 3  
CVSG 56

UNITS PACIFIC:

YORKTOWN CVS 10 (PRS)  
COCHRANE DDG 21  
NICHOLAS DD 449  
RUPERTUS DD 851  
CHIPOLA AO 63  
ARLINGTON AGMR 2  
UDT 12

TRACKING SHIPS:

\*USNS VANGUARD T AGM 19 (dual role)  
USNS REDSTONE T AGM 20  
USNS MERCURY T AGM 21  
USNS HUNTSVILLE T AGM 7

# SANDOVAL reclassified LPA 194 but still used APA in postmark.

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: None

MISSION DESCRIPTION: Demonstrate crew/spacecraft/mission support facilities performance during a manned Saturn V mission with command and service module. Demonstrate performance of nominal and selected mission activities including translunar injection, command service module navigation, communications and mid course corrections, and command service module consumables assessment and passive thermal control. Detailed test objectives designed to wring out systems and procedures that have a direct bearing on future lunar landings and space operations in the vicinity of the Moon.

NOTES: Liftoff came at 06:51:01 AM CST; lunar orbit insertion at 69:08:52 hours into the mission; and splash at 04:52 AM YORKTOWN time (147:00:11 into the mission).

Never before had humans traveled so far and fast (nearly 250,000 miles), or looked so closely on a celestial body (lunar orbit 60.5 by 60.9 nautical miles after two revolutions). On each of the lunar orbits all contact was lost for 45 minutes as they passed behind the Moon.

On Christmas Eve 1968, the three astronauts read the ten verses of Genesis, the Story of Creation. Its conclusion - "...and God saw that it was good." They ended with, "God bless all of you - all of you on the good Earth."

MISSION: APOLLO 8 (Continued)

On each day about 3 PM, on the way to the Moon, the astronauts appeared live on television screens on Earth. For about 20 hours, the astronauts were locked in the grip of the Moon. On December 24, they appeared on TV at 07:30 AM and again at 09:30 PM. Most of the time in lunar orbit was spent photographing future landing sites.

Early Christmas morning behind the Moon, they positioned the craft for trans-earth injection. When the craft came around from the far side they had indeed left behind lunar gravity and was headed home.

After Apollo 8 broke out of Moon orbit at nearly 5,500 miles per hour and came under Earth influence, the craft gathered speed until it reached almost 25,000 miles per hour. With that speed if they entered the Earth's atmosphere at the wrong angle, they would be burned to a cinder. To land safely Apollo 8 had to be threaded through what at 80 miles above the Earth amounted to the eye of a needle - an imaginary doorway some 400 miles by 26 miles. They hit blunt end first and began a flaming arc through the atmosphere. Twice the craft was rolled so that the aerodynamic lift designed into it caused it to climb briefly. The G-force rose to six times Earth's gravity. However, all systems were go and Apollo 8 landed on target.

Major Anders received a promotion for the Apollo 8 flight. Anders' promotion was in accord with a policy adopted by President Johnson in 1965 of advancing each military astronaut one grade when he completed his first space flight. Borman and Lovell received promotions after their trip aboard Gemini 7, December 1965.

On May 5, 1969, the Post Office Department issued a 6¢ commemorative postage stamp in honor of the Apollo 8 mission. The design was based on a photo showing the Earth over the Moon horizon.

An interesting article appeared by The Associated Press in newspapers across the land comparing Apollo 8 with a book written by JULES VERNE 100 years ago about a voyage to the Moon.

SPACECRAFT:	Apollo 8: 12 feet x 13 feet; weight 12,392 lbs. Verne: 12 feet x 13 feet; weight 12,230 lbs.
LAUNCH SITE:	Apollo 8: Cape Kennedy, Florida. Verne: Florida described would be the Cape Kennedy area.
CREW:	Apollo 8: 3 men. Verne: 3 men.
MOON ORBIT:	Apollo 8: 69 miles above the Moon. Verne: 25 miles above the Moon.
SPLASH:	Apollo 8: Pacific Ocean. Verne: Pacific Ocean.

MISSION: APOLLO 9 AS-504 (SA-504) (Orbital, Manned)

SCHEDULED DATE OF LAUNCH: 28 February 1969  
ACTUAL DATE OF LAUNCH: 03 March 1969  
DATE OF LANDING: 13 March 1969  
LENGTH OF FLIGHT: 10 days, 1 hr., 0 min., 54 sec.  
NO. OF REVS: 152  
POSIT. OF LANDING: 23-15N, 68-00W  
DIST. FROM PRS: 4 nautical miles  
TIME TO RECOVER ASTROS: 45 min.  
TIME TO RECOVER S/C: 2 hrs., 12 min.  
LAUNCHED FROM: Cape Kennedy, Florida, Pad A, Complex 39  
RECOVERED BY: Helo to GUADALCANAL LPH 7  
ASTRONAUTS: JAMES A. MC DIVITT, Col., U.S.A.F.  
DAVID R. SCOTT, Col., U.S.A.F.  
RUSSELL L. SCHWEICKART, Civilian

UNITS ATLANTIC:

\*GUADALCANAL LPH 7 (PRS)  
\*ALGOL LKA 154  
PAIUTE ATF 159  
VANGUARD T AGM 19\*  
HS 3  
CVSG 56  
VW 53  
UDT 22

UNITS PACIFIC:

LEONARD F. MASON DD 852  
COCHRANE DDG 21  
\*NICHOLAS DD 449

TRACKING SHIPS:

\*USNS VANGUARD T AGM 19 (dual role)  
USNS REDSTONE T AGM 20  
USNS MERCURY T AGM 21  
USNS HUNTSVILLE T AGM 7

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: Launch delayed 3 days due to colds of astros. The EOM TP was for REV 151 but was deleted due to heavy weather. EOM TP 152 was named the new impact point.

MISSION DESCRIPTION: Check out of the lunar module and its systems in a series of tests and maneuvers in which the LM is the active rendezvous vehicle just as it would in a lunar orbit rendezvous. And to conduct an abbreviated EVA.

NOTES: Liftoff came at 10:00:00 AM CST and splash came at 241:00:53 into the mission. Code names were assigned: GUMDROP was the Command and Service Module (CSM); the Lunar Module (LM), code-named SPIDER; and astronaut "RUSTY" SCHWEICKART was code-named RED ROVER while on EVA.

Other spacecraft like the command module is designed to bear unbelievable heat for reentry, but the Spider can only fly in space. One might say it may resemble an earthling's nightmare of a visitor from outer space. For almost six hours while orbiting 135 miles above the Earth and up to 111 miles away from GUMDROP, SPIDER checked out systems and performed rendezvous.

The EVA made on Apollo 9 was to check out the LM's pilot's extravehicular mobility pack and to see if LM could support EVA. The Apollo 9 EVA will be the only planned EVA in the Apollo program until lunar landing. "RUSTY" experienced nausea the day before EVA and it was canceled, however, the crew decided upon a modified EVA which was carried out.

The cable on the GUADALCANAL B&A crane broke while undergoing recovery, but "TILLEY", the mobile aircraft handling crane, was brought into play. Recovery of the CM was then accomplished.

MISSION: APOLLO 10 AS-505 (SA-505) (Lunar Orbital, Manned)

SCHEDULED DATE OF LAUNCH: 17 May 1969  
ACTUAL DATE OF LAUNCH: 18 May 1969  
DATE OF LANDING: 26 May 1969  
LENGTH OF FLIGHT: 8 days, 0 hrs., 3 min., 58 sec.  
NO. OF REVS: 31 lunar (61.6 hrs.)  
POSIT. OF LANDING: 15-04S, 164-41W  
DIST. FROM PRS: 4.7 nautical miles  
TIME TO RECOVER ASTROS: 39 min..  
TIME TO RECOVER S/C: 1 hr., 36 min.  
LAUNCHED FROM: Cape Kennedy, Florida, Pad B, Complex 39  
RECOVERED BY: Helo to PRINCETON LPH 5  
ASTRONAUTS: THOMAS P. STAFFORD, Col., U.S.A.F.  
JOHN W. YOUNG, Cdr., U.S.N.  
EUGENE A. CERNAN, Cdr., U.S.N.

UNITS ATLANTIC:

\*RICH DD 820  
OZARK MCS 2  
\*CHILTON LPA 38  
SALINAN ATF 161  
VANGUARD T AGM 19\*

UNITS PACIFIC:

\*PRINCETON LPH 5 (PRS)  
CARPENTER DD 825  
\*CHIPOLA AO 63  
\*ARLINGTON AGMR 2  
UDT 11  
HS 4

TRACKING SHIPS:

\*USNS VANGUARD T AGM 19 (dual role)  
USNS REDSTONE T AGM 20  
USNS MERCURY T AGM 21  
USNS HUNTSVILLE T AGM 7

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: The change from the first to the second day of the launch window permitted observation and collection of data on Apollo landing site 2 as the area of primary interest and also permit observation of site 3 after sunrise on the Moon.

MISSION DESCRIPTION: The purpose of the flight was to provide additional experience in combined system operation during the three-day trip to the vicinity of the Moon and in lunar orbit. With the exception of the actual landing of the lunar module on the lunar surface, the mission plan was the same as the lunar landing mission.

NOTES: Liftoff came at 12:49 EDT and splash came at 11:53:35 AM CDT. Code name CHARLIE BROWN was assigned the Command Module. SNOOPY was assigned to the Lunar Module.

After 1 1/2 earth orbits Apollo 10 coasted to the Moon. The world watched TV while Stafford separated the command module from the third stage of the Saturn V. Lunar insertion was at 12:30 PM CDT on Tuesday. While Snoopy descended on its first lunar pass, the LM was seized by a series of violent gyrations. Stafford took over and stabilized the craft manually. The problem was traced to the control switch left in the wrong position. The descent stage was left in lunar orbit which caused some concern to the space trio before their trans-earth burn at 5:25 AM CDT, Saturday. They had spent 61.5 hours in lunar rendezvous. Apollo 10 entered the Earth's atmosphere at 24,769 mph which was the fastest yet recorded. The astronauts were recovered by Cdr. Charles Smiley, Exec. of Helo Squadron 4.



MISSION: APOLLO 11 AS-506 (SA-506) (Lunar Landing)

SCHEDULED DATE OF LAUNCH:	16 July 1969
ACTUAL DATE OF LAUNCH:	16 July 1969, 1332:00.61 GMT
LUNAR LANDING:	20 July 1969, 2017:39.9 GMT
MAN'S FIRST STEP:	21 July 1969, 0256:19 GMT
LUNAR LAUNCH:	21 July 1969, 1754:00.8 GMT
TIME ON MOON:	21 hrs., 37 min., 21 sec.
TIME OF LANDING/EARTH:	24 July 1969, 1650:35
LENGTH OF FLIGHT:	8 days, 3 hrs., 18 min., 35 sec.
NO. OF REVS:	30 lunar (59 hrs., 28 min.)
POSIT. OF LANDING:	13-18N, 169-24W
DIST. FROM PRS:	13 nautical miles
TIME TO RECOVER ASTROS:	1 hr., 8 min. (with decontamination complete)
TIME TO RECOVER S/C:	3 hrs., 5 min.
LAUNCHED FROM:	Cape Kennedy, Florida, Pad A, Complex 39
RECOVERED BY:	Helo to HORNET CVS 12
ASTRONAUTS:	NEIL A. ARMSTRONG, Civilian EDWIN E. ALDRIN, Col., U.S.A.F. MICHAEL COLLINS, Lt. Col., U.S.A.F.

UNITS ATLANTIC:

NEW DD 818  
OZARK MCS 2  
SALINAN ATF 161  
VANGUARD T AGM 19\*

UNITS PACIFIC:

HORNET CVS 12 (PRS)  
GOLDSBOROUGH DDG 20  
HS 4  
UDT 11, 12  
VW 1

TRACKING SHIPS:

\*USNS VANGUARD T AGM 19 (dual role)  
USNS REDSTONE T AGM 20  
USNS MERCURY T AGM 21  
USNS HUNTSVILLE T AGM 7

UNITS PACIFIC NOT RECOVERY:

ARLINGTON AGMR 2 Pres. Com. Ship  
CARPENTER DD 825 SAR Support  
HASSAYAMPA AO 145 Refueling

SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: Prime Recovery Area was considered unsuitable and the target point was moved about 200 nautical miles to an acceptable area. Splash occurred immediately after first light. The CM inverted to Stable 2 Condition (apex down). Uprighting bags were deployed and inflated which successfully returned the module to an upright position. MQF support aboard HORNET was extremely successful and further shipment of MQF to Houston went well. The CM was off loaded at Hawaii, deactivated, and shipped to California without incident.

MISSION DESCRIPTION: To accomplish man's long-time dream of walking on another celestial body and return.

NOTES: Code name EAGLE was assigned to the LM. COLUMBIA was the name given to the Command Module.

NEIL A. ARMSTRONG, age 38, made the first human step on the Moon. His first words spoken were: "That's one small step for a man, one giant leap for mankind." (First printed version of those words left out "a" ... for a man." Neil was asked again upon return exactly what he said and the "a" was mentioned.)

President Richard M. Nixon watched the recovery aboard HORNET. ARLINGTON was stationed mid-way between HORNET and Pearl Harbor for a Presidential stop-over for one night. CARPENTER was stationed for Presidential safety enroute.

Fate had deemed that ARMSTRONG, COLLINS, and ALDRIN would be selected to be on the first Moon Landing Mission. Two would actually set foot on the Moon while Collins would stay aboard Columbia until the other two would return. Collins said before the flight to newsmen,

"I'd like to point out, that I have no TV set on board and therefore I'm going to be one of the few Americans who is not going to be able to see the moon walk. So, I'd like you to save the tapes for me, please. I'd like to look at them after the flight."

On July 12, Russia launched LUNA 15, to the Moon. It was unmanned and purpose unknown. Later as Apollo 11 neared the Moon, astronaut Borman called M. V. Keldysh, President of the Russian Academy of Sciences for exact details on LUNA 15 behavior as everyone wanted to be sure of no interference. Borman was told that LUNA would not interfere with Apollo. However, all was not worry, and there were signs of friendship in this flight between both countries. The three Apollo 11 astronauts took along medals of the Russian cosmonauts YURI A. GAGARIN, first man-in-space, and VLADIMIR KOMAROV who was killed in accidents in Russia. In addition, they took insignia patches of GUS GRISSOM, ED WHITE, and ROGER CHAFFEE and their own Apollo 11.

The mission to the Moon was marked with TV broadcasts with very little not planned. On July 20 after sending back reports of the altitude from EAGLE as the LM came nearer to the surface of the Moon, he said, "Okay engines stopped." Then: "Tranquillity Base here. The Eagle has landed." The time was 4:17:39, man had landed on the Moon. Landing site 2 where the astronauts landed was chosen because of the smooth area shown in photographs. The site is located at 0° 42' 50" North latitude, 23° 42' 28" East longitude. Site 2 located on the east central part of the Moon in southwestern Mar Tranquillitatis. It is about 62 miles (100 kilometers) east of the rim of Crater Sabine and about 118 miles (190 kilometers) southwest of the crater Maskelyne. Eagle actually overshot this area by about 4 miles.

After Armstrong stepped on the Moon, his initial act was to unveil a plaque whose message symbolizes the nature of the mission. (See photo on a following page.) The plaque was fastened to a leg of EAGLE.

Neither Armstrong or Aldrin found any difficulty in walking in the 1/6 gravity on the Moon when they planted the American flag or gathered Moon samples to take back. President Nixon called the astronauts over 240,000 miles distance and congratulated them. During EVA they left behind a seismometer experiment. After 2 hours and 32 minutes EVA, the crew returned to the LM. Armstrong and Aldrin tried to sleep aboard EAGLE and their rest was fitful. Liftoff from the Moon was made at 1:56 PM, July 21. President Nixon proclaimed July 21 as a Day of National Participation - Moon Day.

Shortly after liftoff from the Moon and rendezvous with Collins in Columbia, LUNA 15 crashed landed on the Moon in the Sea of Crisis, 500 miles from the spot where Armstrong and Aldrin had walked.

After splash, aboard Hornet, President Nixon greeted the three returning heroes through their quarantine trailer system window. The President proclaimed, "This is the greatest week in the history of the world since the Creation."

Two separate cargo planes carried the precious moon samples back to the United States. No chances were taken in losing all in a plane crash.

The astronauts were flown to Houston in their quarantine trailer and from there placed in the Manned Spacecraft Center quarantine laboratory. The Lunar Receiving Laboratory (LRL) originally was scheduled to accommodate 17 persons - 12 staff members, 3 Apollo crewmen, and 2 attendants, however, 4 men and 1 woman were exposed to moon samples and were confined also. All were released in good health on August 11.

In retrospect the first landing on the Moon was not perfect. Apollo 11 came within 14 seconds of an abort. Armstrong saw the computer automatic guidance system steering them into a rock-filled crater and immediately took over manual control using precious fuel of only 14 seconds to land safely.

After the Apollo 11 crew left the Moon surface, the experiment they left behind recorded its first entry - a moon quake.

Besides the American flag; plaque; medals; patches; the Astronauts left behind flags of 136 nations, 50 U.S. States, the District of Columbia, and four possessions; a small disc carrying messages of Presidents Eisenhower, Kennedy, and Nixon along with 73 leaders of the world and VIP Americans. All these messages were placed on the disc with a microminiature electronic circuit.

Apollo 11 carried to the Moon a master United States Post Office die to be used later for the production of an Apollo 11 commemorative stamp. The die was trimmed 80% of its weight for the lunar round trip. The astronauts canceled some mail aboard Columbia with this die and returned it to earth over what is now termed history's longest "mail route". A letter together with the master die is part of the national philatelic collection located in Washington, D.C.

The resulting desire by collectors the world over to get a replica of the Moon Landing postmark and Moon Stamp was more than the Post Office had realized. It took over five months to service the First Day covers (final count was 8,743,070). The Washington Stamp Exchange, Maplewood, New Jersey published a brochure on the die that flew to the Moon giving all the details of this venture.

In the months since the issuance of the Moon Stamp, an error was discovered in El Paso, Texas Fort Bliss Branch by Capt. Kenneth DeVito. It seems as if the American flag was missing from the shoulder of Armstrong. The errors were discovered on plate numbers 31401 and 31405.

The moon has many meanings to men down through the ages - love, death, change of seasons, and you name it. In Roman legends, the Moon was Diana, twin sister of Apollo. Now we can say with the landing of Apollo 11 on the Moon, the legendary twins were reunited.

MISSION: BIOSATELLITE 3 (PRIMATE)

SCHEDULED DATE OF LAUNCH: Earlier  
ACTUAL DATE OF LAUNCH: 28 June 1969  
DATE OF LANDING: 7 July 1969  
LENGTH OF FLIGHT: 9 days  
NO. OF REVS: 130  
POSIT. OF LANDING: 25 nmi north of Kauai, Hawaii  
TIME TO RECOVER PRIMATE: 1 hr., 6 min.  
LAUNCHED FROM: Cape Kennedy, Florida  
RECOVERED BY: CH-3B Helo  
ASTROMONKEY: BONNY

RECOVERY UNITS: (Pacific)

6594<sup>th</sup> U.S.A.F. Test Group

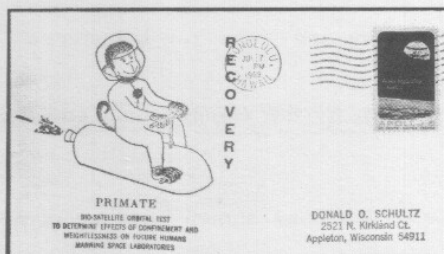
SIGNIFICANT MISSION CHANGES AFFECTING LAUNCH/LANDING: Minute by minute readings indicated BONNY's health was deteriorating rapidly. Dr. W. Ross Adey of UCLA and NASA scientists elected to invoke emergency procedures to terminate the flight.

MISSION DESCRIPTION: A ringtail monkey, named Bonny was to orbit the earth for 30 days to provide medical data for prolonged flight. Set guide lines for future manned flights in space stations and planetary travel that could last months or years.

NOTES: Bonny, a 3-year old male from Thailand was launched at 11:30 PM, EDT on a two-stage Delta rocket. He was to orbit at 250 miles for 30 days. (The previous longest animal flight was made by two Russian dogs in 1966 for 22 days).

Bonny was instrumented in a way that no man could be, to determine many medical experiments. However, to prevent Bonny from pulling the sensors loose, he was strapped into a cocoon-like device with only his arms free. Besides the medical tests done through instruments, Bonny was to perform two behavioral tasks. One to test his short-termed memory and the other coordination between eye and hand. For good performances, he was rewarded with food pellets from a dispenser.

The seven foot long, 1,536-pound satellite flight was aborted and a 6594<sup>th</sup> Test Group C-130 Hercules aircraft was to snag the 31 pound capsule holding Bonny, in mid-air as it reentered the earth's atmosphere at 12:30 PM. But the plane lost it in overcast. A helo spotted the capsule in the water and dropped two pararescue men to secure a flotation collar around it. The capsule was loaded aboard the chopper at 1:30 PM. Bonny died on July 8, 1969 from undetermined causes after being brought to Hickam AF Base the day before. A team of 15 doctors had worked to save his life.



Cachet designed and applied by author

## POST MARKING DIES, KENNEDY SPACE CENTER, FLORIDA

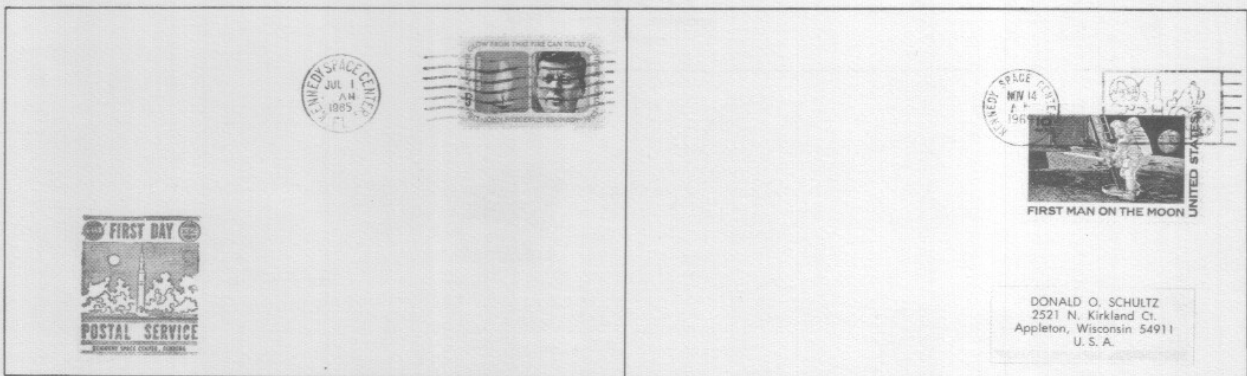
The first day Kennedy Space Center, Florida received and used its own post office cancellation die was July 1, 1965. It is shown with a FIRST DAY POSTAL SERVICE cachet affixed. The die is known as a flag die.

On July 30, 1965, the JFK Center received a new die with a missile launch in its slogan. The first philatelic event canceled on that day was the launching of the Saturn S/A-10. (Item shown not first day.)

The third die was first used at 11:30 AM, November 14, 1969. (See photo) (A first day die (JFK) of the space twin stamps not shown because of short usage.)

One can see the first die differences with both the second and third by the wavy flag cancel. The second die has FLORIDA (FL) upside-down in relation to KENNEDY SPACE CENTER. In the slogan, NASA symbol is black or solid with white letters of NASA. Other minor details of the clouds of the missile blast, the missile, and rectangular size of the slogan are apparent between die two and three.

It was reported by several collectors to Postal Inspectors that a "fake" JFK cancellation was introduced to the philatelic world. Mr. David Chessman has sent this author photographs that he took of a "fake" and genuine Kennedy postmark. They appear in photograph 4. Noticeable on the "fake" is the wing to the right of the NASA symbol is blunt while the genuine is sharp and pointed. There is a difference in the missile among other points of interest. This author at the time of this writing has no proof of the "fake" or any outcome of the investigation by postal authorities. This item is shown only to bring to your attention the possibilities and draw your own conclusions from what you see in Mr. Chessman's photograph. Surely as collectors, we can not tolerate any faking and this fact made known not only for now but for all future philatelists. (Chessman photo - "fake" upper; genuine lower portion.)



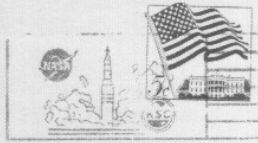
First Die

Third Die

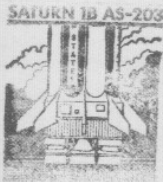


Second Die

David Chessman photo

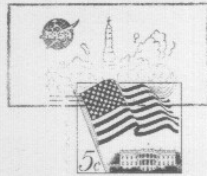


A/S-201  
(Unmanned)



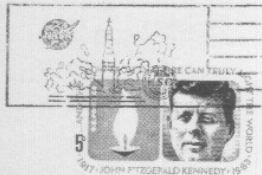
A/S-203  
(Not Scheduled for Recovery)

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54914  
U. S. A.



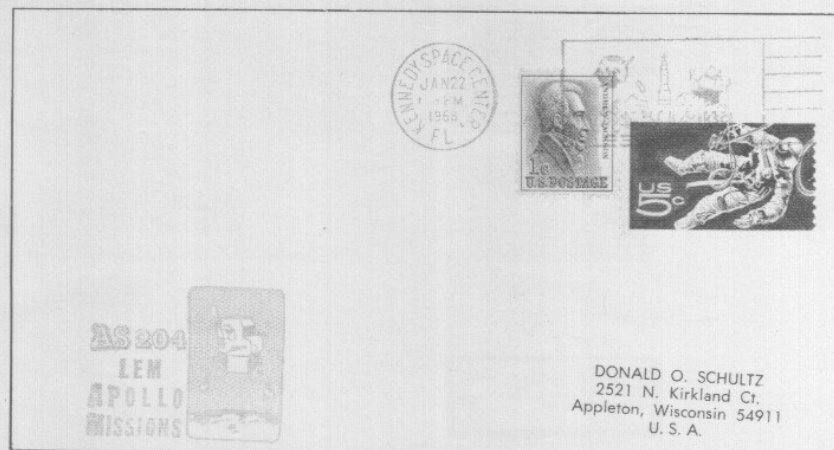
A/S-202  
(Unmanned)

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911  
U. S. A.



Apollo 4  
A/S-501  
(Unmanned)

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911  
U. S. A.

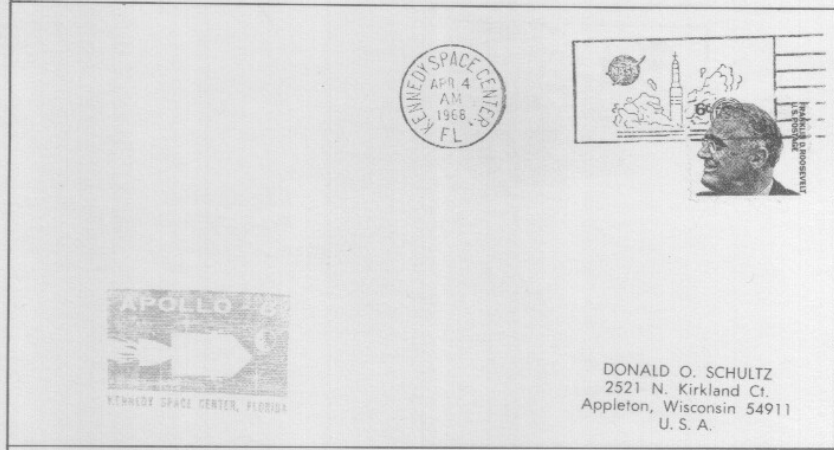


KENNEDY SPACE CENTER  
JAN 22  
1 - PM  
1968  
FL

AS 204  
LEM  
APOLLO  
MISSIONS

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911  
U. S. A.

A/S-204  
(Not Scheduled for Recovery)



KENNEDY SPACE CENTER  
APR 4  
AM  
1968  
FL

APOLLO 6  
KENNEDY SPACE CENTER, FLORIDA

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911  
U. S. A.

Apollo 6  
A/S-502  
(Unmanned)

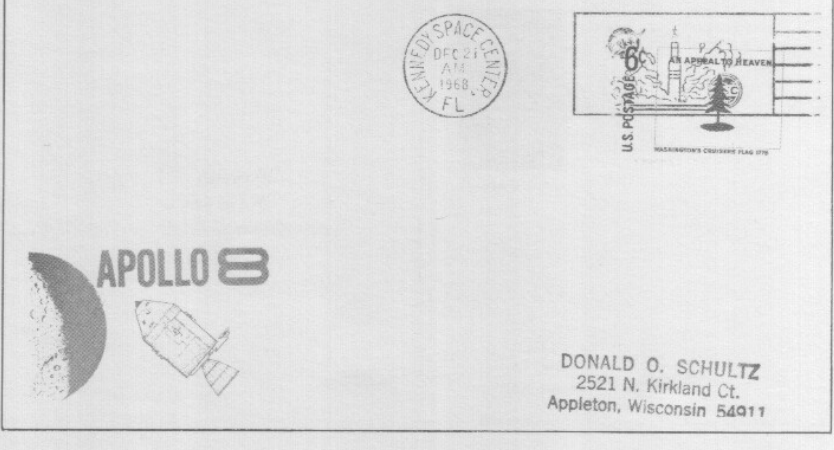


KENNEDY SPACE CENTER  
OCT 11  
AM  
1968  
FL

SCHIRRA-EISELE-CUNNINGHAM  
VII

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911

Apollo 7  
A/S-205  
Schirra-Eisele-Cunningham

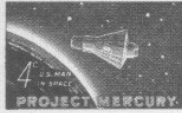


KENNEDY SPACE CENTER  
DEC 21  
AM  
1968  
FL

APOLLO 8

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911

Apollo 8  
A/S-503  
Lovell-Anders-Borman

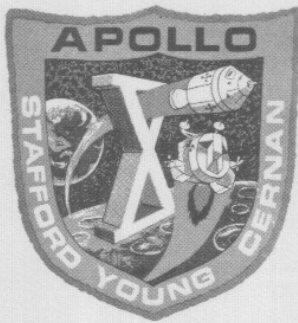
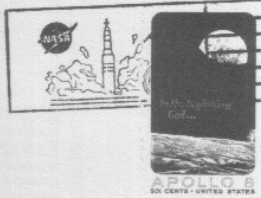


Apollo 9  
A/S-504  
McDivitt-Scott-Schweickart



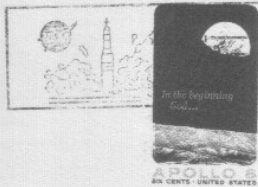
DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911

Apollo 10  
A/S-505  
Stafford-Young-Cernan



DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, WI 54911

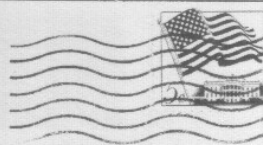
Apollo 10  
A/S-505  
Stafford-Young-Cernan



DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911

Apollo 11  
A/S-506  
Armstrong-Aldrin-Collins





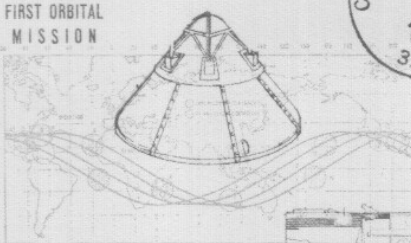
A/S-201  
(Unmanned)

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54914

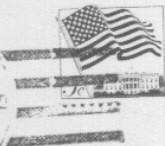


# Apollo II

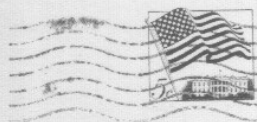
FIRST ORBITAL MISSION



Saturn Moon Rocket 2nd Stage Orbiting  
Liquid Hydrogen Fuel Space Test  
92 Ft. 58,500 Stage Fired 10:53 AM EDT



A/S-203  
(Not Scheduled for Recovery)



A/S-202  
(Unmanned)

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911  
U. S. A.



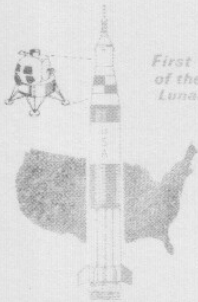
Apollo 4  
A/S-501  
(Unmanned)

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54914

B728

Apollo - 5

SATURDAY



First flight of the Apollo Lunar Module 1



The vehicle's two major engines each is to be fired two times in an orbit test. These are the descent engine, designed to drop the crew onto the moon, and the ascent engine, intended to lift them off.

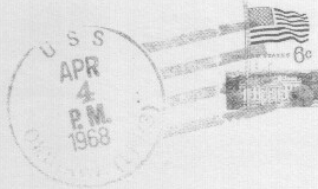
BOX 2296, HUNTINGTON, W. VA. 25724

A/S-204  
(Not Scheduled for Recovery)

APOLLO 6 RECOVERY



Apollo 6  
A/S-502  
(Unmanned)



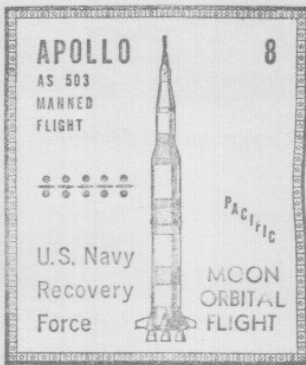
Apollo 6  
A/S-502  
(Unmanned)

DONALD D SCHULTZ  
2521 KIRKLAND CT  
APPLETON WIS  
54911



Apollo 7  
A/S-205  
Schirra-Eisele-Cunningham

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911



Apollo 8  
A/S-503  
Lovell-Anders-Borman

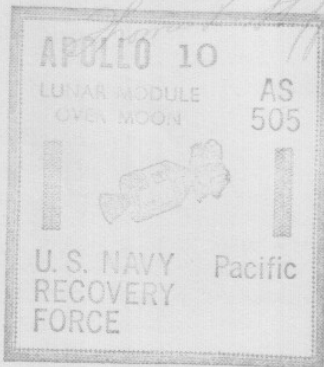
DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911



*Donald O. Schultz*

Apollo 9  
A/S-504  
McDivitt-Scott-Schweickart

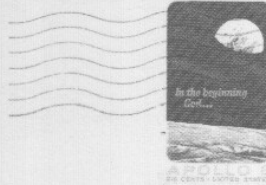
DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911



Apollo 10  
A/S-505  
Stafford-Young-Cernan

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911

APOLLO AS 506 MANNED LUNAR LANDING



U.S. NAVY RECOVERY FORCE

PACIFIC

Apollo 11  
A/S-506  
Armstrong-Aldrin-Collins

DONALD O. SCHULTZ  
2521 N. Kirkland Ct.  
Appleton, Wisconsin 54911

PHILATELIC DISCREPANCIES

<u>NAME OF SHIP</u>	<u>FLIGHT</u>	<u>DISCREPANCY</u>	<u>PARTICIPATION</u>	<u>COMMENTS</u>
ESCAPE ARS 6	Apollo 5	Commemorative	Did not take part	Covers postmarked but not involved.
ELLISON DD 864	Apollo 7	Commemorative	ASW training	Covers postmarked but not involved.
STORMES DD 780	Apollo 7	Commemorative	ASW training	Covers postmarked but not involved.
GREENE DD 711	Apollo 7	Commemorative	ASW training	Covers postmarked but not involved.
PAWCATUCK AO 108	Apollo 7	Commemorative	ASW training & refueling	Covers postmarked but not involved.
CUBERA SS 347	Apollo 7	Commemorative	ASW training	Covers postmarked land stations - not involved.
CUTLASS SS 478	Apollo 7	Commemorative	ASW training	Covers postmarked land stations - not involved.
HASSAYAMPA AO 145	Apollo 7	Commemorative	Did not take part	Replaced by PONTCHATOULA
OZARK MCS 2	Apollo 7	Commemorative	Did not take part	Scratched
RUSHMORE LSD 14	Apollo 7	Commemorative	Did not take part	Scratched
WATERTOWN T AGM 6	Apollo 8	Commemorative	Did not take part	Dropped from Apollo program.
MYLES C. FOX DD 829	Apollo 9	Commemorative	Did not take part	Participation was before flight with Mobile Quarantine trailer aboard.

There were numerous missile tracking ships that cacheted and had covers postmarked on the correct Apollo flight days. These T AGM ships have no postal facility aboard and the covers were canceled at different shore stations. It is apparent that Public Affairs Officers cacheted covers just to accommodate collectors and not for taking part in the mission.

Also, it is known that collectors sent covers to many ships not knowing if they were assigned recovery duty or not in hopes of having covers aboard the right ship at recovery. All these covers MUST be classed as commemorative as those ships did not participate.

## INFORMATION DISCREPANCIES

AS-201 mission listing will come as a great surprise to many readers as there were several more ships than the news reports ever printed. This is not a discrepancy from the records as all sources cross-check. However, we did not know about them for our purposes and no doubt not many philatelic covers exist for the ships. (KANKAKEE, SALINAN, FIDELITY, BEALE, WALLER, and BORDELON.)

Manned Spaceflight Center several times omitted the close-in abort craft names such as ARS, ATF or craft of that type. However, they were aware of the ship.

Greatest differences found was between Task Force One Four Zero and The Naval History Division together with Department of Defense brochures. DOD explained their differences was because the brochures were printed several weeks before the flight and last minute changes did not reflect. Certain ship changes not listed in their brochures were cross-checked with their office and these were correctly given even though they didn't have it printed. They were aware of the correct information and ships involved.

T.F. 140 listed VANGUARD in dual roles for Apollo 7, 8, and 9. On 10 and 11, VANGUARD was tracking as its main duty. However, checking with VANGUARD, and DOD at the Cape, it was found that T AGM 19 indeed had dual roles through Apollo 11 although relieved early in the flights.

The Navy reclassified many ships during the span of Apollo. This reclassification is noted mainly for readers of the future when they have their covers in front of them and read in a book a different classification. Neither the postmark or the book will be in error. Official records show the new classification of the ship while the ship(s) did not receive their new postmarks yet.

T.F. 140 does not list HASSAYAMPA, ARLINGTON, and CARPENTER on the recovery force for Apollo 11 - Naval History does. This was checked out with the P.A.O. aboard HORNET. T.F. 140 was correct and Naval History was wrong. (The ships listed in this book for Apollo 11 are as they participated and their specific duties for the mission.)

Naval History showed YORK COUNTY on Apollo 10 recovery force but was apparently not informed that YORK COUNTY only trained in March 1969 for the duty and was relieved in April by OZARK.

The only serious discrepancy I found with T.F. 140 information was with OPNAV report 5750.12 dated 19 February 1969. (This is an early write-up to continue the history of the Force between flights.) That report said that Apollo 5 was launched on 9 February 1968. (Apollo 5 actual launch date was 22 January 1968.) The discrepancy was found apparently before the actual final mission history was typed later in 1968, as I found it correct in their final records.

It is interesting to note that tracking ships did not come under T.F. 140 history except as I noted above. They referred me to Naval History. Naval History did not list those ships either. I finally found them under the U.S.A.F. and DOD sources at the Cape and NASA Recovery at Houston.

## CONCLUSION

Although covers and photographs shown are important, they represent only a fraction of what is available. The material shown here are from my own collection which depict some important events in the Apollo space program. Naval covers are from the prime recovery ships.

Again I must say that no one has all the possible ship covers for the flights. Since the Navy saw fit to take off tankers from the recovery list, it is almost impossible to know the ships name before the recovery takes place, hence in some cases these refueling tanker (AO) covers are missing. In some missions these ships are not listed in either Task Force 140 booklets or DOD Mission booklets for each flight. Also, there is a good reason to believe that USS ARLINGTON AGMR 2 took part in several previous Apollo recoveries before the ship was listed. On some of the later Apollo flights only the prime recovery ship was at sea while the inport standby ship (mostly destroyers) was actually in port. It was found that the prime ship even as large as a carrier did not have any ship as an escort or plane guard for aircraft accidents. Then it was found that only the AO topped-off fuel for this prime recovery ship and was not listed in the official records taking part. In corresponding with the Public Affairs Officer aboard ARLINGTON, which was a complex of communications, this writer had the impression that this ship had spent many missions for Apollo. However, even with the PAO's help, this could not be proved out because of the records available to him.

The Navy used the Apollo recovery waiting time for training exercises as was in the case of Apollo 7. The exercise was normal ASW duty while the carrier waited for recovery so no time was lost and full use was made of the ships and money involved. Philatelic wise, this type of exercise, threw the collecting world in a dither thinking all sorts of things. Collectors also made mistakes by sending indiscriminately to all sorts of ships like known missile tracking ships that were engaged in DOD missile tracking and to AO's, DD's and the like in hopes of getting their covers aboard the right ships. Some of these cases, ships postmarked covers on the correct days of the flight so in years to come other collectors will have a hard time telling for sure if that ship really took part.

During the time this book reviews, we saw President Kennedy's challenge to the Nation come to pass. Apollo 11 was the realization of man's dream to walk upon another celestial body and return. This was the beginning of perhaps further far reaching desires. A desire to compare processes on Earth and the Moon; evaluate the Moon as a base; determine the potential of man as an explorer on another planet; and to find clues of the solar system, its origin, and the mysteries of life. How far can a man dare dream? It is up to him. For all it takes is thought, a way will be found.

REFERENCES:	NASA, The Apollo Spacecraft	(space data)
	T.F. 140, Recovery Mission Chronology	(naval)
	NASA, M.S.C., Houston, Texas	(space data)
	Howard Benedict, Associated Press	(space data)
	John Stonesifer, M.S.C., Houston, Texas	(space data)
	Division of Naval History, Washington, D.C.	(naval data)
	Individual Public Affairs Officers aboard ships	(naval data)
	Dan Fager and David Chessman	(photos)

All data and information set forth was gathered from references and full credit is given. The author claims only bringing these sources together with comments and story added.

Project Apollo, The Moon & Beyond, is to be written as the fourth volume in this series later into the 1970's.