Sotheby's 25%

TRANGULITY TSASE. THE FIRST AMERICAN FLAG

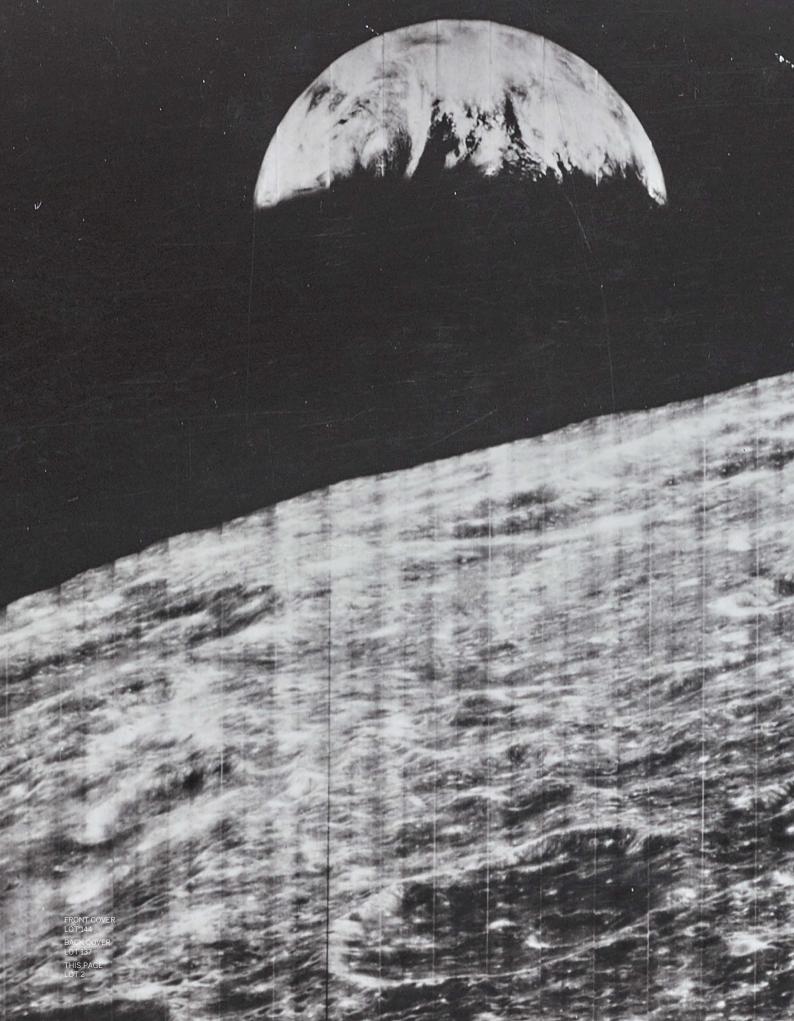
1 Zugg Oldrins APOLLO XI

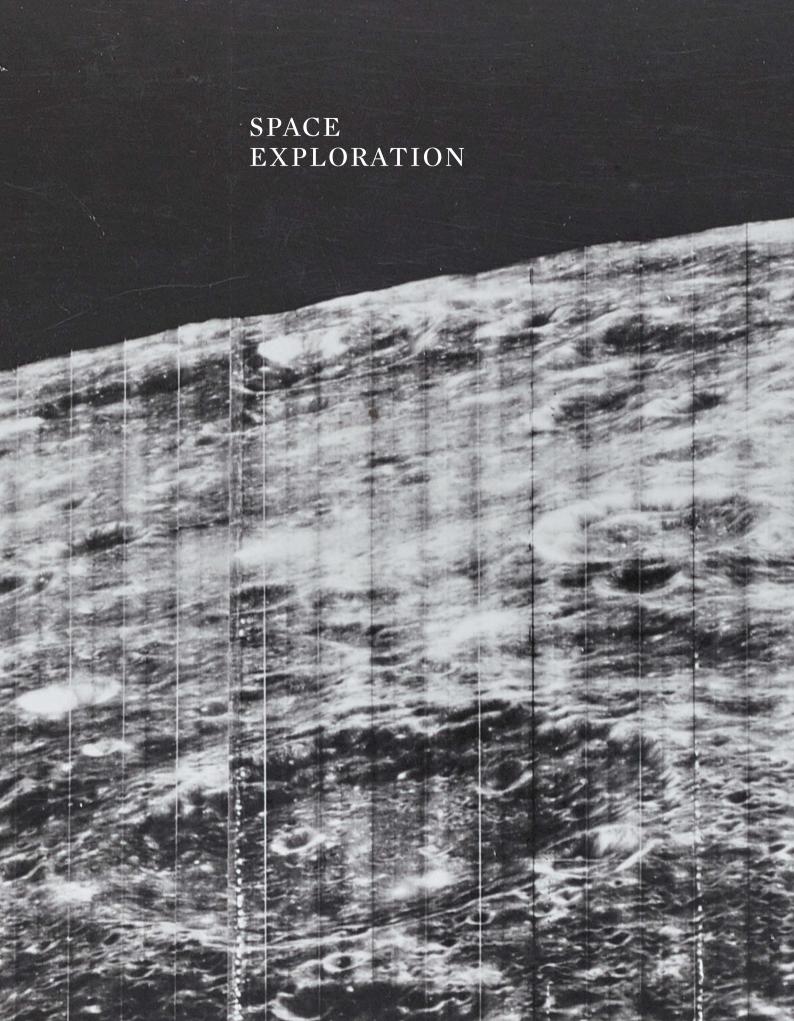




SPACE EXPLORATION

NEW YORK | 20 JULY 2019







SPACE EXPLORATION

AUCTION IN NEW YORK 20 JULY 2019 SALE N10096 11:00 AM

SESSION ONE: 11:00 AM SESSION TWO: 2:00 PM

ALL EXHIBITIONS FREE AND OPEN TO THE PUBLIC THE EXHIBITION WILL BE THE 13-19 OF JULY

Saturday 13 July 10 am-5 pm

Sunday 14 July 1 pm-5 pm

Monday 15 July 10 am-5 pm

Tuesday 16 July 10 am-5 pm

Wednesday 17 July 10 am-5 pm

Thursday 18 July 10 am-5 pm

Friday 19 July 10 am-5 pm

1334 York Avenue New York, NY 10021 +1 212 606 7000 sothebys.com FOLLOW US @SOTHEBYS #SOTHEBYSINSPACE PROPERTY OF VARIOUS OWNERS, INCLUDING PROPERTY DIRECTLY FROM THE PERSONAL COLLECTIONS OF:

Apollo 9 Lunar Module Pilot Russell Schweickart
Apollo 11 Lunar Module Pilot Buzz Aldrin
Apollo 13 Mission Commander James Lovell
Apollo 16 Mission Commander John Young, via his estate
NASA Senior Photographer Bill "Two More" Taub, via his Estate





This passport, properly visued, is valid for travel in all countries unless other-

This passport, unless limited to a shorter period, is valid for two years from its date of issue and may be renewed upon payment of a free of 55 but the final date of expiration shall not be more than four years from the original date of issue.

American citizens traveling in disturbed areas of the world are requested to keep in touch with the nearest American diplomatic or consular officers.

'American citizens making their homes or residing for a prolonged period abroad should register at the nearest American consulate.

SEE PAGES 6, 7, AND 8 FOR RENEWAL, EXTENSIONS, AMENDMENTS, LIMITATIONS, AND RESTRICTIONS.

5











Specialists and Auction Enquiries

For further information on lots in this auction please contact any of the specialists listed below.



Cassandra Hatton Senior Specialist, CDR +1 212 606 7385 cassandra.hatton@sothebys.com



Selby Kiffer Senior International Specialist, EECOM +1 212 606 7385 selby.kiffer@sothebys.com



Ella Hall Specialist, CMP +1 212 606 7385 ella.hall@sothebys.com



Dr. Kalika Sands Associate Specialist, LMP +1 212 606 7385 kalika.sands@sothebys.com



Claudia Ludwig

Administrator, CAPCOM
+1 212 606 7385
claudia.ludwig@sothebys.com

BOOKS DEPARTMENT

Richard Austin

Head of Department
richard.austin@sothebys.com

Selby Kiffer International Senior Specialist selby.kiffer@sothebys.com

Justin Caldwell

Senior Specialist
justin.caldwell@sothebys.com

Cassandra Hatton Senior Specialist cassandra.hatton@sothebys.com

Ella Hall Specialist ella.hall@sothebys.com

Dr. Kalika Sands Associate Specialist kalika.sands@sothebys.com

Lucy Finn
Sale Coordinator
annelouise.finn@sothebys.com

Claudia Ludwig

Administrator
claudia.ludwig@sothebys.com
+1 212 606 7385

SALE NUMBER

N10096 "KUBRICK"

BIDS DEPARTMENT

+1 212 606 7414 FAX +1 212 606 7016 bids.newyork@sothebys.com

Telephone bid requests should be received 24 hours prior to the sale. This service is offered for lots with a low estimate of \$5,000 and above.

SALE ADMINISTRATOR

Claudia Ludwig claudia.ludwig@sothebys.com +212 606 7385 FAX +212 606 7038

POST SALE SERVICES

Ariela Behar

Post Sale Manager

ariela.behar@sothebys.com

FOR PAYMENT, DELIVERY

AND COLLECTION

+1 212 606 7444

FAX +1 212 606 7043

uspostsaleservices@sothebys.com

CATALOGUE PRICE

\$45 at the gallery

FOR SUBSCRIPTIONS CALL

+1 212 606 7000 USA +44 (0)20 7293 5000 for UK & Europe



Lucy Finn
Sale Coordinator, FAO
+1 212 606 7385
annelouise.finn@sothebys.com



Contents

```
AUCTION INFORMATION
SPECIALISTS AND AUCTION ENQUIRIES
KEY DATES IN THE HISTORY OF SPACE EXPLORATION
INTRODUCTION
10
BIOGRAPHIES
12
SESSION ONE: LOTS 1-103
REPRESENTATIONS OF THE LUNAR SURFACE: LOTS 1-3
MODELS, SPACESUITS & HARDWARE: LOTS 4-40
PROJECT MERCURY: LOTS 41-53
GEMINI PROGRAM: LOTS 54-59
APOLLO PROGRAM: LOTS 60-71
APOLLO 1-10: LOTS 72-103
SESSION TWO: LOTS 104-219
APOLLO 11: LOTS 104-152
APOLLO 12: LOTS 153-157
APOLLO 13: LOTS 158-179
APOLLO 14: LOTS 180-185
APOLLO 15: LOTS 186-191
APOLLO 16: LOTS 192-206
APOLLO 17: LOTS 207-212
ASTP, SKYLAB & STS: LOTS 213-219
148
HOW TO BID
149
CONDITIONS OF SALE
TERMS OF GUARANTEE
ADDITIONAL TERMS AND CONDITIONS FOR LIVE ONLINE BIDDING
151
BUYING AT AUCTION
SELLING AT AUCTION
SOTHEBY'S SERVICES
154
INFORMATION ON SALES AND USE TAX
155
```

INTERNATIONAL DEPARTMENTS

KEY DATES IN THE HISTORY OF SPACE **EXPLORATION**

BEGINNING OF THE SPACE RACE

Launch of the first artificial satellite, the Sputnik-1 (Oct. 1957)

FIRST HUMAN IN SPACE

Vostok-1 (April 1961): Yuri Gagarin†

FIRST WOMAN IN SPACE

Vostok-6 (June 1963): Valentina Tereshkova

FIRST SPACEWALK

Voshkod-2 (March 1965): Alexei Leonov

FIRST MOONLANDING & MOONWALK

Apollo 11 (July, 1969): Neil Armstrong† & Edwin "Buzz" Aldrin, Jr.

END OF THE SPACE RACE

Apollo-Soyuz Test Project-ASTP (July, 1975):

Apollo Crew: CDR: Thomas Stafford; CMP: Vance D. Brand; DMP: Donald "Deke" Slayton+

Soyuz Crew: CDR: Alexei Leonov; FE: Valeri Kubasov†

UNITED STATES MANNED MISSIONS & CREWS

PROJECT MERCURY (The "Mercury Seven")

Mercury Redstone-3 (May, 1961): Pilot: Alan Bartlett Shepard Jr. †

Mercury Redstone-4: (July, 1961): Pilot: Virgil "Gus" Grissom†

Mercury Atlas-6 (Feb. 1962): Pilot: John Herschel Glenn Jr. †

Mercury Atlas-7 (May, 1962); Orig. Pilot; Deke Slayton+; Replacement Pilot; Malcolm "Scott" Carpenter+

Mercury Atlas-8: (Oct. 1962): Pilot: Walter "Wally" Schirra, Jr. †

Mercury Atlas-9 (May, 1963): Pilot: Leroy Gordon "Gordo" Cooper, Jr. †

PROJECT GEMINI

Gemini 3 (April 1964): CP: Virgil "Gus" Grissom†; Pilot: John Young †

Gemini IV (June 1965); CP: James McDivitt: Pilot: Ed White+

Gemini V (August 1965): CP: Leroy Gordon "Gordo" Cooper, Jr.+; Pilot: Charles "Pete" Conrad+

Gemini VII (Dec. 1965): CP: Frank Borman; Pilot: James Lovell

Gemini VI-A (Dec. 1965): CP: Walter "Wally" Schirra†; Pilot: Thomas Stafford

Gemini VIII (March 1966): CP: Neil Armstrong†; Pilot: David Scott

Gemini IX-A (June 1966): CP: Thomas Stafford; Pilot: Eugene "Gene" Cernan†

Gemini X (July 1966): CP: John Young †; Pilot: Michael Collins

Gemini XI (Sept. 1966): CP: Charles "Pete" Conrad+; Pilot: Richard F. Gordon, Jr.+

Gemini XII (Nov. 1966): CP: James Lovell; Pilot: Edwin "Buzz" Aldrin, Jr.

APOLLO PROGRAM

Apollo 1 (Jan. 1967): CDR: Virgil "Gus" Grissom+; Sr. Pilot: Edward White+; Pilot: Roger Chaffee+

Apollo 7 (Oct. 1968): CDR: "Wally" Schirra+; LMP: "Walt" Cunningham; CMP: Donn Eisele+

Apollo 8 (Dec. 1968): CDR: Frank Borman; LMP: James Lovell; CMP: William Anders

Apollo 9 (March 1969): CDR: James McDivitt; LMP: "Rusty" Schweickart; CMP: David Scott

Apollo 10 (May 1969): CDR: Thomas Stafford; LMP: Eugene "Gene" Cernan†; CMP: John Young †:

Apollo 11 (July 1969): CDR: Neil Armstrong†; LMP: Edwin "Buzz" Aldrin, Jr.; CMP: Michael Collins

Apollo 12 (Nov. 1969): CDR: Charles "Pete" Conrad†; LMP: Alan Bean †; CMP: Richard F. Gordon †

Apollo 13 (April 1970): CDR: James Lovell: LMP: Fred Haise: CMP: John "Jack" Swigert+

Apollo 14 (Feb. 1971); CDR: Alan Shepard+; LMP: Edgar Mitchell+; CMP: Stuart Roosa+

Apollo 15 (July 1971): CDR: David Scott; LMP: James B. Irwin+; CMP: Al Worden

Apollo 16 (April 1972): CDR: John Young †; LMP: Charles M Duke; CMP: Thomas "Ken" Mattingly

Apollo 17 (Dec. 1972): CDR: Eugene "Gene" Cernan†; LMP: Harrison Schmitt; CMP: Ronald Evans†

Moonwalkers in bold; †: Deceased; CP: Command Pilot; CDR: Mission Commander; LMP: Lunar Module Pilot; CMP: Command Module Pilot; DMP: Docking Module Pilot; FE: Flight Engineer

COMMANDER'S INTRODUCTION

CASSANDRA HATTON

We are very excited to be holding Sotheby's third annual Space Exploration sale, this year taking place on July 20th, to commemorate the 50th anniversary of mankind's first steps on the moon taken by Neil Armstrong and Buzz Aldrin during Apollo 11. This first lunar landing is an event that nearly every person alive at the time recalls with great clarity, and we are thrilled to be offering as our top lot the earliest, sharpest, and most accurate surviving video images of this momentous moment: original first-generation NASA videotape recordings of the Apollo 11 lunar EVA -unrestored, unenhanced, and unremastered (lot 104).

It is a sad reality that most events that unite mankind through our individual, but shared, human memories are tragedies. The successful lunar landing of Apollo 11 is perhaps the sole event that people around the globe recall with excitement and positivity—the cosmonauts in Star City were no less thrilled than the astronauts and engineers in Houston. And what we universally recall about that event is documented on these tapes—a glorious moment that united the people of earth in peace, as witnesses to mankind's greatest achievement.

We are very proud to be able to say that we are working directly with several of the astronauts who risked their lives in the pursuit of President John F. Kennedy's ambitious and dramatic goal of "Landing a Man on the Moon and returning him safely to Earth", including none other than Apollo 11 Lunar Module Pilot Buzz Aldrin, Apollo 9 Lunar Module Pilot Rusty Schweickart, Apollo 13 Mission Commander Jim Lovell, the Estate of Apollo 16 Mission Commander John Young, as well as from the Estate of the man who documented it all so wonderfully for us, NASA Senior Photographer Bill "Two More" Taub. Please see pages 10-11 for their biographical information, and a listing of their lots.

Four of the items consigned directly by Aldrin come from the FLOWN *Apollo*

11 Flight Plan and Data File, the manuals used by the crew to guide them on their great adventure. These include 3 of the most important documents of the entire mission beginning with the complete FLOWN 4-page "Mission Rules Summary" (lot 108). Truly one of the most crucial and potentially life-saving documents on the entire spacecraft, it detailed the steps to be followed in the event of spacecraft malfunction. This is followed by the very first page of the FLOWN Flight Plan (lot 109); beginning with the word "LIFTOFF", it details the crucial activities to be performed by the crew from the launch through the first two hours of the mission. Next is the final page of the FLOWN Flight Plan (lot 110), which beings with the words "SPLASHDOWN" - this page marks the moment when the Crew of Apollo 11 made it home alive. Finally, the "Photographic Timeline" (lot 111) from the FLOWN Data File, being detailed instructions on camera configurations and film magazines to be used on the Mission. In an amazing alignment of the stars, the sale features three important artifacts that correspond directly with three of the above-mentioned FLOWN documents from Aldrin; these artifacts, when paired with the corresponding FLOWN documents, provide us with a much deeper understanding of the objects and the mission itself. These artifacts are lots 107 (paired with lot 111 "Photographic Timeline"), an incredible assemblage of lunar surface artifacts that include the label from Film "Mag S", used to take the most important lunar surface EVA pictures (and accidentally dropped onto the lunar surface by Armstrong), and what is the first document to be fully handwritten on the lunar surface, written by Buzz Aldrin to explain the contents of the various film magazines used on the mission, including "Mag S". The second is lot 105 (paired with lot 109, the "Liftoff" page), twenty of the Control Panels from Firing Room 1 and Kennedy Space Center, which were used to launch Apollos 11, 8, 17 and

several others. The third is lot 106 (paired with lot 110), the *Boost Cover Release* label salvaged from the Apollo 11 Command Module "Columbia" after Splashdown in the Pacific.

The sale is full of other wonderful items including the finest single owner collection of Flown Robbins Medallions ever assembled (lots 73, 75, 92, 98, 119, 153, 168, 170-171, 180-181, 186, 202-203, 207, and 213-219), many mission flown artifacts, and items such as early contractors and engineering models, spacesuits and glover, photography, original artwork and more, from the Mercury, Gemini, and Apollo programs, plus Skylab, ASTP, and the Shuttle era, as well as a handful of items relating to the Russian Space Program, most notably, a very complete Sokol-KR spacesuit (lot 5). Finally, we cannot speak about the triumphs of the missions without acknowledging the lives that were lost in pursuit of the Moon- lot 72 is an important reminder of this, being the only portion of Roger Chaffee's spacesuit to not be destroyed in the Apollo 1 tragedy. AD ASTRA PER ASPERA. In 2012, President Obama signed into law an act [H.R. 4158] that grants US astronauts who participated in the Mercury, Gemini, or Apollo programs through the Apollo-Sovuz Test Project "full ownership of and clear title to" artifacts that they received during participation in the space missions. It further "prohibits the federal government from having any claim or right to ownership, control, or use of (1) any artifact in the possession of such an astronaut; or (2) any such artifact that was subsequently transferred, sold, or assigned to a third party by such an astronaut." Thanks to this legislation, collectors are able to own important historic artifacts such as these, and it is our privilege to be able to offer them for sale.

Cassandra Hatton VP, Senior Specialist, Books & Manuscripts/ Science & Space Exploration

BIOGRAPHIES



Image credit: NASA

RUSSELL LOUIS "RUSTY" SCHWEICKART (b. 1935)

Rusty Schweickart was born in Neptune, New Jersey, and received both his Bachelor of Science, and Master of Science from MIT in 1956 and 1963 respectively. He served as a fighter pilot in the U.S. Airforce from 1956-1963 before being accepted to NASA's third astronaut class. As part of Group 3, Schweickart worked alongside thirteen other test pilots, including future Apollo astronauts Buzz Aldrin, Alan Bean, Eugene Cernan, Mike Collins, and Dave Scott. Schweickart's inaugural space flight came in March 1969 as the Lunar Module Pilot of Apollo 9, during which he performed the very first EVA of the Apollo program.

As a crewmember aboard Apollo 9, Schweickart spend just over 241 hours in space with Commander James McDivitt, and Command Module Pilot Dave Scott. The mission marked a number of important firsts, including the first manned flight of the Lunar Module, and the first extravehicular activity (EVA) of the Apollo program. After working on Skylab 2 and 4, Schweickart left NASA in 1977 to pursue opportunities in California state government and private enterprise. For items from the collection of Russell Schweickart, please see lots: 84, 85, 86, 87, 88, 89, 90, 91

EDWIN "BUZZ" ALDRIN (b. 1930)

Buzz Aldrin was born in Glen Ridge, New Jersey, and graduated from the United States Military Academy at West Point in 1951 with a degree in mechanical engineering, before going on to receive an Sc.D. in astronautics at MIT, where his thesis was titled "Guidance for Manned Orbital Rendezvous." He served in the United States Air Force as a jet fighter during the Korean War, before entering NASA's third Astronaut Group in 1963.

Aldrin was selected as the backup Pilot for Gemini 9, the Pilot for Gemini 12, and the backup Command Module Pilot for Apollo 8. On July 20, 1969, Neil Armstrong and Buzz Aldrin became the first two humans to walk on the Moon during the Apollo 11 lunar landing, a profound global moment, which was televised live on CBS, and watched by an estimated 600 million viewers around the world. In the course of his career with NASA, Aldrin logged 289 hours and 53 minutes in space, of which, 7 hours and 52 minutes were spent in Extravehicular Activities (EVA).

Aldrin left NASA in 1971. In the years since, he has been a continued advocate for space exploration, including a human mission to Mars, efforts which continue to this day.

For items from the Collection of Buzz Aldrin, please see lots: 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118



Image credit: NASA

O FIG.

Image credit: NASA

JAMES "JIM" LOVELL (b. 1928)

James Lovell was born in Cleveland, Ohio, and graduated from the United States Naval Academy with the class of 1952, and the United States Naval Test Pilot School in 1958. Lovell joined John Young as part of NASA's second astronaut group ("the New Nine") in 1962. Lovell spent almost 14 days in space with Frank Borman as the Pilot of Gemini 7, and later served as the Commander of Gemini 12 with Buzz Aldrin, the final manned Gemini flight before the commencement of the Apollo program.

In December of 1968, Lovell reunited with Borman and served as the Command Module Pilot of Apollo 8, the first manned spacecraft to leave low Earth orbit, reach the moon, orbit it, and return to Earth. The crew orbited the Moon ten times over the course of 20 hour before successfully exiting lunar orbit, returning to the Earth on December 27th. In April of 1970, Lovell was the Commander of the ill-fated Apollo 13 mission, serving alongside Command Module Pilot Jack Swigert, and Lunar Module Pilot Fred Haise. The crew was forced to abort the lunar landing following an oxygen tank explosion that damaged the Service Module, but were able to navigate a successful return to Earth thanks to the joint efforts and quick thinking of crewmembers and Mission Control personnel. Lovell retired from the space program in 1973. Like John Young, Lovell is one of only three astronauts to have flown to the Moon twice, additionally sharing that honor with Gene Cernan. For items from the Collection of James Lovell, please see lots: 158, 159, 160, 161, 162, 163, 164, 165, 166,

167, 169, 185



Image credit: NASA

JOHN WATTS YOUNG (1930-2018)

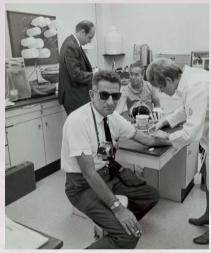
John Young was born in San Francisco, and received a Bachelor of Science in aeronautical engineering from Georgia Institute of Technology in 1952 before joining the Navy. As a member of NASA's second astronaut group in 1962, Young trained alongside a group known as the "New Nine," including Neil Armstrong, Pete Conrad, James McDivitt, Tom Stafford, and Ed White. Young had a long and distinguished career at NASA, serving as part of the Gemini, Apollo, and Space Shuttle Programs. He became the first of the New Nine to fly to space on Gemini 3, the first crewed flight of the Gemini spacecraft. As the Commander of Gemini X, Young and Michael Collins successfully completed the mission's objective to execute the program's first double rendezvous, and broke the altitude record for human spaceflight. After becoming the first person to fly solo around the Moon aboard Apollo 10, Young became the ninth person to walk on the Moon as the Commander of Apollo 16 in 1972. He is one of only three astronauts to have flown to the Moon twice, sharing that honor with Jim Lovell and Gene Cernan. After the conclusion of the Apollo Program, Young served in the Space Shuttle Program, and as the Chief of the Astronaut Office from 1974-1987. Young retired from NASA in 2004 after 42 years with the agency.

For items from the collection of John Young, please see lots: 54, 55, 94, 95, 96, 97, 192, 193, 194, 195, 196, 197, 198, 199, 200

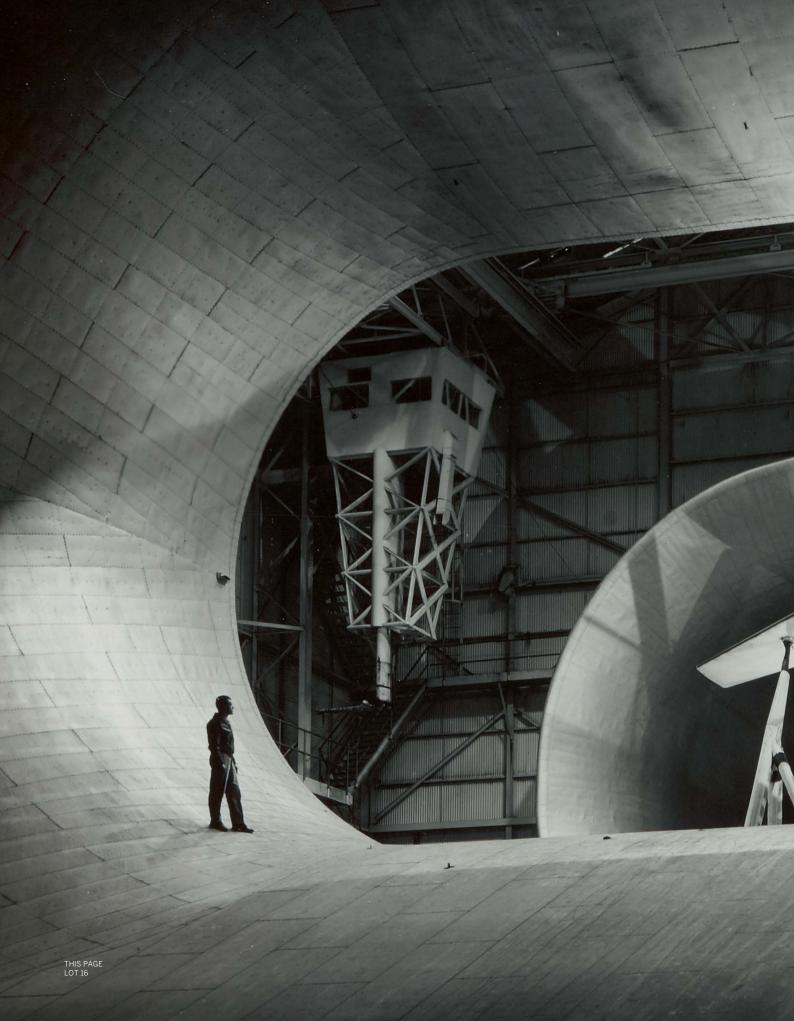
WILLIAM "BILL" ("TWO MORE") TAUB

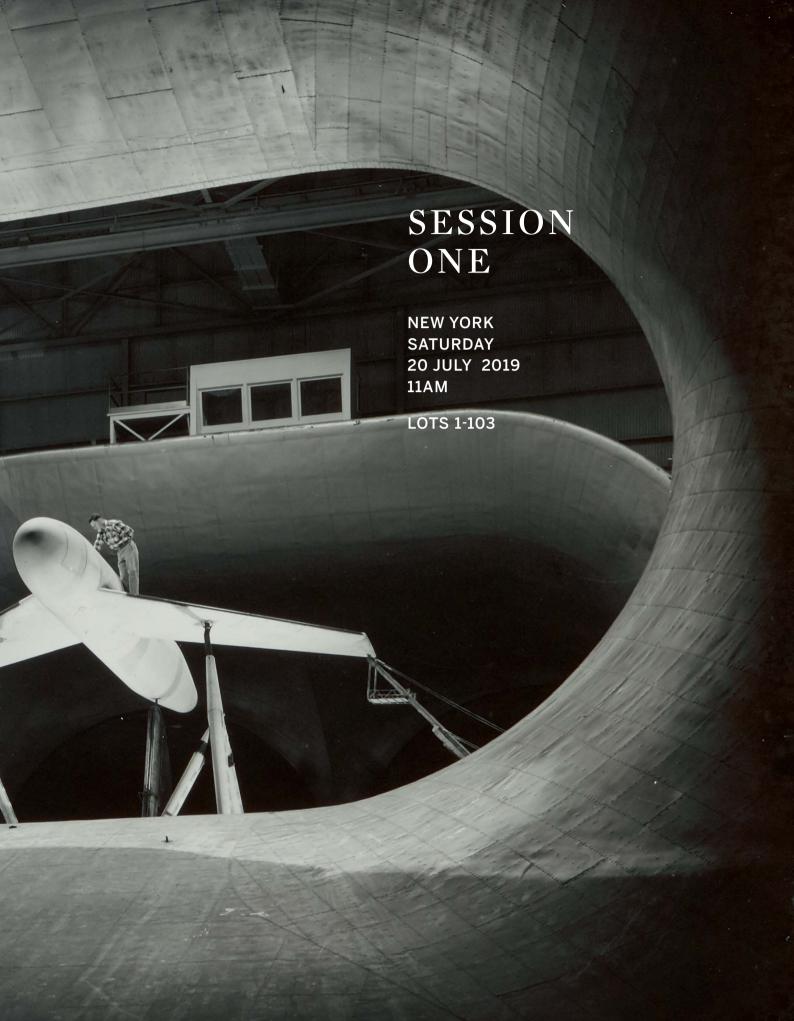
Bill Taub was NASA's first senior photographer, covering every major NASA event from the beginning of project Mercury to the end of Apollo; nearly every official photograph of the Mercury, Gemini, and Apollo astronauts was taken by Taub, and the wonderful informative captions found on the backs of the photos distributed to the press were written by him. At the age of 17, Taub was offered a job building aircraft models at NACA's Langley Field in Hampton, VA. Shortly after he arrived, he succeeded in photographing the spark of an engine inside a cylinder using his Leica camera, something that NACA's official photographers had been unable to capture (as they were using the wrong equipment). This caught the attention of officials at Langley, who then offered him a new job as a photographer; the rest is history. "I had the privilege to be there to record it. I made sure I recorded it to the best of my ability, because I have a sense of history." Mr. Taub was often one of the last people to see the astronauts before liftoff, earning the nickname "Two More Taub" for his insistence on snapping just a couple more shots.

For items from the collection of NASA Senior photographer Bill Taub, please see lots: 16, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 82, 100, 101, 102, 129, 130, 176, 184, 188



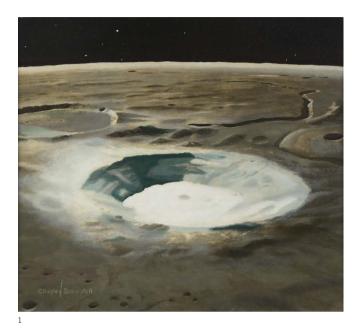
Detail, lot 151

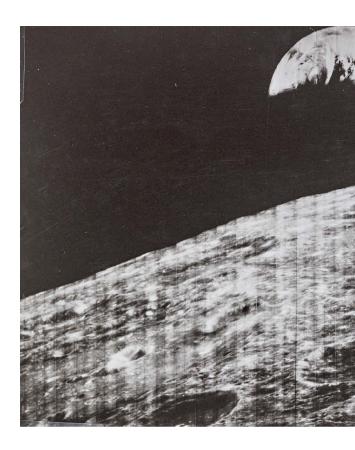




REPRESENTATIONS OF THE LUNAR SURFACE

LOTS 1-3





1

CHESLEY BONESTELL

"30 MILES ABOVE ARISTARCHUS," ca 1949

Oil on board, 10 3/4 by 12 inches (sight), signed "Chesley Bonestell" (lower left). Captioning in pencil to back of frame: "30 miles above Aristarchus | 29 miles in diameter. Possibly impact of meteor on bed of white pumice the case. | 6,900 ft deep." Matted and framed to 17 1/4 by 18 inches.

A STRIKING DEPICTION OF THE LUNAR SURFACE FROM THE FATHER OF SPACE ART

Aristarchus is considered the brightest of the large formations on the lunar surface, and is visible to the naked eye, being 23 miles in diameter, and 10,000 feet deep. Probably formed about 175 million years ago, it is one of the most geologically interesting regions of the moon, and there have even been periodic sightings of reddish gas emissions from the crater rim.

Bonestell revisited Aristarchus crater as an artistic subject several times. The present work appears to be an alternate version of the black and white painting "50 Miles Above Aristarchus" published in *The Conquest of Space* (1949).

REFERENCES

See: Ron Miller & Fredrick C. Durant III. *The Art of Chesley Bonestell*, pp. 60-61

\$ 3,000-5,000

2

LUNAR ORBITER I

MAN'S FIRST LOOK AT THE EARTH FROM THE MOON, 23 AUGUST 1966

Silver gelatin print, 115/8 by 41/4 inches.

Perhaps the most famous of the Lunar Orbiter images, this photo, taken by Lunar Orbiter I after responding to commands sent to it from Earth from a quarter million miles away, was taken from a vantage point of 730 miles above the far side of the Moon, on August 23, 1966.

\$ 3,000-5,000

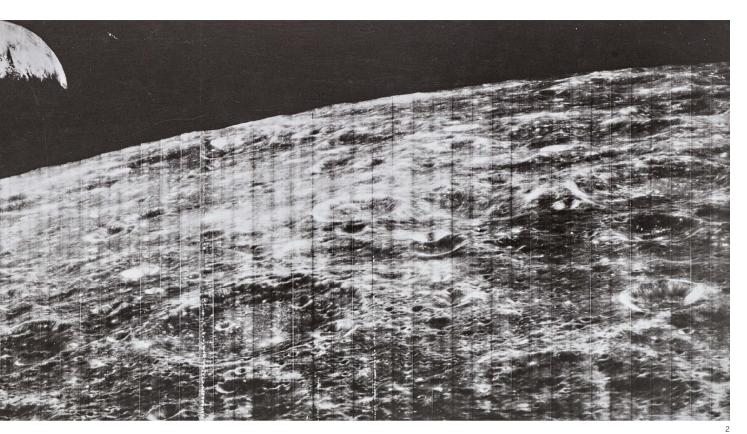
3

ALAN BEAN

"TO EVERYONE WHO HELPED, I SALUTE YOU." 2005

Acrylic over texturized modeling medium on aircraft plywood, 12 1/16 by 8 13/16 inches, signed "ALAN BEAN © 2005" lower left. Modeling medium texturized with a moon boot and Bean's flown geology hammer, with tiny FLOWN bits of the Apollo 12 spacecraft (heatshield and gold kapton foil) and small piece of one of Bean's FLOWN emblems embedded with traces of moondust mixed into the medium. Framed to 13% by 101/4 inches, descriptive label from Al Bean's studio affixed to frame verso.

When Alan LaVern Bean (1932-2018) passed away in 2018 at the age of 86, he was remembered primarily for his part in the Apollo 12 mission, when he became the fourth person to set foot on the moon, just four months after Neil Armstrong and Buzz Aldrin became the first moonwalkers. However, when the astronaut left NASA in 1981 he undertook a major life change and began to pursue painting full time (to the surprise of his astronaut peers). He would later go on to say "I think of myself not as an astronaut who paints, but as an artist who was once an astronaut."



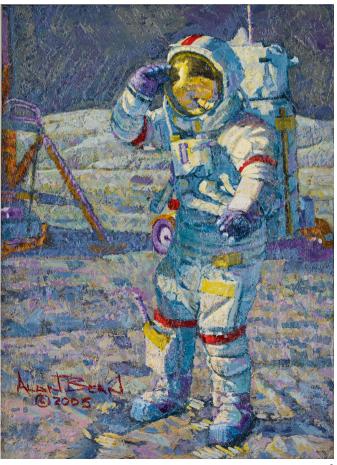
Bean's unique artistic process is a direct reflection of his dual identity as an artist and an astronaut. He would prepare his canvas by covering a piece of aircraft plywood with a thick acrylic modeling medium, then texturize the surface of his canvas using a replica of the soles of his lunar boots, and the actual FLOWN metal geology hammer that accompanied him to the lunar surface on Apollo 12 ("these tools, which once helped me explore the moon, are now putting the moon's stamp on my paintings.") In his later paintings, he would also incorporate three additional elements into the modeling medium: FLOWN pieces of heat shield and gold Kapton foil from the Apollo 12 spacecraft, and a small piece of one of Bean's flown emblems embedded with traces of moondust.

This painting of an astronaut saluting on the lunar surface takes its inspiration from the final mission of NASA's Apollo program — Apollo 17. Bean cites a quote from Commander Gene Cernan, who wrote following the successful conclusion of the mission: "To everyone who helped put American astronauts on the moon, wherever you are today, I salute you."

REFERENCES

ILLUSTRATED: Alan Bean. Painting Apollo; First Artist on Another World, p. 217

\$ 10,000-15,000



MODELS, SPACESUITS & HARDWARE

LOTS 4-40



VOSKHOD-2 ROCKET MODEL

Project presentation model, NPO Energia, ca 1987

Extra large 1:8 scale, approx. 72 inch tall custom handmade model in metal and resin, on stand with plaque reading "Space Rocket Model. Voshkod-2". Very fine.

An excellent, finely detailed model made for exhibition purposes. Voshkod-2 was a Soviet manned space mission, launched on 18 March 1965 carrying on board Alexei Leonov and Pavel Belyayev. During the second orbit of Voshkod-2, Leonov stepped out of the spacecraft and performed humanity's first Spacewalk, which lasted 12 minutes and 9 seconds. The mission almost ended in disaster when Leonov was unable to re-enter the airlock due to the suit being stiff from over-inflation, forcing him to bleed air from the suit in order to get into the airlock. After finally gaining entry into the spacecraft cabin, the primary hatch would not seal completely. The environmental control system compensated by flooding

the cabin with oxygen, creating a serious fire hazard in a craft only qualified for sea level nitrogen-oxygen gas mixes. On re-entry, the primary retrorockets failed. A manually controlled retrofire was accomplished one orbit later. The service module failed to separate completely, leading to wild gyrations of the joined reentry sphere - service module before the connecting wires burned through. Vostok-2 finally landed near Perm in the Ural Mountains in heavy forest. The crew spent the night in the woods, surrounded by wolves, before being located. The recovery crew had to chop down trees to clear a landing zone for helicopter recovery of the crew, who had to ski to the clearing from the spacecraft. Only some days later could the capsule itself be removed.

Subsequent Voskhod missions were cancelled because of their dangerous conditions.

\$ 7,000-10,000

5

SOKOL-KR

A Sokol-KR ("Falcon") Spacesuit, manufactured by NPP Zvezda, ca 1973

Full two-piece spacesuit, manufactured by NPP Zvezda, approx. 61 inches tall, top and bottom half joined by zipper completely circling waist. White outer restraint later of white nylon canvas, integral helmet with soft hood and polycarbonate visor locking with gold anodized aluminum flange, complete with leather and lambskin communications cap outfitted with two microphones and labeled N 498 and p 58 in stitching. Support sling running horizontally across chest to crotch using webbed belts and metal clips. Integrated pressure valve on chest reading "ОТВЕРНУТЬ ДО СРЕДНЕГО УПОРА ПЕРЕД ПОЛЕТОМ РДСП 3" [unscrew fully to medium before flight RDSP 3], Zvezda "CAIOM" [Salyut] patch to right of valve. Lacing detail under arms and at hips. Arms with trussed sleeves with adjustable articulating cables and webbed belt lashings, left arm with USSR State Emblem patch, right arm with USSR Flag Patch. Pressure gauge on left sleeve; detachable gloves, and glove liners. Legs with pleated knee attaching to suit with zippers, each leg with utility pocket and soled boots attaching with zippers. Gloves marked "ΓΠ-7-111-0380110" and "ГП-7-111-0150384" at cuff.

VERY RARE SOKOL-KR ("FALCON") SPACESUIT, a version of the Sokol-K Rescue Spacesuit which was used on Soyuz 12, from 1973-1980. Zvezda made many refinements to the Sokol-K suit, and the Sokol-KR was a version that was designed to work with a regenerative life-support system on the TKS spacecraft. The suit was never flown, as the TKS never ended up flying a crew, though this suit was clearly used for training.



5 (DETAIL)



5 (DETAIL)



5 (DETAIL)



The Sokol space suit was, and still is, worn by all who fly on the Soyuz spacecraft. The suit was developed from 1973-1979 with the goal of supporting a suited astronaut for up to 30 hours in a pressurized cabin and two hours in an unpressurized one. Described by manufacturer NPP Zvezda as a rescue suit, the Sokol was designed to keep the wearer alive in the event of an accidental depressurization rather than being used outside the spacecraft on an EVA. The suit was developed following the disastrous loss of the Soyuz 11 crew in 1971 through sudden depressurization, and its successor, the Sokol-KV2, was first used on the Soyuz T-2 mission, launched on June 5, 1980.

REFERENCES

For details on the development of Russian spacesuits, see Abramov and Skoog, *Russian Spacesuits*.

\$ 20,000-30,000

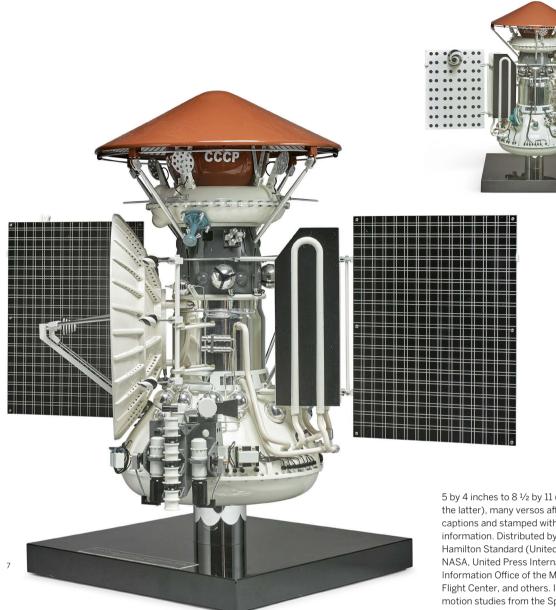
6

TRANSLATIONAL HAND CONTROLLER

Translational Controller (KRUD), configured for a Soyuz TM spacecraft, ca 1990

Controller in metal, rubber, and composite materials, with aluminum mount, together $14\frac{1}{4}$ by $8\frac{1}{2}$ inches.

CONTROLLING THE SOYUZ TM SPACECRAFT. The Soyuz translational controller (KRUD) is essentially a joystick used to move the spacecraft up, down, left, right, backwards, and forwards in space. It was mounted onto the seat and shock absorber assembly (Kazbek) in the cockpit of the Soyuz TM spacecraft. The controller unit itself was used across several generations of the Soyuz spacecraft, with the detachable mount changing between different Soyuz generations. The TM generation was launched between 1986 and 2002.



MARS-3 MODEL

MAPC-3 ("Mars-3") Soviet Automatic Interplanetary Probe Project Presentation Model, NPO Lavochkin, ca 1987

Large, approx. 1:8 scale custom handmade model, 221/2 by 26 by 15 inches, in metal, resin, and composite materials, complete with cone antennae, large dish antenna, and fully deploying solar panels. Mounted onto 12 by 12 by 11/2 inch base with metal plaque reading: "Mars-3 Soviet Interplanetary Probe Project, NPO Lavochkin, 1971." Very fine.

Mars-3 was an unmanned space probe of the Soviet Mars program, which spanned from 1960-1973. Developed by the Lavochkin Design Bureau in Khimki, it was designed to study the surface of Mars both from orbit and on the lander, and was launched by a Proton-K

rocket on 28 May 1971. After 6 months, on 2 December 1971, the probe became the first spacecraft to soft-land on the martian surface. The data transmission to Earth lasted only 14.5 seconds before communications halted for reasons unknown.

\$ 15.000-20.000

8

[SPACESUIT TESTING]

ARCHIVE OF PRESS PHOTOGRAPHS DOCUMENTING SPACESUIT FUNCTIONALITY AND CERTIFICATION. CA 1958-1975

Approximately 42 vintage black and white silver gelatin photographs, 5 color photographs, and 1 color photolithograph, ranging in size from

5 by 4 inches to 8 $\frac{1}{2}$ by 11 (predominately the latter), many versos affixed with paper captions and stamped with courtesy and credit information. Distributed by ILC Industries, Hamilton Standard (United Technologies), NASA, United Press International, the Public Information Office of the Marshall Space Flight Center, and others. Including four motion studies from the Space Division of North American Aviation dated June 1967, overlayed with tissue paper, and bearing annotations charting the movement capacity of the subject in a spacesuit. Overall quite good, assorted wear consistent with circulated press photographs, a few photographs toned or warped.

AN EXTENSIVE ARCHIVE OF PHOTOGRAPHS TRACING THE TESTING OF THE SPACESUITS THAT WOULD BE USED IN THE MERCURY, GEMINI, APOLLO, AND SPACE SHUTTLE **PROGRAMS**

As NASA progressed from Project Mercury through to Gemini and Apollo, the spacesuits adapted along with evolving program requirements, always with the critical aim to protect the astronauts against the extreme conditions of space travel while maintaining an adequate degree of comfort and functionality. Some of the contractors engaged to work on Spacesuit development for NASA during these years included the David Clark Company, B.F. Goodrich, ILC Dover, and Hamilton Standard.





This archive offers a glimpse into the testing and certification process, including donning procedures, strength and functionality tests (including dexterity and mobility), demonstrations of Beta cloth capabilities, and the Astronaut Maneuvering Unit (AMU), including the Modular Maneuvering Unit (MMU) and Emergency Life Support System (ELSS).

\$ 3,000-5,000

9

GEMINI G2-G SPACESUIT GLOVES

GEMINI G2-G Prototype spacesuit gloves with working fingertip lights, MADE FOR ALAN SHEPARD, AND manufactured by B.F. Goodrich FOR NASA, CA 1963

A pair of matching G2-G gloves, approximately 12 inches long, aluminized nylon (remnants from the earlier silver Mercury suits), backs of hands and thumbs in white nylon, palms in gray texturized material, tightening with laces at backs of hands, index and middle fingertips outfitted with small, still functional light-bulbs, bulbs powered by two AA batteries housed within battery pockets on back of hands, wrists with aluminum connector rings. Each glove with label reading "G-ZG-18/LG [Left Glove] (and) RG [Right Glove] / SIZE: SHEPARD"

VERY RARE, EARLY PROTOTYPE GEMINI SPACESUIT GLOVES, COMPLETE WITH WORKING FINGERTIP LIGHTS. Project Gemini was critical to the objective of landing a man on the moon, and the US astronauts were given a variety of tasks that were not assigned to the previous project Mercury, including conducting spacewalks. As such, their suits needed to be adapted to the new program requirements. In 1962, the Manned Spacecraft Center awarded contracts to B.F. Goodrich for the development of a pressure suit system, which NASA later specified was to be used in the Gemini program. B.F. Goodrich completed the G2-G model in January of 1963, however the suit was rejected by NASA in favor of a suit designed

by the David Clark Company. NASA, however, decided to retain the helmet, gloves, and other hardware designed by B.F. Goodrich.

REFERENCES

Young, Amanda, Spacesuits: The Smithsonian National Air and Space Museum Collection, pp. 40-47; see Monchaux, Spacesuit: Fashioning Apollo.

\$ 8,000-12,000







The SPD-143, closely related to the SPD-117



SPD-117 APOLLO SPACESUIT

An SPD-117 Prototype Apollo Spacesuit, made by the International Latex Corporation, ca 1962

Two piece outer cover layer for an SPD-117 spacesuit, manufactured by the International Latex Corporation, approx. 54 inches tall, top half and bottom halves joined by zipper completely encircling waist area, metal ring at neck for helmet attachment. Green heavy-duty nylon with ruched leather at shoulders, elbows, hips and knees. Leather dry and brittle, suit stiff and worn.

VERY RARE EARLY PROTOTYPE APOLLO SPACESUIT. THE ARCHETYPE FOR ALL SUBSEQUENT APOLLO SUITS. The SPD-117, sometimes referred to as "The Apollo Stateof-the-Art Suit" was the very first spacesuit by the International Latex Corporation (ILC) to be assessed by NASA, and was the archetype for all subsequent Apollo spacesuits (though ILC had originally submitted it to NASA for the Mercury suit contract). While ILC did not win the contract for the Mercury Suits (B.F. Goodrich did), they were awarded a study contract to develop suits towards the lunar program, including the SPD-134 and the AX-1L. The SPD-117 is perhaps most recognized as being the "Major Matt Mason Suit" (from the toy of the same name).

IT WOULD APPEAR THAT THERE ARE NO EXAMPLES OF THE SPD-117 IN THE SMITHSONIAN NATIONAL AIR AND SPACE MUSEUM COLLECTION.

REFERENCES

For details on the development of the Apollo and other spacesuits, see Young, Spacesuits: The Smithsonian National Air and Space Museum Collection, and Monchaux, Spacesuit: Fashioning Apollo.

\$6,000-9,000

11

A6L APOLLO SPACESUIT

An early-stage A6L Prototype APOLLO spacesuit, made by the International Latex Corporation, 1967

An early-stage two-piece A6L Prototype Spacesuit Thermal Micrometeoroid Garment (TMG) Jacket and Trouser Cover Layer Assembly, by the International Latex Corporation. Both with outer layer of high temperature resistant nylon (HT-1), two alternating layers of perforated aluminized mylar and marquisette spacer, five layers of perforated aluminized mylar separated by layers of unwoven dacron, and one layer of neoprene coated ripstop. Jacket closing with zipper, sleeves with stowage pockets closing with Velcro. Trousers with elasticized waist, both legs with zippers running from upperthigh to ankle. Both with International Latex Corporation labels, trousers label reading "SPEC. CP 1003 TROUSERS ASSY, TMG. A6L-205050-01. MODEL NO. 1003 A. SIZE: MEDIUM LONG, SERIAL: 007, DATE 2/67, CONTRACT NO.: NAS 9-6100. NASA INTERNATIONAL

LATEX CORPORATION 74897," details on jacket tag illegible due to wear. Jacket yellowed and worn, with some tears and repairs.

IMPORTANT PROTOTYPE SPACESUIT. ORIGINALLY INTENDED FOR USE ON THE LUNAR SURFACE. Manufactured by the Latex International Corporation, the A6L was essentially the flight version of the A5L suit, and was designed to prevent micrometeroids from puncturing the inner pressure bladder worn by astronauts during EVAs. Until the tragic Apollo 1 fire in 1967, the A6L was the suit configuration intended for use on the lunar surface. The fire triggered a review of the suit's design, which resulted in modifications including a Beta-cloth fire-protection layer, as well as the suit being changed from a two-piece into a one-piece configuration. The A6L configuration never ended up being used on the lunar surface, and essentially became an Apollo training and developmental stage for the A7L series of suits. The A7L's first flight use was on Apollo 7, first EVA use during Apollo 9, and first moonwalk on Apollo 11.

REFERENCES

For details on the development of the Apollo and other spacesuits, see Young, Spacesuits: The Smithsonian National Air and Space Museum Collection, and Monchaux, Spacesuit: Fashioning Apollo.

\$ 6,000-9,000

MOCK-UP A7L SPACESUIT

MOCK-UP THERMAL MICROMETEROID GARMENT (TMG) COVER LAYER FOR A7L EV (EXTRA-VEHICULAR)-TYPE SPACESUIT, [LIKELY BY INTERNATIONAL LATEX CORPORATION], CA. 1969

White PTFE (Teflon)-coated Beta-cloth cover layer with guilted inner lining, approx. 60 inches tall, complete with removable bubble helmet with tag reading "KSC/NASA 76087," removable gloves with black rubber fingers, and removable boots. Large American flag patch to left shoulder, NASA meatball logo patch to right chest. Front of suit with 2 replica electrical connectors (in red), and 2 each of oxygen inlet and outlet connectors (in blue), placket over crotch area connecting with 4 snaps, arms and legs with storage pockets closing with snaps, neck and wrists with replica helmet and glove connector rings (one wrist connector ring loose), zipper running from back of neck down to crotch area, zipper covered with Velcro flap. Inner padding and American flag patch with some discoloration.

AN EXCELLENT MOCK-UP OF THE A7L SPACESUIT, THE SUIT USED TO WALK ON THE MOON DURING THE APOLLO 11 MISSION, MADE TO BE DISPLAYED AT THE KENNEDY SPACE CENTER, LIKELY BY ILC DOVER, THE MANUFACTURER OF THE ACTUAL SPACESUITS

The International Latex Corportation, later known as ILC Dover, has been the designer and producer of the space suit pressure garment for NASA since the beginning of the Apollo program. They developed the first highly mobile space suit, the A7L, which made it possible for the astronauts to walk on the Moon; in fact, every American astronaut to go into space since the Apollo program did so in an ILC Dover suit. Each full suit took about 5,000 hours to complete, and cost approximately \$1,000,000 to produce. The suits were tailor-made for the astronauts, and underwent rigorous testing and painstaking study to get just right.

The Thermal Micrometeoroid Garment (TMG) is the outer layer of a spacesuit, and served

three purposes. First, to insulate the astronaut from the extreme cold of space, second, to protect them from solar radiation, and third, to protect them from micrometeoroids that could potentially puncture the suit and cause depressurization.

This spacesuit appears to be a very complete version of a Mock-up A7L, made by ILC Dover, which sold in these rooms in 2017 for \$12,500.

REFERENCES

For two excellent histories of spacesuit development, and in particular the development of the A7L, see Monchaux, Spacesuit: Fashioning Apollo and Young, Spacesuits: The Smithsonian National Air and Space Museum Collection.

\$7,000-10,000

13

S-1026 PROTOTYPE APOLLO ADVANCED EXTRA VEHICULAR SPACESUIT GLOVE

S-1026 PROTOTYPE APOLLO ADVANCED EXTRA VEHICULAR FULL PRESSURE SPACESUIT GLOVE, MADE FOR RUSSELL SCHWEICKART, AND MANUFACTURED BY THE DAVID CLARK COMPANY, SEPT, 1968

Right hand glove, approx. 13 inches long, outer Beta-cloth layer over layers of aluminized mylar, and other protective materials, red aluminum connector ring at wrist, inside wrist label reads: "GLOVE ASSEMBLY, FULL PRESSURE/ SPACE SUIT ASSEMBLY, PROTOTYPE/ APOLLO EXTRA VEHICULAR/MFG. DAVID CLARK CO., INC./S1026 SER. NO. 101/ P/N 16575G-02CAZZR/SIZE: SCHWEIKART [sic] SEPT. 1968." General rubbing and wear to glove, some areas rubbed away to reveal inner layers, tear in fabric at thumb revealing inner layers. Some dents to wrist connector.

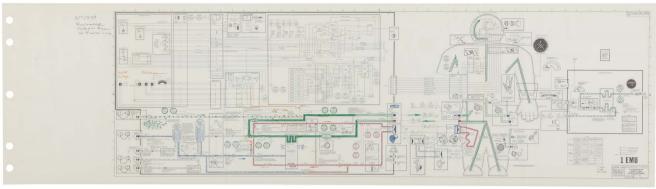
A VERY RARE PROTOTYPE FOR THE APOLLO ADVANCED EXTRA VEHICULAR SPACESUIT. Intended as an alternate EVA suit for the Apollo 15-17 missions, it was ultimately not used. The Smithsonian has only two suits identified as the S-1026 model, which they refer to as a "mystery" suits; they note that theirs is not intended for use outside of the spacecraft, as it does not have the hook-ups for a Portable Life Support System, indicating that their example is a suit made for a Command Module Pilot, whereas the present glove was intended to be used by a Mission Commander of Lunar Module Pilot, who would have both ventures outside of the spacecraft on an EVA.

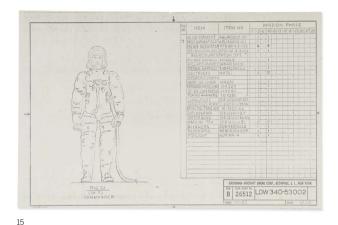
\$3,000-5,000

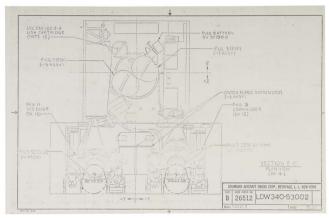




12







15

14

APOLLO SPACE SUIT SCHEMATIC

Extravehicular Mobility Unit Detailed Schematic, 1 EMU, drawing from an Apollo 17 LM Systems Data Book, NASA/MSC, March 1972. Single folded sheet, 10½ by 37¼ inches, handcolored in green, red, blue and orange in a skilled hand, likely that of an engineer. Some technical notations in black and orange.

AN EXCELLENT, DETAILED SCHEMATIC OF THE EXTRAVEHICULAR MOBILITY UNIT, MORE COMMONLY KNOWN AS THE SPACESUIT. This highly detailed schematic reveals the engineering marvel of the Apollo spacesuits, showing all subsystems, including life support, power systems, communications systems, and more. An incredible document that demonstrates the deep complexity of the suits that kept the Apollo astronauts alive while on their historic moonwalks. Of special interest is the detailed drawing of the face of an Omega Speedmaster Chronograph Wristwatch, indicating where on the suit the watch was to be placed.

\$ 2,000-3,000

15

PROPERTY OF A GRUMMAN STRUCTURAL/

GRUMMAN APOLLO LUNAR LANDING PROJECT

Blueprint Sheets # 4, 9, & 12 of the Lunar Excursion Module (LEM), Crew Provisions Engineering Group Drawing LBW340-53002. Bethpage, New York: Grumman Aircraft Engineering Corp., June 1964

Three blueprint drawings, each 11 by 17 inches, depicting: 1. Aft view of the Lunar Module. 2. Astronauts at their stations in the Ascent Stage of the Lunar Module. 3. Mission Commander in his spacesuit, with list of 23 items items needed for a Lunar launch mission.

AN EXCELLENT EARLY SET OF OVERSIZE **BLUEPRINT DRAWINGS WITH SPACESUIT** DETAILS DONE FOR GRUMMAN AS PART OF THE APOLLO LUNAR LANDING PROJECT. Showing details of the Ascent and Descent stages of the Lunar Module, placement of the Commander and Systems Engineer (Later Lunar Module Pilot), PLSS (Portable Life Support System) and other items in the LM Ascent Stage, and details on the EVA Spacesuit including items needed for a lunar launch mission such as pressure suit, scissors, penlight, chronograph, biomedical harness, and sunglasses. These blueprints were used by a Grumman Structural/Mechanical Engineer, who worked with the Crew Provisions Design Group through 1969. Their last task was to prove out the Design location of the fixed television camera which was located on the MESA box to capture the first steps on the moon.

\$ 1,500-2,500

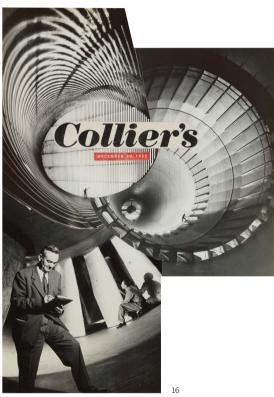












FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

TAUB, BILL

COLLECTION OF ORIGINAL GELATIN SILVER PRINTS OF THE FAMOUS PHOTOGRAPHS TAKEN AT THE LANGLEY WIND TUNNELS BY NASA SENIOR PHOTOGRAPHER BILL TAUB

Two 17 by 14 inch black photo albums, containing 153 gelatin silver prints of various sizes mounted onto black paper, as well as a handful of magazine clippings (consisting of published images from the albums). Albums worn, paper brittle and chipping, but photos overall in beautiful condition, with a handful of them arranged in collages for publication.

AN ABSOLUTELY STUNNING COLLECTION OF SOME OF THE MOST FAMOUS PHOTOGRAPHS OF THE LANGLEY WIND TUNNELS, MANY OF WHICH WERE PUBLISHED, ALL PRINTED AND ASSEMBLED IN THE ALBUMS BY THE PHOTOGRAPHER HIMSELF, INCLUDING SEVERAL PHOTOGRAPHS OF WOMEN MATHEMATICIANS AND ENGINEERS.

Engineers at Langley began the design & construction of a full-scale Wind Tunnel in 1929, with the goal of testing new aircraft. At the age of 17, Taub was offered a job building aircraft models at NACA's Langley Field in Hampton, VA. Shortly after he arrived, he succeeded in photographing the spark of an engine inside a cylinder using his Leica camera, something that NACA's official photographers had been

unable to capture (as they were using the wrong equipment). This caught the attention of officials at Langley, who then offered him a new job as a photographer; the rest is history.

REFERENCES

See: For an excellent interview of Taub done for the NASA Oral History Project see: https://historycollection.jsc.nasa.gov/ JSCHistoryPortal/history/oral_histories/ NASA_HQ/Administrators/TaubWP/ TaubWP_11-8-06.htm

For an excellent article about many of the famous images in this album, see https://airscapemag.com/2018/09/18/light-as-air/

\$6,000-9,000





A LARGE ANIMATED LIGHT-UP CONTRACTOR'S ADVERTISING MODEL FOR THE X-248 ALTAIR ROCKET STAGE, made by the Chemical Propulsion Division of the Hercules Powder Company Incorporated, Wilmington, Delaware, ca 1960

Large stand up advertising model in wood and metal on wood base (24 by 203/4 by 101/2 inches). Cutout revealing rocket launching a satellite into space, with rotating plate covered in stars behind rocket. Model plugs in, lighting up stars and actioning the rotating plate. A second window reveals a series of key rocket features, rotating on a circular metal plate. Base with "X-248 Altair" in large red 3D block letters, "Reliability in Space" in raised turquoise block letters.

A FANTASTIC AND RARE MODERNIST STYLE CONTRACTOR'S ADVERTISING MODEL FOR THE ALTAIR ROCKET STAGE, WITH BEAUTIFUL MOVING LIGHT-UP STAR BACKGROUND. The Altair was a solid-fuel rocket manufactured by Allegamy Ballistics Laboratory (ABL) as the X-248. Starting in 1946, ABL was operated by the Hercules Powder Company, a chemical and munitions manufacturer based in Wilmington, Delaware. Starting in 1956, Hercules Powder Co. began to develop solid-fuel rocket motors for NASA & the US military, including the Altair rocket stages for Vanguard rockets.

\$ 3,000-5,000



NIMBUS SATELLITE MODEL

Early model of a Nimbus satellite, likely by RCA Aerospace for NASA, ca 1964

1:8 scale model in metal, wood, and resin (16½ by 16 by 7½ inches), with fully articulating solar panels, mounted onto black acrylic base with label reading "Nimbus½ scale" (12 by 12 by½ inches). Two small numbered labels, with accompanying labels in braille. Some oxidization to metal supports, some pieces chipped off around outer ring. Housed in the original wood carrying case (20¼ by 17½ by 14 inches) with NASA worm label (indicating that this was released for educational purposes to Oklahoma State University), metal Oklahoma State University tag, and metal NASA California State University Chico, University Foundation tag.

Nimbus satellites were second generation robotic spacecrafts used for meteorological research and development including weather forecasting, measurements of the Earth's radiation budget, observations of the Ozone layer and sea ice, and were at the forefront of the GPS era with their operational search and rescue data collection systems. A total of 7 Nimbus satellites were launched between 1964-1978 aboard Thor-Agena and Delta rockets.

\$ 3,000-5,000









NASA BIOSATELLITE-3

Contractor's model of the NASA Biosatellite-3, made by General Electric, ca 1969

Cut-away model of unknown scale (8 by 5½ by 5½ by 9 inches), metal, wood, acrylic and composite materials, mounted onto wooden base with metal plaque reading: "The NASA Biosatellite, Designed, Developed and Produced by General Electric Space Re-Entry Systems Programs Re-Entry & Environmental Systems Division." Metal tag to underside of base reads: "'Visual' Oakmont, PA. 15139. (412) 828-8211." With original 13 by 2¼ inch display sign.

VERY RARE, EARLY MODEL OF THE NASA BIOSATELLITE, a satellite designed and built for NASA by contractor General Electric starting in 1963, and used to assess the effects of spaceflight on living organisms, in particular weightlessness and radiation.

Biosatellite-1 was launched in 1966 aboard a Delta-G rocket, carrying with it several biological specimens. The capsule was unable to enter Earth's atmosphere due to a motor malfunction, and was stranded in orbit; it eventually re-entered the Earth's atmosphere and disintegrated in 1967. Biosatellite-2 launched in 1967 carrying 13 biological specimens including frog eggs, insects, plants, and other microorganisms. It spent 45 hours in Earth orbital flight, and provided NASA with valuable data. Biosatellite-3 was the last flight in the Biosatellite program. It launched in 1969 with a pig-tailed monkey named Bonnie on board, with the objective of studying the effects of space flight on brain states, cardiovascular

and metabolic states, behavior, and fluid balances. While the intent was for *Biosatellite-3* to stay in orbit for 30 days, Bonnie's quickly deteriorating health forced NASA to end the mission after 8 days.

An identical model, lacking the contractor's label, can be seen on the website of the Smithsonian National Air and Space Museum at: https://airandspace.si.edu/collection-objects/model-satellite-biosatellite.

\$ 3,000-5,000

20

APOLLO CAPSULE MODEL

Apollo Command Module Capsule model, manufactured for NASA, ca 1962

Large 1:10 scale demonstration model, approx. 19 inches tall on a 14 inch diameter metal base in the original 10 by 20 by 17 inch carrying case with NASA meatball logo sticker, shipping labels, and stencils. Capsule with cutout area revealing 3 seated astronauts in highly detailed silver Mercury-era spacesuits, complete with NASA meatball patches, name tags, and other fine details.

VERY RARE, LARGE CUT-AWAY MODEL DEPICTING THE APOLLO CAPSULE, COMPLETE WITH THREE SEATED ASTRONAUT FIGURES. Models such as this, complete with highly detailed figures are very rare indeed. This is an excellent model used by NASA for educational purposes.

\$ 4,000-6,000

APOLLO SPACECRAFT CONTRACTORS MODELS

TWO MODELS (CSM AND LM), SIGNED BY ASTRONAUTS FROM THE FIRST SEVEN APOLLO FLIGHTS

Vintage model, four pieces, when assembled 20 3/4 inches high, plastic, metal, and composite, produced by the Wlater J. Hyatt Co., atop circular base that reads "North American Aviation, Inc. Apollo Spacecraft", SIGNED and INSCRIBED by WALTER CUNNINGHAM (Apollo 7), JAMES LOVELL (Apollo 8), MICHAEL COLLINS (Apollo 11), ALAN BEAN (Apollo 12), and FRED HAISE (Apollo 13). Minor toning, some chips to paint and composite.

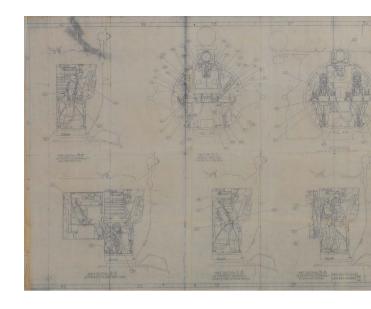
Vintage model, two pieces, when assembled 6 ½ by 10 ¼ inches, plastic, metal, and composite, produced by Precise Models Inc., with NASA and Grumman logos on base, SIGNED and INSCRIBED by RUSTY L. SCHWEICKART (Apollo 9), and TOM STAFFORD (Apollo 10). Minor toning, some minor chipping to paint.

The INSCRIPTIONS present on these models are, in mission order, as follows: WALTER CUNNINGHAM: "FIRST MANNED APOLLO MISSION"; JAMES LOVELL: "FIRST LUNAR MISSION"; RUSTY L. SCHWEICKART: "APOLLO 9 LMP"; TOM STAFFORD: "APOLLO X"; MICHAEL COLLINS: "APOLLO XI"; ALAN BEAN: "FIRST PRECISION LUNAR LANDING"; and FRED HAISE: "SAFE RETURN TO EARTH AFTER OXYGEN TANK EXPLOSION!"

A PAIR OF EARLY APOLLO MODELS, SIGNED and INSCRIBED by seven different Apollo astronauts from the first seven Apollo flights.

\$ 4,000-6,000





OFFICIAL CONTRACTOR LUNAR LANDER MODEL

ISSUED BY THE SPACECRAFT BUILDER GRUMMAN

Model of the Lunar Module (LM) made from injected-molded plastic for the Grumman Aircraft Engineering Corporation (GAEC) of Bethpage, Long Island, NY. GAEC was the prime NASA contractor for the LM. The model stands 7 inches tall with four metal landing legs approximately 8 inches apart. The upper Ascent Stage is detachable from the lower Descent Stage. The complete model is removable from a 10 ½ inch circular base which has NASA and Grumman logos and the wording: "LUNAR MODULE."

The LM made one unmanned and one manned earth orbital flight and carried out eight manned lunar missions of which six landed on the moon. The vehicle served as a "life boat" during the Apollo 13 mission after the Service Module explosion. An emergency firing of its descent engine put Apollo 13 on a safe trajectory back to Earth and the vehicles oxygen system kept the crew alive during that time.

\$ 3.000-5.000

23

APOLLO LUNAR MODULE MODEL

PRODUCED BY THE FRANKLIN MINT, AND SIGNED BY SIX MOONWALKERS, ONE FROM EACH LUNAR LANDED MISSION

Two pieces, 7½ by 10 inches when assembled, plastic, metal, and composite materials, produced by the Franklin Mint, with enameled NASA mission emblems and metal plaques to

base, SIGNED by BUZZ ALDRIN, ALAN BEAN, EDGAR MITCHELL, DAVID SCOTT, CHARLIE DUKE, and GENE CERNAN. Minor rubbing and chipping to paint.

Apollo LM model SIGNED by a MOONWALKER from each lunar landed mission.

\$ 5,000-8,000

24

PROPERTY OF A GRUMMAN STRUCTURAL/ MECHANICAL ENGINEER

GRUMMAN APOLLO LUNAR LANDING PROJECT—COMPLETE 1:10 SCALE BLUEPRINTS OF THE LUNAR EXCURSION MODULE (LEM) AND ASTRONAUTS FROM ALL ANGLES, AND IN EXTREME DETAIL.

Blueprint sheets 1-4 (of 4) of the Lunar Excursion Module (LEM) and Astronauts, Crew Provision Design Group Drawing LDW 340-54050. Bethpage, NY: Grumman Aircraft Engineering Corp, June 1964

Four 1:10 scale blueprint drawings, consisting of: 1. An 11 by 17 inch cover sheet titled "Inboard Profile". 2. A 10 foot 8 inch long, by 3 foot tall 1:10 scale blueprint of the Inboard Left-hand side, and Outboard Right-hand side of the Lunar Excursion Module (LEM), complete with 810-item Nomenclature list. 3. An 11 foot, 7 inch long, by 3 foot tall 1:10 scale blueprint of the LEM with Exterior View looking aft; looking outboard from the Left-hand side: the Ascent Stage plan view (with 2 astronauts in place); and Descent stage plan view. 4. An 11 foot, 7 inch long, by 3 foot tall 1:10 scale blueprint of the LEM and astronauts, with exterior view looking forward; Aft equipment bay; numerous diagrams of astronauts performing a variety

of tasks, including using the lunar surface television camera, recharge station, and alignment optical telescope.

WONDERFUL, OVERSIZED, AND EXTREMELY DETAILED BLUEPRINTS OF THE GRUMMAN LUNAR EXCURSION MODULE, COMPLETE WITH 810 ITEM NOMENCLATURE LIST DETAILING SYSTEMS, EQUIPMENT, AND ASTRONAUTS AT VARIOUS WORK STATIONS. These blueprints were used by a Grumman Structural/Mechanical Engineer, who worked with the Crew Provisions Design Group through 1969. Their last task was to prove out the Design location of the fixed television camera which was located on the MESA box to capture the first steps on the moon.

\$ 6,000-9,000

25

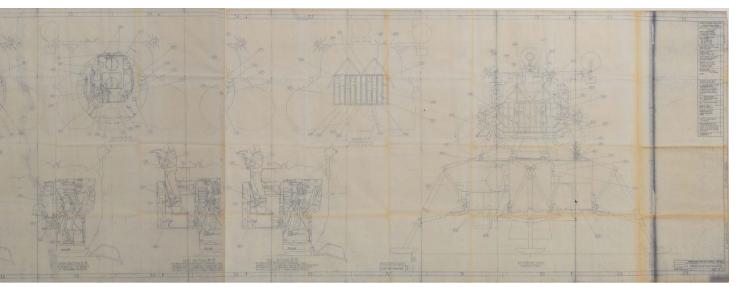
LUNAR MODULE

ARCHIVE OF VINTAGE PHOTOGRAPHS DOCUMENTING THE LUNAR MODULE, CA 1962-1969

75 vintage black and white silver gelatin photographs and 23 vintage color photographs (including 9 NASA Red Number photographs, numbers NASA S-68-20788, S-68-20787, S-68-20792, S-68-20791, S-67-47816, S-68-20798, S-68-25501, S-68-25493, and S-68-20793), all approx. 11 by 81/2; most bearing a three-hold punch on one margin, occasional soiling and

AN EXTENSIVE ARCHIVE OF VINTAGE PHOTOGRAPHS DOCUMENTING THE LUNAR MODULE, THE FIRST AND ONLY MANNED VEHICLE TO LAND ANYWHERE BEYOND EARTH

The development of the Lunar Module was overseen by Grumman Aircraft after NASA



made the critical calculation to pursue a moon landing via Lunar Orbit Rendezvous (LOR), necessitating a separate aircraft capable of descent to the lunar surface, and ascent back into lunar orbit.

This archive depicts various interior and exterior aspects of the Lunar Module documented prior to launch, including the

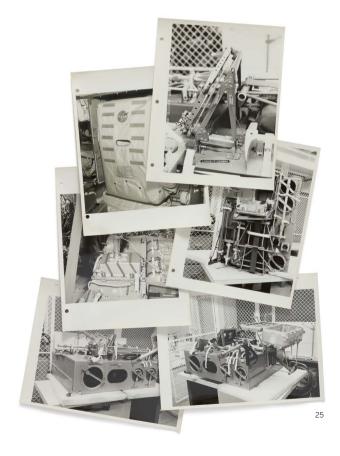
cabin, systems equipment and stowage areas, and the Modular Equipment Stowage Assembly (MESA), where lunar exploration equipment was stored. The MESA also contained a lunar TV camera, which would be activated as the Mission Commander descended the ladder to the lunar surface to capture the astronauts' first steps on the moon. In addition to photographs depicting the camera itself, two

photographs depict a position study for the placement of the TV camera (marked "Position A" and "Position H"), revealing different vantage points under consideration to document that historic moment.

\$ 2,500-3,500







OVERSIZED SATURN V ROCKET MODEL

Oversized model, 43½ inches tall, metal and composite on a wooden base with brass plaques and NASA meatball logo; toning, some chips to paint and composite, minor crack to composite, minor peeling to NASA logo.

SIGNED and INSCRIBED by 15 different astronauts, including a Moonwalker from each lunar landed mission, as follows: FRANK BORMAN (Apollo 8), JIM MCDIVITT (Apollo 9), RUSTY SCHWEICKART (Apollo 9), JOHN YOUNG (Apollo 10 and 16), BUZZ ALDRIN (Apollo 11), MICHAEL COLLINS (Apollo 11), ALAN BEAN (Apollo 12), RICHARD GORDON (Apollo 12), FRED HAISE (Apollo 13), JAMES LOVELL (Apollo 13), EDGAR MITCHELL (Apollo 14), DAVE SCOTT (Apollo 15), AL WORDEN (Apollo 15), CHARLIE DUKE (Apollo 16), and GENE CERNAN (Apollo 17).

The development of the Saturn V rocket was the result of the US government bringing Wernher von Braun, and about 700 German rocket engineers and technicians to the U.S. as a part of *Operation Paperclip*. The program was authorized by President Truman, and its primary purpose was to give the U.S. an advantage in the Cold War through the development of intermediate-range and intercontinental ballistic missiles.

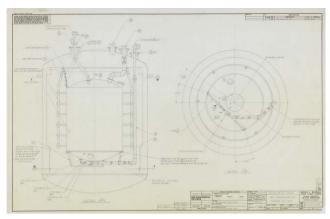
The Saturn V was launched 13 times without loss of crew or payload. As of today, it remains the tallest, heaviest, and most powerful rocket ever brought to operational status.

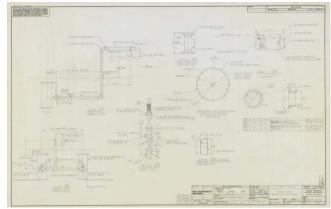
\$ 5,000-8,000



26 (DETAIL)

S





27

SKYLAB - ORBITAL WORKSHOP

Archive of original hand-drawn engineering plans relating to the Skylab Orbital Workshop (OWS) at the George C. Marshall Space Flight Center. NASA, Hunstville, Alabama, July 20, 1968

Ten original hand-drawn engineering plans on vellum (34 by 22 inches), being: Sheets 1-10 (of 10) of Saturn IB Test Stand. OWS Passivation Test Thermal Test Ass[embl]y. 90M04008. Drawing dates, July 20, 1968.

AN EXCELLENT SET OF FINELY DETAILED ENGINEERING DRAWINGS RELATING TO THE SKYLAB ORBITAL WORKSHOP, SPECIFICALLY THE TEST STAND FOR THE SATURN IB ROCKET

Skylab, America's first space station, fulfilled the dream of Wernher von Braun to build an orbiting station where people could live and work in space for extended periods. The Orbital Workshop (OWS), the largest component of Skylab, was built according to Von Braun and his team's brilliant idea of using a spent S-IVB rocket stage. There were two approaches for getting the workshop into orbit; first was known as the "wet" workshop, consisting of a multiple docking adapter, which permitted up to five spacecraft to be docked to Workshop at once; an airlock module attached to the OWS; and Crew quarters in the S-IVB hydrogen tank, with two wings covered with solar cells. These components would all be added after the crew had docked with the station in space, replaced all of the residual propellants from the S-IVB

stage with breathable oxygen, before outfitting the tank as a space station. Another simpler method, known as the "dry" workshop, involved launching a fully outfitted Workshop — this approach was not used because all Saturn V launch vehicles were already earmarked for the Apollo programs, and thus the more complicated "wet" approach had to be used.

REFERENCES

For an excellent, detailed history of the development of Skylab, see https://history.nasa.gov/SP-4208/contents.htm

\$ 5,000-8,000

28

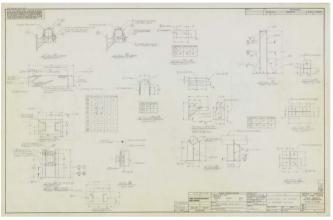
ROCKET ENGINE TEST STANDS

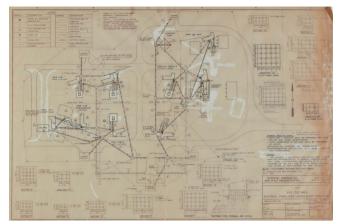
Archive of original hand-drawn engineering plans relating to Rocket Engine Test Stands at the George C Marshall Space Flight Center. NASA, Huntsville, Alabama, July-August, 1968

Together 12 original hand-drawn engineering plans on vellum (34 by 22 inches), consisting of: 1-3.) Sheets 1-3 (of 3) F-1 Test Stand. Fuel (RP-1) Pulsating System. 90M04024. Drawing date July 29, 1968. 4 & 5.) Sheets 1-2 (of 4) F-1 Engine Test Stand . Deflector Hole Pattern Modification. 90M04009. Drawing date July 22, 1968. 6 & 7). Sheets 1-2 (of 2) F-1 Turbo-Pump Stand. Fuel (RP-1) Pulsating System. 90M04023. Drawing date July 29, 1968. 8-10). Sheet 1-3 (of 3) S-IVB Stand. LH₂ Recharger Fill & Vent Line. 90M04028. Drawing date August 1, 1968. 11). Sheet 2 (of 2) F-1 Test Stand. Fuel Pulsing System Using Outboard PVC's. 90M04052. Drawing date 30 September, 1968. 12). Sheet 1 (of 1) S-I-B Dynamic Stand. Modification to Floor.... Passivation Test. 90M0400. Drawing date 8 July, 1968.

AN EXCELLENT, AND EXTREMELY DETAILED SET OF ENGINEERING DRAWINGS DEPICTING INTRICATE DETAILS OF VARIOUS STANDS FOR THE F-1 ROCKET ENGINE AND THE S-IVB ROCKET STAGE.

\$ 3,000-5,000





29

THE STORAGE & TRANSFER OF LIQUID OXYGEN FOR USE AS AN OXIDIZER IN ROCKET **PROPELLANTS**

ARCHIVE OF ORIGINAL HAND-DRAWN ENGINEERING PLANS RELATING TO THE STORAGE AND TRANSFER OF LIQUID OXYGEN AT THE GEORGE C. MARSHALL SPACE FLIGHT CENTER. NASA, HUNTSVILLE, ALABAMA, 8 JULY, 1968

Thirteen original hand-drawn engineering plans on vellum (34 by 22 inches), being: 1). Sheets 1-11 (of 11) CTL 114. Additional LOX Storage & Transfer System. 90M04001. Drawing dates 8 July, 1968; 2). Sheet 1 (of 1) Cell 501. LOX Dump Line Revision. 90M0416. Drawing date 7 November, 1969. 3.) Sheet 1 (of 1) Cell 501. LOX Dome Transition. 90M04105. Drawing date 7 March, 1969.

AN EXCELLENT, FINELY DETAILED SET OF ENGINEERING PLANS RELATING TO THE STORAGE AND TRANSFER OF LIQUID OXYGEN AT THE GEORGE C. MARSHALL SPACE FLIGHT CENTER. Liquid Oxygen (LOX) was used as an oxidizer for the propellant in all three stages of the Saturn V rocket, with the S-II & S-IVB stages using LOX in combination with LH₂ (Liquid Hydrogen), and the S-IC stage using LOX in combination with RP-1 fuel. Liquid Oxygen was the cheapest and safest oxidizer for cyrogenic rocket engines, such as those found in the Saturn V rocket. Because of its cyrogenic nature, LOX can cause items that touch it to become extremely brittle, and thus, storing LOX poses special challenges.

\$ 3,500-4,500

30

30

ENGINEERING AND SITE DEVELOPMENT PLANS FOR THE GEORGE C MARSHALL SPACE FLIGHT CENTER

Archive of original hand-drawn engineering and site plans for the George C. Marshall Space Flight Center in Huntsville, Alabama, 1962-1968

Together thirteen hand drawn engineering and site plans on two different types of vellum (22 by 34 inches, 17 by 22 inches, and 12 by 18 inches), some heightened in color, consisting of: 1). Suggested Arrangement for Ventilation of M.G. Set. 8927359. Drawing date 25 April, 1963. On graph paper. 2). Sheet 1 (of 1) Industrial Water System. Construction Drawing ... Loop Connection at Static Test Tower. 8927241. Drawing Date 1 February, 1962. 3). Sounds Suppression Test Facility. Drainage Trench & 11/2 " Water Line Plan & Section. 8927361. Drawing Date 29 April, 1963. 4). Sheet 1 (of 1)

High Pressure Pneumatic Facility Building 4372. Addition of Protective Mesh. 8927362. Drawing date 30 April, 1963. 5). Sheet 1 (of 1) GN₂ Battery @4598. GN₂Piping Header. 90M04027. Drawing date 8 August, 1968. 6). Sheet 1 (of 1) Acoustic Test Facility. Cell 116. 12 Inch Water Dump-Line. 90M04003. Drawing date 9 July 1968. 7). Sheet 1 (of 1) C.T.L. Cell 115. High Pressure GH₂Spool Piece. 90M04007. Drawing date 17 July 1968. 8 & 9). Sheets 1A & 1B (of 15) Saturn V G.S.E. Test Facility. General Location Plan. 90M00917. Drawing dates 11 May, 1963. 10). C5 G.S.E Test Area. Electrical Power, Area Lighting.... 89273575. Drawing date 24 October, 1962. 11-13). Test Division. Site Development Plan. North Shop Support Area. 8927363. Drawing dates 17 July, 1963.

AN ARCHIVE OF HIGHLY DETAILED ENGINEERING AND SITE DEVELOPMENT PLANS FOR THE GEORGE C. MARSHALL SPACE FLIGHT CENTER IN HUNSTVILLE. ALABAMA.

\$ 3,000-5,000





LUNAR GLOBE

REPLOGLE LUNAR GLOBE. USA, CA 1972

A 12 inch diameter lunar globe, 180 mi. per inch scale. Two sets of 12 thick printed glossy paper gores over pasteboard, each pole with metal pin. Landing sites up to Apollo 17 printed.

SIGNED and INSCRIBED by a MOONWALKER from each lunar landed mission: "BUZZ ALDRIN | APOLLO XI" over the Sea of Tranquility; "ALAN BEAN | APOLLO 12" over the Sea of Rains; "EDGAR MITCHELL | APOLLO 14" with an arrow pointing to Fra Mauro; "DAVE SCOTT | APOLLO 15 CDR" over the Marsh of Decay; "CHARLIE DUKE | APOLLO 16" over the Sea of Vapors; and "GENE CERNAN | APOLLO XVII" over the Sea of Crises.

Only 12 men have ever walked on the lunar surface, kicking up moondust as they marked their place in history.

\$ 6,000-9,000

32

HAPKE THEORETICAL MODEL OF LUNAR SURFACE REFLECTION

Contractor's model of lunar surface reflection, as theorized by planetary scientist Bruce Hapke, manufactured by Boeing, ca 1965

Contractor's model of unknown scale in painted acrylic ($12^{1/2}$ by 5 by 5/14 inches) on wooden base (16 by 9 by 1 inches), base marked "Boeing", and with label reading: "Hapke Theoretical Model of Lunar Surface Reflection. H=0.49~F=0.04, $=3.5^{\circ}$ ", scales around base of model indicating Site Longitude and Phase Angle. Repairs to both peaks of model.

A VERY RARE CONTRACTOR'S MODEL DEMONSTRATING THE THEORETICAL SCATTERING OF LIGHT FROM THE LUNAR SURFACE. The lunar surface reflects light in ways that were very puzzling to scientists, as it reflects light back in the direction of the light source, rather than reflecting it uniformly in all directions. Because of this, astronauts walking on the moon had great difficulty viewing details or contrast when the Sun was at their backs. Noted planetary scientist Bruce Hapke was the first person to come up with an adequate theoretical model for this phenomenon, known as lunar photometric function, which was published in his 1963 paper "A Theoretical Photometric Function for the Lunar Surface." (Journal of Geophysical Research, 1 August, 1963). The present model is a 3D rendering of Hapke's theory.

REFERENCES

For a detailed explanation of lunar photometric function see: *Lunar Sourcebook: A User's Guide to the Moon.*

\$ 3.000-5.000





APOLLO SOYUZ TEST PROJECT (ASTP)

Extra-large contractor's model of the docked Apollo and Soyuz spacecrafts, manufactured by Rockwell International, ca 1975

1:25 scale model in metal and wood, complete with detachable solar panels, 323/4 by 141/2 by 10 inches, mounted onto 14 by 10 inch oval wooden base, with metal tag reading: "Apollo-Soyuz Test Project. Scale1/25. Space Division. Rockwell International."

THE END OF THE SPACE RACE. Conducted in July 1975, the Apollo-Soyuz Test Project signaled the symbolic end of the Space Race which had begun with the launch of Sputnik in 1957. It was the first joint US-Soviet space flight, during which the US Apollo Command/Service Module docked with the Soviet Soyuz 19 capsule, and the two crews, consisting of US astronauts Tom Stafford, Vance Brand, and Deke Slayton, and Russian Cosmonauts Alexey Leonov and Valeri Kubasov visited each others ships, shared meals, and conducted experiments together. ASTP was the last manned US space mission until the first Space Shuttle flight in 1981.

\$ 3,000-5,000





SHUTTLE CENTAUR G PRIME ROCKET STAGE

Custom, hand-built model, likely by General Dynamics, ca 1980

Large, approx. 1:19 scale model in wood, metal, and composite materials (18 by $10^{1/4}$ by $9^{1/2}$ inches), housed within clear acrylic case with hinges, allowing model to be propped at a 45 degree angle. Metal NASA worm logo tag to inside of model. Original wood NASA carrying case (11 by 20 by $12^{3/4}$ inches), with 3 NASA meatball labels, NASA Glenn Research Center Exhibit Material labels, NASA shipping labels, and stencil reading "Shuttle/Centaur G Prime Speakers Bureau."

VERY RARE, LARGE-SCALE CUSTOM BUILT MODEL OF THE CANCELLED CENTAUR-G ROCKET STAGE. The Centaur-G Prime liquid-fueled upper rocket stage was built in the 1980s to boost shuttle payloads out of low Earth orbit. It was originally scheduled to fly in 1986, but was cancelled after the Challenger disaster due to concerns that a cyrogenic liquid-fueled stage would be too risky to launch on the space shuttle.

\$ 6,000-9,000

35

HUBBLE SPACE TELESCOPE

Large highly detailed model by Penwal Industries for NASA, ca 1990

1:25 scale model in metal, resin and composite materials, (21 inches long with two 18 inch long solar panels), reflective mirror inside base of telescope, mounted onto wooden base (12 by 8 by 1 inches) with metal plaque reading "Hubble Space Telescope. 1:25 scale", and metal NASA worm logo tag indicating that this was made for the NASA Aerospace Education Services Program. In original carrying case. Some small chips/cracks.

Hubble was the world's first space-based optical telescope, named after the American astronomer Edwin Hubble. Launched into low Earth orbit in 1990, it marked the most significant advancement in astronomy since Galileo's refinements of the telescope in the beginning of the 17th century.

\$ 6,000-9,000

36

MARS GLOBE

LARGE VISUAL-RELIEF MARINER 9 MARS GLOBE. CHICAGO: DENOYER-GEPPERT CO., 1973

A 16 inch diameter globe comprised of 12 paper gores, 1/16,700,000 scale, with a wooden cradle mount. Artwork by J. Inge, U.S.G.S. Mapping and Cartography Branch of Astrogeography, United States Geological Survey; Data is from the Jet Propulsion Laboratory, NASA. Some minor wear and discoloration commensurate with age.

The unmanned probe Mariner IX launched on 30 May 1971. Images sent back of the planet's surface revealed an incredibly rocky landscape reminiscent of the lunar surface. After completing its final transmission on 27 October 1972 it had photomapped 100% of the planet's surface. This early Mars globe would have been one of the first to incorporate Mariner IX imagery.

\$ 2,000-3,000





SPACE SHUTTLE MAIN COMPUTER

IBM AP101B General Purpose Computer, manufactured by IBM Corp, 11 November, 1988

Metal outer case, 191/2 by 10 by 71/2 inches, with interior gold-plated electronics having a total weight of 54 pounds. Five data ports and an analog hour meter (reading 799 hours) located between dual hand brackets at the front. Side ID tag reads in part: "MFG by IBM Corp. Owego, NY for Rockwell Int. Space Division, CII, MC615-0001-0210, Contract No. NAS9-14000, Part No. 6247100-26, Serial No. 14, Date of MFG - 11/11/88, Model Type - Production." A paper label on upper side reads in part: "Item Name: Central Processing Unit. MFG. Name: International Business Machines. MFG. Model: FVC11. MFG. Ser.: 014. FSC: 7021. Condition Code: B4. Cost: 300,000.00."

Development of the Space Shuttle flight General Purpose Computers (GPC) began in early 1972, and each Space Shuttle Orbiter was outfitted with five sets of AP101B General Purpose Computers (GPC). The GPC units consisted of two main components constructed as group unit, the Input Output Processor (IOP) and a Central Processing Unit (CPU). Four of these operated in synchronization for redundancy, while the fifth acted as a backup. The CPU controls access to the memory of the General-Purpose Computers and executed commands to vehicle systems, while the IOP formatted and transmitted commands to Space Shuttle systems, received and validated response data, and maintained the status of interfaces with the CPU and the other GPCs.

\$ 6.000-9.000

38

SPACE SHUTTLE SPACELAB COMPUTER

IBM APL101-SL, manufactured by IBM Corp, 12 December, 1989

Metal outer case, 19 by 11½ by 7¾ inches, with interior gold-plated electronics, housed in the original custom heavy-duty shipping case (32 by 22 by 18 inches). Six data ports and an analog hour meter (reading 3733 hours) located between dual hand brackets at the front. Front ID tag reads in part: "AP101SL Computer. McDonnell Douglas PN: 9005608-1. Rev Level: L. Serno: 108. Contract No. SK87J087. Mfd. By IBM Corp Owego NY. Date of MFG: 12/12/89."

The IBM AP101-SL computer was used in the Spacelab module to operate the laboratory's subsystems (power, thermal, etc.) as well as to monitor and control experiment operations through a data display system with keyboard and screen. Spacelab, developed by the European Space Agency (ESA) was a reusable laboratory used on certain flights flown by the Space Shuttle. A total of 32 Space Shuttle missions flew Spacelab components.

\$ 6,000-9,000





FLOWN SPACE SHUTTLE PAYLOAD AND GENERAL SUPPORT LAPTOP COMPUTER

PAYLOAD AND GENERAL SUPPORT COMPUTER (PGNC), manufactured by GRID/SAI Technology ca 1996

Heavy-duty laptop computer, 15 by 11 by 2 inches, "Payload and General Support Computer. P/N SED33103332-715. S/N 1012" stenciled in white to top, white label reading "Payload & General Support Computer. PGSC-715. S/N 1012/ JSC-GFE. Handle with Care" with additional red label reading "Class II Controlled Equipment" to top. Housed in the original padded NASA laptop bag with sewnown label reading: "NASA Payload & General Support Computer PGSC Carrying Case. S/N 1012."

FLOWN PAYLOAD AND GENERAL SUPPORT LAPTOP COMPUTER, USED ON THE SHUTTLE ENDEAVOUR ON STS-67. The Payload and General Support Computer (PGSC) is used to support Shuttle and Payload on-orbit operations. The primary functions are command and display of non-critical payloads and additional crew information services.

\$ 5,000-8,000

40

CO2 ABSORBER

CO2 Absorber Filter Assembly, AiResearch Part 813540-2-1

Metal cannister, 7 by 7 by 5 inches, manufacturer's tag reading "Absorber Element CO₂/ Part 813540-2-1/ Serial: 29-403/ Order: NAS-9-150/ NASA: 00400 0029403/ REF SPEC: ME901-0218-0051. Airesearch Manufacturing Co., Los Angeles/Phoenix."

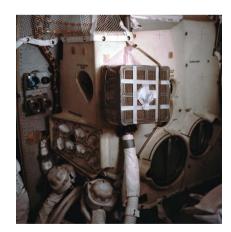
AN EXAMPLE OF ONE OF THE MOST FAMOUS PIECES OF APOLLO HARDWARE. Used to absorb carbon dioxide and remove odors from the air in a Command Module. Several of these canisters were carried on each flight, and were swapped out every 12 hours or so. This piece of Environmental Control System hardware would normally not be an item noticed by most, however it was launched into the spotlight during the near-disastrous Apollo 13 mission. At just under 56 hours into the mission, an oxygen tank explosion resulted in a major loss to electrical power to the Command and Service Module, forcing the crew to cancel the lunar landing and move into the Aquarius, using it as a lifeboat in order to survive a four day journey around the moon and return back to Earth. The levels of CO₂ in the spacecraft were reaching lethal levels, however due to the fact that they Command/Service Module and the Lunar Module were built by two different contractors (North American Rockwell, and Grumman), the

CO₂ canisters in each were of incompatible size and shape. NASA engineer Ed Smylie devised the brilliant solution to the problem, by creating an adapter using materials found in the LM, including tape, LGC bags, and an EVA cue card, thus saving the lives of the Apollo 13 crew.

REFERENCES

For more details on the mission, see the *Apollo* 13 Flight Plan, sold in these rooms in July 2017 https://www.sothebys.com/en/auctions/ecatalogue/2017/space-exploration-n09759/lot.140.html?locale=en

\$ 2,000-3,000



(Lot 40) The improvised air-filter constructed by the Apollo 13 crew, as built in the Apollo 13 LM cabin. Image Credit: NASA"

PROJECT MERCURY

LOTS 41-53







41

41

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

THE ORIGINAL SEVEN

Vintage color photograph, image taken by Bill Taub, 81/4 by 103/4 inches, McDonnell Aircraft Corporation stamp to verso, with number D4C-1856. Minor toning.

SIGNED by ALAN SHEPARD, WALTER SCHIRRA, JOHN A. GLENN JR., VIRGIL "GUS" GRISSOM, M. SCOTT CARPENTER, DONALD "DEKE" K. SLAYTON and LEROY GORDON COOPER, and INSCRIBED: 'TO "TWO MORE" TAUB | WITH BEST REGARDS | FROM THE "MERCURY | ASTRONAUTS"

SIGNED BY THE ENTIRE MERCURY CREW TO **BILL TAUB**

An image of the Mercury Seven, dressed in their finest, posing in front of the McDonnell Aircraft offices.

\$ 4,000-6,000

42

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

THE MERCURY ASTRONAUTS

Vintage black and white photograph, image taken by Bill Taub, 8 by 10 inches.

SIGNED by ALAN SHEPARD, WALTER SCHIRRA, JOHN A. GLENN JR., VIRGIL "GUS" GRISSOM, M. SCOTT CARPENTER, DONALD "DEKE" K. SLAYTON and LEROY GORDON COOPER, and INSCRIBED: "TO DICKIE WITH BEST | WISHES. | THE MERCURY ASTRONAUTS".

SIGNED BY THE ENTIRE MERCURY 7 CREW

A publicity image of the "Original Seven" handling a rocket model.

\$4,000-6,000

43

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

A PAIR OF PHOTO BOOKS CAPTURING THE FRIENDSHIP 7 AND **AURORA 7 MISSIONS**

A SERIES OF PHOTOGRAPHS **ILLUSTRATING THE FRIENDSHIP 7** AND AURORA 7 MISSIONS, FROM TECHNICAL PREPARATIONS TO PUBLIC **CELEBRATIONS**

Two comb-bound albums, custom made for Taub with his name gilt on each card cover, with 60 vintage black and white photographs in total, images taken by Bill Taub, printed recto and verso on card, 93/8 by 71/4 inches.

A striking collection of photographs capturing the excitement of these Mercury missions, offering images of Glenn and Carpenter preparing for launch, liftoff, recovery at sea, Glenn and President John F. Kennedy, the heroes' homecoming parades, etc. The details of each album are as follows:

Friendship 7 album (33 photographs): SIGNED and INSCRIBED by JOHN GLENN on card preceding the first photo: "BEST REGARDS TO | "TWO MORE-WILLIE" TAUB | - AND MY SINCERE APPRECIATION | FOR THE COVERAGE YOU GAVE |-GOOD JOB, BILL -|JOHN"

Aurora 7 (27 photographs): SIGNED and INSCRIBED by SCOTT CARPENTER on the first photo: "FOR BILL WHO DID MOST OF | THIS AND WHOSE READY SMILE |AND GOOD SPIRIT WAS VITAL TO | OUR SUCCESS-MANY THANKS. | SCOTT CARPENTER"

\$ 2,000-3,000

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

MERCURY REDSTONE (MR-3) UMBILICAL CABLE

A SEGMENT FROM THE UMBILICAL CABLE CONNECTED TO THE FREEDOM 7, THE FIRST UNITED STATES HUMAN SPACEFLIGHT

Rubber casing around a gathering of insulated copper wires, 2½ inches in diameter by 5½ inches tall, old tape to rubber casing reading "MR-3 (SHEPARD) | MAY 5, 1961 — UMBILICAL CORD"; yellowing to tape. With a vintage color photograph of Bill Taub and astronaut Alan Shepard, 3 by 5 inches, with "Kodachrome Print Made by Kodak" watermark on verso.

The umbilical cable from which this segment was connected to the *Freedom 7* during launch procedures and provided all electrical power to the spacecraft up to the T-30 second liftoff countdown, at which point it was ejected. The present segment was given to Bill Taub by the Mercury 7 team.

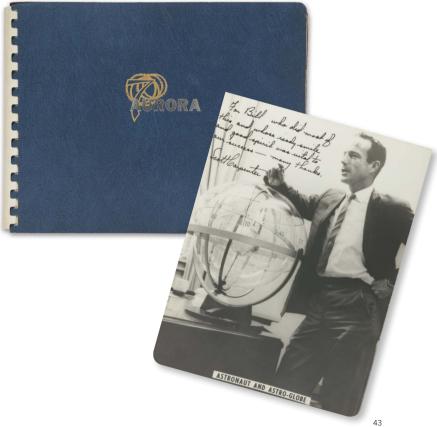
\$ 2,000-3,000



4







44







46

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

ROCKET LAUNCH AT CAPE CANAVERAL

MERCURY-REDSTONE 4 LIFTOFF

Vintage color photo lithograph, image taken by Bill Taub, 8 by 10 inches.

SIGNED and INSCRIBED by GUS GRISSOM: "WARMEST PERSONAL REGARDS | TO "TWO MORE" TAUB. | GUS GRISSOM".

On 21 July 1961, Liberty Bell 7 was launched from Cape Canaveral, with Grissom as its pilot. The sub-orbital flight lasted 15 minutes and 37 seconds.

\$ 1.500-2.500



47

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER RILL TALIR

A PAIR OF VINTAGE PHOTOLITHOGRAPHS INSCRIBED TO BILL TAUB'S DAUGHTER, MYRA

JOHN GLENN IN HIS SILVER SPACESUIT, AND THE LAUNCH OF MERCURY REDSTONE 3

Vintage color photolithograph, image taken by Bill Taub, 8 by 10 inches, SIGNED and INSCRIBED by JOHN GLENN: "BEST REGARDS TO MYRA | AND SORRY WE'VE KEPT YOUR | DAD BUSY AWAY FROM | HOME SO MUCH. WORLD'S | BEST PHOTOG — RIGHT? RIGHT! | JOHN H GLENN JR. | APOLLO ASTRONAUT.'

Vintage color photolithograph, image taken by Bill Taub, 6 by 9 inches, SIGNED and INSCRIBED by ALAN SHEPARD: "TO MYRA — | ALAN B. SHEPARD."

Myra, to whom these are inscribed, was the daughter of Bill Taub. As NASA's senior photographer, Taub was away from home for as many as 150 days a year, travelling to training sessions, shuttle launches, and recovery sites. Glenn's inscription warmly captures the gruelling nature of Taub's schedule, and also the high regard in which NASA's astronauts held him.

\$ 2,000-3,000



46

47

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUR

LIFE MAGAZINE COVER SIGNED BY ALL 7 MERCURY ASTRONAUTS

LIFE MAGAZINE. 14 SEPTEMBER 1959

Single sheet, 10½ by 13¼ inches; matted and framed to 173/4 by 213/4 inches. Some toning to mat, not examined out of frame.

"ONE OF SEVEN: FIRST AMERICAN IN SPACE"

SIGNED BY JOHN GLENN, WALLY SCHIRRA, GORDON COOPER, SCOTT CARPENTER, ALAN SHEPARD, GUS GRISSOM and DEKE SLAYTON, and INSCRIBED "TO OUR GOOD FRIEND AND ASSOCIATE, BILL "TWO MORE" TAUB, FROM THE ASTRONAUTS |1/26/60".

\$ 1,500-2,500

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

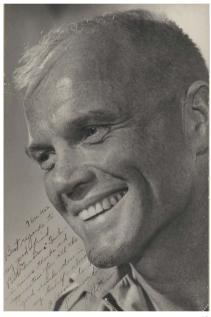
MERCURY-ATLAS 6 LAUNCH IMAGE

THE FIRST AMERICAN ORBITAL SPACEFLIGHT

Vintage color photolithograph, image taken by Bill Taub, image size 12 by 16½ inches, "ATLAS-MERCURY, MAN-IN-ORBIT PROGRAM FOR NASA, BUILT BY GENERAL DYNAMICS | ASTRONAUTICS" printed on lower left border; framed to 18 by 22 inches.

SIGNED and INSCRIBED by JOHN GLENN: "MY VERY BEST REGARDS TO | NADINE TAUB — SORRY WE'VE KEPT | YOUR EVER-LOVIN' WILLIE SO BUSY | DURING MA-6 PREPARATIONS, BUT HE HAS | DONE A FINE JOB — I APPRECIATE IT | VERY MUCH. | JOHN A. GLENN JR. | LT. COL. USMC | MERCURY ASTRONAUT"

\$ 1,500-2,500



4

50

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

VINTAGE NASA "RED NUMBER" PHOTOGRAPH OF THE MERCURY ASTRONAUTS

THE MERCURY FLYERS POSING IN FRONT OF AN F-106 JET

Vintage "NASA Red Number" color photograph, image taken by Bill Taub, 8 by 10 inches, with "A Kodak Paper" watermark on verso. The identification number "NASA S-61-1250" is printed in red near the upper left corner.

An image of the Mercury astronauts standing beside a Convair F-106B aircraft. They are, from left to right: Scott Carpenter, Gordon Cooper, John Glenn, Gus Grissom, Wally Schirra, Alan Shepard, and Deke Slayton.

\$ 1,500-2,500



48

49

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

JOHN GLENN

Vintage black and white photograph, image taken by Bill Taub, 9 by 131/4 inches; matted and framed to 161/2 by 201/2 inches. A few old creases to image; not examined out of frame.

SIGNED and INSCRIBED by JOHN GLENN: "7 DEC 1962 | BEST REGARDS TO | MY GOOD FRIEND | BILL "TWO SHOTS" TAUB — | IN SINCERE THANKS AND | APPRECIATION FOR ALL THE | GOOD WORK DONE IN | MY BEHALF — ALWAYS A | PLEASURE TO HAVE | YOU AROUND, NELLY — | JA GLENN JR."

\$ 1,500-2,500



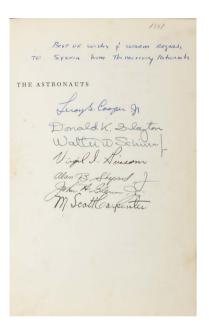
50



Donald K. Sleim Ja. Donald K. Sleim Ja. OCT A.M. 1962 27065 Walter Donard Man B. Shepard M. Scott Carpenter Vigil Linion

51

THE ASTRONAUTS THE STORY OF PROJECT MERCURY, AMERICA'S MAN-IN-SPACE PROJECT MERCURY.



52





MERCURY 7 CREW SIGNED POSTAL COVER

SIGNED BY ALL 7 CREW MEMBERS, AND POSTMARKED ON THE DAY OF WALLY SCHIRRA'S SIGMA 7 FLIGHT

A postal cover measuring approximately 3¾ by 6½ inches, postmarked twice from Cape Canaveral, October 3, 1962. Mounted with a photograph of the Mercury 7 crew.

SIGNED by the full Mercury 7 crew: JOHN H. GLENN JR; DONALD K. "DEKE" SLAYTON; WALTER "WALLY" SCHIRRA; LEROY "GORDON" COOPER; ALAN B. SHEPARD; M. SCOTT CARPENTER; and VIRGIL "GUS" GRISSOM.

\$ 3,000-5,000

52

THE STORY OF PROJECT MERCURY, AMERICA'S MAN-IN-SPACE PROGRAM

SIGNED BY THE MERCURY SEVEN

CAIDIN, MARTIN. *The Astronauts*. New York: E.P. Dutton & Co., Inc., 1960. 7% by 51/4 inches. Original black cloth, pictorially printed jacket. Some foxing primarily to endleaves, minor toning, minor rubbing to extremities, closed tears and old tape to jacket, some foxing and soiling.

INSCRIBED by the crew on the front free endpaper, "BEST OF WISHES & WARM REGARDS | TO SYLVIA FROM FROM THE MERCURY ASTRONAUTS," and SIGNED by LEROY GORDON COOPER, DONALD "DEKE" SLAYTON, WALTER W. SCHIRRA, VIRGIL "GUS" GRISSOM, ALAN SHEPARD, JOHN GLENN, and SCOTT CARPENTER.

Caidin was an American author, as well as an authority on aeronautics and aviation. He began writing fiction in 1957, and would author more than 50 fiction and nonfiction books, and over 1,000 magazine articles. Here, with great detail, Caidin has constructed a gripping account of the origins of Project Mercury, its astronauts, and their rigorous training leading up to the selection of one man for America's first orbital flight.

\$ 3,000-5,000

GEMINI PROGRAM

LOTS 54-59





53

MERCURY ROCKET LAUNCHES

- 1. Mercury-Redstone 2, 31 January, 1961
- 2. Mercury-Redstone 3, 5 May, 1961
- 3. Mercury-Redstone 4, July 21, 1961
- 4. Mercury-Atlas 4, 13 September, 1961
- 5. Mercury-Atlas 7, 24 May, 1926

Five vintage chromogenic prints on fiber-based paper with "A Kodak Paper" watermark on verso, each 11 by 14 inches.

Mercury-Redstone 2, launched on 31 January, 1961, was the penultimate test flight prior to the first manned American space mission in Project Mercury, carrying a chimpanzee named Ham on a suborbital flight. Mercury-Redstone 3, launched on 5 May, 1961 was the first United States human spaceflight, piloted by Alan Shepard. Mercury-Redstone 4, launched on July 21, 1961 was the second United States human spaceflight, and its spacecraft, Liberty Bell 7 was piloted by astronaut Virgil "Gus" Grissom. Mercury-Atlas 4, launched on 13 September, 1961, was an unmanned spaceflight of the Mercury program in during which the spacecraft orbited the Earth once. Mercury-Atlas 7, launched on 24 May, 1962, was the fourth flight of Project Mercury. The spacecraft Aurora 7, piloted by astronaut Scott Carpenter, made three Earth orbits.

54

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF GEMINI X, VIA HIS ESTATE

FLOWN ON GEMINI 10

"TEXAS ART EMBROIDERY" MISSION INSIGNIA PATCH

FLOWN embroidered patch, approximately 3 by 4 inches overall, featuring a large red roman number X against a light blue background.

Affixed to a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

VERY RARE, one of only 110 examples supplied to NASA. One of the few mission patches without the crew's names.

Susy Young's provenance letter reads, in full: "I hereby certify that the Gemini 10 "Texas Art Embroidery" Embroidered Mission patch that accompanies this letter was flown aboard the Gemini 10 mission July 18-21, 1966. This patch was part of John W. Young's personal collection since the mission. The protective package holding the patch is sealed with a holographic tamper-proof label, #1745118, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 3.000-5.000

55

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF GEMINI X, VIA HIS ESTATE

FLOWN ON GEMINI 10

HEAT SHIELD SEGMENT IN LUCITE

Gemini 10 heat shield segment approximately 10 by 13 by 42 mm. Encased in a Lucite cylinder 2½ inches tall and 3 inches in diameter. The base of the cylinder in engraved: "GEMINI X | JULY 18-21, 1966." With a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads, in full: "I hereby certify that the Gemini 10 Heat Shield in Lucite that accompanies this letter was flown aboard the Gemini 10 mission July 18-21, 1966. It has been part of John W. Young's personal collection since returning from the mission."

\$ 3,000-4,000







ORIGINALLY FROM THE COLLECTION OF GEMINI XI PILOT RICHARD GORDON

FLOWN GEMINI XI STAR CHART

FLOWN Circular rotating star chart, serial No. CF55062-1, prepared by the Aeronautical Chart and Informational Center, United States Air Force, for the National Aeronauticas and Space Administration, [1966]

Two 9-inch diameter circular discs rotating around a central divot, upper disc with Northern region constellations, lower disc with Southern region constellations, the two halves rotating under a semi-transparent printed overlay, the upper half printed with "ASCENDING NODE", "NORTH DECLINATION", "89 MINUTE PERIOD 32° 30' INCLINATION", "INDEX LINE" and "ORBIT POLAR STAR", lower half printed with "ASCENDING NODE", "SOUTH DECLINATION", "89 MINUTE PERIOD 32° 30' INCLINATION", "INDEX LINE" and "ORBIT POLAR STAR". Overlay sealed with 5 pieces of scotch tape, some silvering to outer ring of overlay. With a Typed Letter Signed by Gemini XI Pilot Richard Gordon.

Northern region disc signed and inscribed "RICHARD GORDON. FLOWN ON GEMINI XI. SEPTEMBER 1966."

FLOWN circular star chart, carried on the Gemini XI mission as a back-up chart to be used in the event that the craft was launched into an inclination of 32 degrees, 30 minutes. Gemini XI was in fact launched at 28 degrees, 30 minutes inclination.

\$ 2,500-3,500

57

GEMINI VI AND VII

"First Rendezvous in space, at 17,000 mph, Gemini VI", December 15, 1965

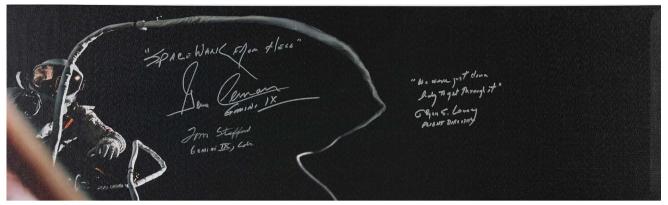
Vintage chromogenic print on fiber-based paper with "A Kodak Paper" watermark on verso, 14 by 11 inches. Recto captioned in pen "Rendezvous Gemini VI & VII in Space. Earth on lower right."

A HISTORIC MILESTONE IN THE SPACE PROGRAM, MANKIND'S FIRST SPACE RENDEZVOUS, accomplished by Walter Schirra and Thomas Stafford in the Gemini VI, and Frank Borman and James Lovell in the Gemini VII. Gemini VII had been launched eleven days before Gemini VI, on 4 December 1965. Once Gemini VI achieved orbit, the spacecraft caught up to Gemini VII and the two ships manoeuvred to within a few feet of each other during three Earth orbits.

REFERENCES

Thomas, p 144; Cortwright, p. 165

\$1,000-2,000



GEMINI IXA PANORAMA

"Space Walk from Hell"

Photographic canvas print, 12 by 40 inches, depicting Eugene Cernan during his grueling EVA.

SIGNED and INSCRIBED by GENE CERNAN: "SPACE WALK FROM HELL' GENE CERNAN GEMINI IX." Additionally SIGNED by TOM STAFFORD, and flight director GLYNN LUNNEY, who includes the INSCRIPTION: "We were just damn lucky to get through it."

In this photograph taken by Tom Stafford, Gemini IXA pilot Eugene Cernan is seen outside the spacecraft during his two hour, eight minute spacewalk on June 5, 1966. He was scheduled to demonstrate the Astronaut Maneuvering Unit (a propulsion unit that would allow the pilot controlled flight), but was unable to accomplish this due to stress, fatigue, and overheating. Cernan's experience during showed there was still much to be learned about working in microgravity.

\$ 2,500-3,500

59

GEMINI IX & APOLLO 17

Gemini IX Pilot Gene Cernan's "Spacewalk from Hell", 5 June 1966, & Apollo 17 Lunar Module Pilot Ron Evans' Spacewalk, 17 December 1972

Two vintage Chromogenic prints on fiber-based paper with "A Kodak Paper" watermark on verso, each 11 by 14 inches, NASA negative numbers S66-38515 and AS-17-152-23391.

Eugene Cernan, Gemini IX Pilot, performed his two 2 hour and 8 minute long "Spacewalk from Hell" in which he almost didn't make it back alive. Nearly blinded by a malfunctioning spacesuit, and exhausted from trying to maintain command over himself while spinning out of control, Cernan kept calm under pressure. And, with the help of his crewmate, Tom Stafford, Cernan managed to regain entry into the capsule. Ron Evans, Apollo 17 Command Module Pilot, performed a spacewalk lasting 1 hour and 7 minutes during the spacecraft's trans-Earth coast, retrieving film cassettes from the Lunar Sounder, Mapping Camera, and Panoramic Camera.

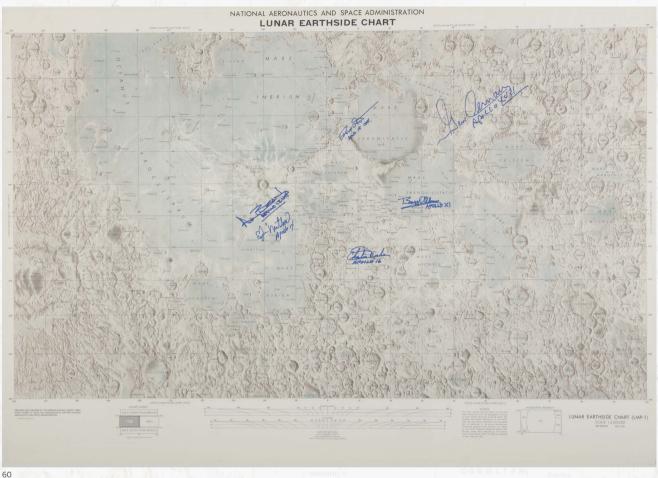
\$ 2,000-3,000





APOLLO PROGRAM

LOTS 60-71



60

VERY LARGE LUNAR EARTH SIDE CHART, SIGNED BY A MEMBER OF **EVERY APOLLO LUNAR LANDING** CREW

National Aeronautics and Space Administration Lunar Earthside Chart (LMP-1). Defense Mapping Agency Aerospace Center, for NASA, Edition 3, May 1976

Color lithographed lunar map in Mercator projection, 281/2 x 401/2 inches. Scale 1:5,000,000 at the equator.

SIGNED AND INSCRIBED BY A MEMBER OF EVERY APOLLO LUNAR LANDING CREW OVER THEIR CORRESPONDING LANDING SITES:

"BUZZ ALDRIN. APOLLO XI"

"ALAN BEAN. APOLLO 12 LMP"

"EDGAR MITCHELL. APOLLO 14"

"DAVE SCOTT. APOLLO 15 CDR"

"CHARLIE DUKE. APOLLO 16"

GENE CERNAN. APOLLO XVII"

One of the largest lunar maps ever produced for NASA during the Apollo program. All large craters and mare are labeled including unique features such as rilles and ejecta rays. These features are based on image data from all five Lunar Orbiter Spacecraft.

\$ 15,000-20,000



VERY LARGE LUNAR FARSIDE CHART, SIGNED BY 6 OF THE MEN TO HAVE SEEN THE FARSIDE OF THE MOON

National Aeronautics and Space Administration Lunar Farside Chart (LMP-2). Defense Mapping Agency Aerospace Center, for NASA, Edition 3, May 1976 Color lithographed lunar map in Mercator projection, 281/2 x 401/2 inches. Scale 1:

5,000,000 at the equator.

SIGNED AND INSCRIBED BY SIX OF THE MEN WHO HAVE SEEN THE FARSIDE OF THE MOON:

- "JOHN YOUNG. APOLLO 10 CMP"
- "MICHAEL COLLINS. APOLLO XI"
- "RICHARD GORDON. APOLLO XII"
- "JAMES LOVELL. APOLLO 8. 13. [with arrow pointing to Lovell Crater]"
- "AL WORDEN. APOLLO 15"

One of the largest lunar maps ever produced for NASA during the Apollo program. All large craters and mare are labeled including unique features such as rilles and ejecta rays. These features are based on image date from the Lunar Orbiter Spacecrafts. We have not seen any other signed example of this Lunar Farside chart be offered at auction.

\$ 10,000-15,000



62

APOLLO PROGRAM

Signature Board

A display board featuring the signatures of the astronauts of all Apollo missions except for Apollo 1, with additional signatures of astronauts from Mercury, Gemini, Skylab, Apollo-Soyuz, and various STS missions (totaling 46 signatures in all, plus duplicate signatures of Gordon Cooper, Stuart Roosa. and Walt Cunningham), the board overall is 21 by 17 inches with a centrally mounted 133/4 by 103/4 inches color photograph of the launch of Apollo 11, with autopen signatures of the Apollo 11 crew, all other signatures on mat; a couple of signatures faded but still legible, three signatures written over "white-out" evidently after false starts. The original board is accompanied by a fine reproduction suitable for display produced by Chromatics Imaging.

AN UNUSUALLY COMPREHENSIVE ROSTER OF APOLLO AND OTHER UNITED STATES ASTRONAUTS, INCLUDING THE FULL CREWS OF APOLLO 12-17 (and thus 10 of the 12 moonwalkers), THE FULL CREWS OF ALL 3 SKYLAB MISSIONS, THE FULL AMERICAN CREW OF ASTP, 6 OF THE 7 MERCURY ASTRONAUTS, 11 OF THE 16 GEMINI ASTRONAUTS, AND SEVEN SHUTTLE ASTRONAUTS.

The signatures on this board were gathered at the Johnson Space Center from 1970 through 1974 by John Marshall Eggleston, then Director of Engineering and Development for NASA with oversight responsibility for a staff of nearly 1,000, mostly engineers. Eggleston, who had joined the National Advisory Committee for Aeronautics (NASA's predecessor) in 1949, solicited the autographs on behalf of a friend who was inspired to begin the collection after the Apollo 1 tragedy.

The following missions are represented on the board, as below (please note, the form of the signatures—initials, diminutives, suffixes—are given as signed on the board; further, the affiliation of an astronaut's name with multiple missions does not indicate that the board is signed multiple times):

Apollo 7 (WALT CUNNINGHAM, DONN F. EISELE, WALTER SCHIRRA); Apollo 8 (FRANK BORMAN, W. A. ANDERS, JAMES LOVELL); Apollo 9 (JAMES A. MCDIVITT, RUSTY SCHWEICKART, DAVE SCOTT); Apollo 10 (JOHN YOUNG, TOM STAFFORD, GENE CERNAN); Apollo 12 (CHARLES CONRAD, RICHARD F. GORDON JR., ALAN L. BEAN); Apollo 13 (JACK SWIGERT, FRED W. HAISE, JAMES LOVELL); Apollo 14 (STUART ROOSA, ALAN SHEPARD, E. D. MITCHELL); Apollo 15 (JIM IRWIN, AL WORDEN, DAVE SCOTT); Apollo 16 (KEN MATTINGLY, JOHN YOUNG, CHARLIE DUKE JR.); Apollo 17 (RON EVANS,

JACK SCHMITT, GENE CERNAN); Mercury 3 (ALAN SHEPARD); Mercury 6 (JOHN GLENN); Mercury 7 (SCOTT CARPENTER); Mercury 8 (WALTER SCHIRRA); Mercury 9 (GORDON COOPER); Gemini 3 (JOHN YOUNG); Gemini 4 (JAMES A. MCDIVITT); Gemini 5 (GORDON COOPER, CHARLES CONRAD); Gemini 6 (TOM STAFFORD, WALTER SCHIRRA); Gemini 7 (FRANK BORMAN, JAMES LOVELL); Gemini 8 (DAVE SCOTT); Gemini 9 (TOM STAFFORD, GENE CERNAN); Gemini 10 (JOHN YOUNG); Gemini 11 (CHARLES CONRAD, RICHARD F. GORDON JR.); Gemini 12 (JAMES LOVELL); Skylab 2 (JOE KERWIN, P. J. WEITZ, CHARLES CONRAD); Skylab 3 (ALAN L BEAN, JACK LOUSMA, OWEN K. GARRIOTT); Skylab 4 (EDWARD G. GIBSON, BILL POGUE, JERRY CARR); and Apollo-Soyuz (TOM STAFFORD, DEKE SLAYTON, VANCE BRAND).

The board is also SIGNED by seven astronauts who served on later missions: STORY MUSGRAVE (STS-6 and others), BRUCE MCCANDLESS II (STS-31, STS-41-B), TONY ENGLAND (STS-51-F), ROBERT PARKER (STS-9, STS-35), JOSEPH P. ALLEN (STS-5, STS-51-A), DON LIND (STS-51-B), JOE ENGLE (STS-2, STS-51-I), as well as by P. K. CHAPMAN, the first Australian-born American astronaut, who served for about five years in NASA Astronaut Group 6.

\$ 15,000-20,000

























63

APOLLO MOONWALKERS COLLECTION

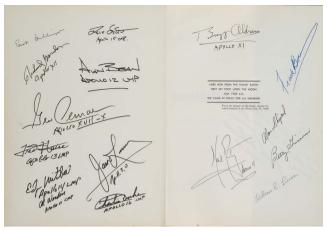
A COMPLETE COLLECTION OF PORTRAITS OF EACH 12 APOLLO MOONWALKERS, EACH SIGNED BY ITS SUBJECT

5 color photolithographs, 2 black and white photographs, and 5 color photographs, each 10 by 8, or 8 by 10 inches. All photolithographs and are officially NASA released with printed captions identifying the subject to the lower margins, many with printed NASA biographies to versos, one black and white photograph officially NASA released (photo number: "71-H-834").

LOT INCLUDES:

NEIL ARMSTRONG Apollo 11 CDR
BUZZ ALDRIN Apollo 11 LMP
CHARLES "PETE" CONRAD Apollo 12 CDR
AL BEAN Apollo 12 LMP
ALAN SHEPARD Apollo 14 CDR
EDGAR MITCHELL Apollo 14 LMP
DAVID SCOTT Apollo 15 CDR
JAMES IRWIN Apollo 15 LMP
JOHN YOUNG Apollo 16 CDR
CHARLES DUKE Apollo 16 LMP
EUGENE "GENE" CERNAN Apollo 17 CDR
HARRISON SCHMITT Apollo 17 LMP

\$ 10.000-15.000





65

64 CORTWRIGHT, EDGAR M., EDITOR

Apollo Expeditions to the Moon. NASA SP-350. Washington, D.C.: Scientific & Technical Information Office, 1975
12 by 9 inches. Pictorial cloth. 313 pp.

FIRST EDITION, PRESENTATION COPY SIGNED BY 25 ASTRONAUTS AND NASA LUMINARIES. Presented to Julie Kertes, who served as secretary to Wernher von Braun, and later to Sam Phillips and James C. Fletcher. Kertes' contributions to the Space Program were tremendous, as is evidenced by the warmth of the inscriptions in this book.

All of the signatures & inscriptions in the present copy are vintage, and likely done around the time of Kertes' retirement from NASA. Signatures & inscriptions include the full crews of Apollo 11 & 12, 8 moonwalkers, and more, as follows:

NEIL ARMSTRONG, BUZZ ALDRIN, MICHAEL COLLINS, FRANK BORMAN, ALAN SHEPARD, RUSTY SCHWEICKART, ALAN BEAN, CHARLES CONRAD, RICHARD GORDON, JAMES LOVELL, FRED HAISE, EDGAR MITCHELL, DAVID SCOTT, AL WORDEN, CHARLIE DUKE, GENE CERNAN, BETTY GRISSOM, JAMES WEBB, JAMES C. FLETCHER, LEE JAMES, ROBERT GALBRAITH, JACK SCHMITT, WILLIAM R. LUCAS, ERNST STUHLINGER, SAM PHILIP, and ROBERT C. SEAMANS JR.

Perhaps the best NASA released book on the Apollo Program based on text written and photographs or images illustrated. Nearly 200 of rarely seen photographs highlight events from lunar orbit, the lunar surface, and support operations such as Mission Control and flight training. Included are chapters written by Astronauts Aldrin and Collins on Apollo 11, Conrad on Apollo 12, Lovell on Apollo 13, and Shepard who finally made his second flight, Apollo 14, after nearly a ten year wait. Other contributors include Wernher von Braun and flight director/mission manager Christopher Kraft.

\$10,000-15,000

CORTWRIGHT, EDGAR M. EDITOR.

Apollo Expeditions to the Moon. NASA SP-350. Washington, D.C.: Scientific & Technical Information Office, 1975 12 by 9 inches. Pictorial cloth. 313 pp.

FIRST EDITION, SIGNED AND INSCRIBED BY 17 APOLLO ASTRONAUTS AND 3 MEMBERS OF THE GROUND CREW, INCLUDING CREW MEMBERS FROM EVERY MANNED APOLLO MISSION AND A MOONWALKER FROM EACH LUNAR LANDED MISSION AS FOLLOWS: "WALLY SCHIRRA", "WALT CUNNINGHAM. APOLLO 7", "FRANK BORMAN. APOLLO 8", "JIM MCDIVITT. APOLLO 9", RUSTY SCHWEICKART. APOLLO 9 LMP", "TOM STAFFORD. GEMINI VI, IX, APOLLO X, APOLLO-SOYUZ". "BUZZ ALDRIN. APOLLO XI". "MICHAEL COLLINS. APOLLO XI", "ALAN BEAN. APOLLO 12", RICHARD GORDON. APOLLO XII", "JAMES LOVELL. APOLLO 13", "FRED HAISE. APOLLO 13 LMP", "EDGAR MITCHELL. APOLLO 14". DAVE SCOTT. APOLLO 15", "AL WORDEN. APOLLO 15", "CHARLIE DUKE. APOLLO 16", and "GENE CERNAN. APOLLO XVII", plus "GENE KRANZ. FLIGHT DIRECTOR. GEMINI-APOLLO". "GERRY GRIFFIN. FLIGHT DIRECTOR. APOLLO", "SY LIEBERGOT. APOLLO EECOM."

\$ 4,000-6,000

66

LUNAR PHOTOGRAPHY INDEX MAP, SIGNED BY MEMBERS FROM EACH LUNAR MISSION

APOLLO MISSION 15 LUNAR PHOTOGRAPHY INDEX MAP

SHEET 8 OF 10 HASSELBLAD PHOTOGRAPHS. Lithograph lunar map based on Apollo 15 photographic data. Prepared Under the Direction of the Department of Defense by the Aeronautical Chart and Information Center, United States Air Force for the National Aeronautics and Space Administration, Houston, March 1972. 571/4 by 191/8 inches. A few tack holes to left margin, old folds.

SIGNED and INSCRIBED by 10 astronauts. representing each Apollo lunar mission, 11-17. INSCRIPTIONS, in mission order, are as follows: BUZZ ALDRIN: "APOLLO XI" (over the Sea of Tranquility, with Aldrin having drawn a circle around the Apollo 11 landing site); ALAN BEAN: "PETE & I LANDED | AROUND HERE SOMEWHERE I ALAN BEAN I APOLLO 12"; RICHARD GORDON: "APOLLO XII"; FRED HAISE: "IT WAS EXPLORED | ON APOLLO 14! | FRED HAISE | APOLLO 13" (all 3 near the Fra Mauro Highlands); JAMES LOVELL: "FRED AND I HAD PLANNED TO | LAND HERE — BEFORE THE EXPLOSION! | JAMES LOVELL | APOLLO 13" (with an arrow pointing to the Fra Mauro Highlands); EDGAR MITCHELL: "APOLLO 14 LMP" (near the Fra Mauro Highlands); DAVE SCOTT: "APOLLO 15 CDR." (near the Sea of Serenity): AL WORDEN: "DAVE AND JIM I LANDED HERE. | AL WORDEN | APOLLO 15 CMP" (over the Sea of Serenity): AL WORDEN (a second time): "A SMALL SAMPLE OF PHOTOGRAPHIC | WORK DONE ON APOLLO 15 | AL WORDEN | APOLLO 15 CMP" (near the map key); CHARLIE DUKE: "APOLLO 16" (over the the Descartes Highlands, with Duke having drawn an "X" over the Apollo 16 landing site); and GENE CERNAN: "APOLLO XVII" (over the Taurus-Littrow Valley).



The objectives for the Apollo 15 mission included: "Emplace and activate surface experiments. Evaluate the capability of the Apollo equipment to provide extended lunar surface stay time, increased extravehicular operations, and surface mobility. [and] Conduct inflight experiments and photographic tasks from lunar orbit." Worden was able to take many photographs through the command module's windows. In fact, because Endeavour was in a more inclined orbit than previous missions, Worden could see lunar features that were previously unknown, and he supplemented his photos with thorough descriptions. His written observations in conjunction with the images he was able to capture directly informed the decision to send Apollo 17 to Taurus-Littrow to search for signs of volcanic activity.

\$ 7,000-10,000

67

A COLLECTION OF SIGNED BETA CLOTH EMBLEMS

8 Beta-cloth emblems, overall sizes from $6^{1}\!/\!_{2}$ inches square to 9 by 9 inches square, with 3 Apollo 17 Beta Cloth astronaut name tags (CERNAN, SCHMITT, and EVANS), approximately 3 by 2 inches, and 4 vintage NASA publicity color photolithographs, from 10 by 8 inches to 14 by 11 inches.

SIGNED and INSCRIBED Beta Cloths emblems include:

Apollo 7 - WALLY SCHIRRA ("APOLLO 7 CDR."), and WALT CUNNINGHAM ("APOLLO 7"); Apollo 9 - JIM MCDIVITT, RUSTY SCHWEICKART, and DAVE SCOTT; Apollo 10 - GENE CERNAN (""D RESS REHEARSAL" | MAY 18-26, 1969"); Apollo 12 - ALAN BEAN ("November 14-24, 1969"); Apollo 13 - JAMES LOVELL ("COMMANDER | APOLLO 13"); Apollo 15 - DAVE SCOTT ("APOLLO 15 | JULY 26-AUGUST 7, 1971"); Apollo 16 - CHARLIE DUKE ("A VOYAGE OF A LIFETIME"); Apollo 17 - GENE CERNAN ("LAST LUNAR LANDING | DEC 11, 1972")



Beta cloth is a type of fireproof silica fiber, similar to fiberglass, which will not burn, and only melts at temperatures exceeding 650 °C (1,200 °F). This cloth was used in the manufacture of Apollo/Skylab A7L space suits, and in other specialized applications.

\$ 5,000-8,000





68



APOLLO 12 & 14 - LANDING SITE CHART - SIGNED & INSCRIBED BY APOLLO 12 LUNAR MODULE PILOT ALAN BEAN & APOLLO 14 LUNAR MODULE PILOT EDGAR MITCHELL

Montes Riphaeus, Lunar Map - LM 76. Defense Mapping Agency for NASA, October 1979

Includes a detailed legend and gridded full sphere lunar near side map locator image at bottom left hand corner. First edition. 22 by 29 inches, scale 1: 1,000,000.

LUNAR MAP SHOWING THE LANDING SITES OF APOLLO 12 AND 14, SIGNED AND INSCRIBED NEXT TO THEIR LANDING SITES: "HOLY CRAN [sic], IT'S BEAUTIFUL OUT HERE! ALAN BEAN. APOLLO 12 LMP", and "PERHAPS WE ARE A STAR'S WAY OF KNOWING ITSELF. EDGAR MITCHELL. APOLLO 14 LMP."

The map illustrates the Montes Riphaeus, a mountain range along the west-northwestern edge of the Mare Cognitum, the Mare Insularum, the Fra Mauro highlands, and the Mare Nubium with the landing sites for Apollo 12, Apollo 14, Surveyor 3 and Ranger VII marked.

\$ 3,000-5,000

69

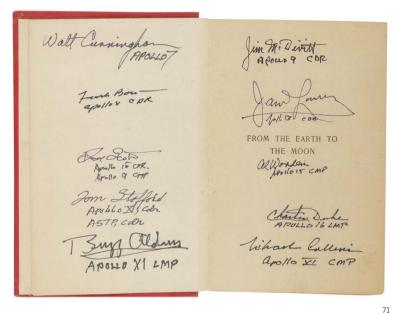
APOLLO PROTOTYPE LUNAR LANDING AND LUNAR SURFACE EXPLORATION MAPS

Lunar Landing Area Map. LAM II-8, 1 page on single sheet, printed recto only; Lunar Landing Site Map. LSM II-8, 1 page, printed on recto of first Lunar Surface Exploration Map sheet; Lunar Surface Exploration Maps, LSE II-8-1 to LSE II-8-13, 13 pages on 7 sheets, printed recto and verso. All 8 by 11 inches, and 1:5,000 scale. Prepared Under the Direction of DOD by ACIC (USAF) For NASA, June 1968.

FIRST PROTOTYPE EDITION OF THE LUNAR SURFACE EXPLORATION MAPS, prepared as part of the lunar surface exploration map data package, using photographic imagery taken by the Lunar Orbiters.

\$ 2,500-3,500





LUNAR ORBIT RENDEZVOUS

"The Rendezvous Maneuver"

Single sheet, printed recto and verso, 8 by 11 inches, creases where previously folded.

SIGNED BY 11 APOLLO ASTRONAUTS: WALLY SCHIRRA, EDWARD H. WHITE, JAMES MCDIVITT, FRANK BORMAN, THOMAS STAFFORD, BUZZ ALDRIN, MICHAEL COLLINS, RICHARD GORDON, JAMES LOVELL, DAVID SCOTT, and EUGENE CERNAN. The Lunar Orbit Rendezvous (LOR) method is the method used on all lunar landed missions to efficiently land humans on the moon. The concept consists of a main spacecraft, the Command Service Module (CSM) that remains in lunar orbit, while a separate lunar lander descends to the lunar surface. The lunar lander is divided into two stages; the descent stage, and the ascent stage. The descent stage remains on the lunar surface after the mission is complete, while the ascent stage is used to launch from the lunar surface and re-dock with the main spacecraft. The CSM then returns to Earth, and the Command Module (CM) then separates from the Service module to re-enter Earth's atmosphere, leaving the Service Module behind in space.

\$ 2,500-3,500

71

VERNE, JULES

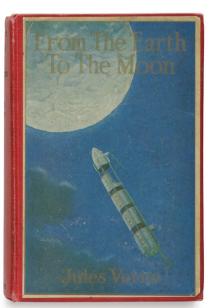
From the Earth to the Moon. New York: Charles Scribner's Sons, 1922

8vo. Publisher's illustrated red cloth, spine titled in gilt.

SIGNED ON THE FLY-LEAF AND HALF-TITLE BY TEN APOLLO ASTRONAUTS: "WALT CUNNINGHAM. APOLLO 7". "FRANK BORMAN. APOLLO 8 CDR". "DAVE SCOTT. APOLLO 16 CDR. APOLLO 9 CMP", "TOM STAFFORD. APOLLO X CDR. ASTP CDR", "BUZZ ALDRIN. APOLLO XI LMP", "JIM MCDIVITT. APOLLO 9 CDR", "JAMES LOVELL. APOLLO 13 CDR", "AL WORDEN. APOLLO 15 CMP", "CHARLIE DUKE. APOLLO 16 LMP", "MICHAEL COLLINS. APOLLO XI CMP".

Neil Armstrong mentioned "From the Earth to the Moon" during a television broadcast back to Earth from the spacecraft on July 23, 1969, the day before he and the rest of his crew mates returned to Earth. "A hundred years ago, Jules Verne wrote a book about a voyage to the Moon. His spaceship, Columbia [sic], took off from Florida and landed in the Pacific Ocean after completing a trip to the Moon. It seems appropriate to us to share with you some of the reflections of the crew as the modernday Columbia completes its rendezvous with the planet Earth and the same Pacific Ocean tomorrow."

\$4,000-6,000



APOLLO 1-10

LOTS 72-103



Astronaut Roger Chaffee Image credit: NASA



72

APOLLO 1 - ROGER CHAFFEE'S HELMET & GLOVE STOWAGE COVER

THE ONLY KNOWN PIECE OF HIS SPACESUIT TO SURVIVE THE APOLLO 1 DISASTER

White nylon helmet and glove stowage bag with Velcroattachments, front Velcro strap with "R.B. CHAFFEE" embroidered in white over black label, interior label reads: "BAG, HELMET-GLOVE, STOWAGE/ NASA DESIGNATION ASB-1C / MFG. DAVID CLARK COMPANY INC. / P/N A-2011-000 SER. NO. 120 / NOVEMBER 1966."

Apollo 1 was the first mission in the manned lunar landing program, which was scheduled to launch on February 21, 1967, from the Cape Kennedy Air Force Station Launch 34 Complex in Florida, carrying as its crew Command Pilot Virgil "Gus" Grissom, Senior Pilot Ed White, and Pilot Roger B. Chaffee. Tragedy struck during a launch rehearsal test on January 27th, with a cabin fire killing all three crew members and destroying the Command Module. Investigations later determined that the cause of the fire was electrical, which spread rapidly due to the high pressure, pure oxygen atmosphere of the cabin.

Command Pilot Gus Grissom had announced his intention to spend a full 14 days in orbit; had the crew reached orbit, they would have stored their helmets and gloves in their bags, and stowed them on the cabin floor using the Velcro attachments. Because the January 27 launch was a test flight that would not remain in orbit, the crew was to keep their helmets on for the entirety of the flight. Because the Helmet-Glove Stowage bags were not needed on the test flight, they were not brought along with the crew into the spacecraft on that fateful day.

Roger Chaffee (1935-1967) was a naval officer, aviator, and aeronautical engineer. He was selected to be part of NASA astronaut group 3, and went on to serve as CAPCOM for Gemini 3 and Gemini 4. Apollo 1 was his first spaceflight assignment. He was posthumously awarded the Congressional Space Medal of Honor.

The umbilical tower and service structure of Launch Complex 34 were razed, and the launch platform at the center of the pad serves as a memorial to the Apollo 1 crew. A plaque at the site reads:

"Dedicated to the Living Memory of the crew of Apollo 1

U.S.A.F. Lt. Colonel Virgil I. Grissom U.S.A.F. Lt. Colonel Edward H. White, II U.S.N. Lt. Commander Roger B. Chaffee

They gave their lives in service to their country in the ongoing exploration of humankind's final frontier. Remember them not for how they died but for those ideals for which they lived."

A second memorial plaque at the site reads:

"IN MEMORY OF THOSE WHO MADE THE ULTIMATE SACRIFICE SO OTHERS COULD REACH THE STARS

AD ASTRA PER ASPERA
(A ROUGH ROAD LEADS TO THE STARS)
GOD SPEED TO THE CREW OF APOLLO 1."

PROVENANCE

Transferred from the Smithsonian to the U.S. Space and Rocket Center in Alabama, and then subsequently de-accessed.

\$ 125,000-150,000



The Crew of Apollo 1 during training in Florida Image credit: NASA $\,$





FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 7

LUNAR MODULE PILOT WALTER CUNNINGHAM'S FLOWN APOLLO 7 SILVER ROBBINS MEDALLION

FLOWN Apollo 7 Robbins Medallion #27, NGC MS 66 (certificate number: 2167543-001), sterling silver, 32 by 25 mm overall. Obverse features the mission insignia with the command and service module encircling the Earth, reverse engraved with launch date ("Oct. 11, 1968") and serial number. With an Autograph Letter Signed by WALTER CUNNINGHAM on his personal letterhead.

ONE OF ONLY 255 MINTED AND FLOWN — THE FIRST APOLLO ROBBINS MEDALLION

Robbins medallions have been produced for, and flown on, every manned NASA mission since Apollo 7. The medallions were paid for by the crews, and available for purchase only by NASA astronauts at the time. 255 medallions were initially minted for the flight of Apollo 7, but Walter Cunningham later commissioned the Robbins Company to strike an additional 45 silver medallions from the original Apollo 7 dies. These unflown medallions were given serial numbers 256 through 300.

Walt Cunningham's provenance letter reads, in part: "I have sent a flown, silver Apollo 7 Robbins Medallion (serial No. 27) for your collection. It flew with me aboard Apollo 7, October 11-22, 1968, and has been part of my collection since the mission. My design of the Apollo 7 medallion emphasized the earth orbital character of the first manned Apollo mission, The circle represents the earth, while the ellipse is the shape of all earth orbital paths."

74

ORIGINALLY FROM THE COLLECTION OF APOLLO 7 LUNAR MODULE PILOT WALTER CUNNINGHAM

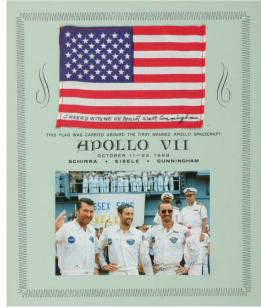
FLOWN UNITED STATES FLAG, CARRIED ON APOLLO 7 BY WALT CUNNINGHAM

FLOWN on Apollo 7, stars and stripes flag, 4 by 6 inches, SIGNED and INSCRIBED by WALTER CUNNINGHAM in blue pen on the lowest horizontal white stripe: "CARRIED WITH ME ON APOLLO 7. WALT CUNNINGHAM." Mounted to NASA designed display certificate with four small pieces of tape above the

words: "THIS FLAG WAS CARRIED ABOARD THE FIRST MANNED APOLLO SPACECRAFT | APOLLO VII | OCTOBER 11-22, 1968 | SCHIRRA | EISELE | CUNNINGHAM." With a 4 by 6 inch color photograph tipped in at the bottom. With Certification of Authenticity SIGNED by WALTER CUNNINGHAM.

A flown flag from the first manned Apollo spacecraft — Walt Cunningham's only spaceflight.

\$ 3,000-5,000







J

75

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 8

COMMAND MODULE PILOT JAMES LOVELL'S FLOWN APOLLO 8 SILVER ROBBINS MEDALLION

FLOWN Apollo 8 Robbins Medallion #136, NGC 64 (certificate number: 2356822-001), sterling silver, 38 by 30 mm overall, mimicking the shape of the Command Module. Obverse features the mission insignia with the Earth and the Moon depicted amidst a large 8, reflecting the circumlunar nature of the mission, the reverse is engraved with the mission dates ("Dec. 21-27, 1968") and serial number. With an Autograph Letter Signed by JAMES LOVELL on Lovell Communications letterhead.

ONE OF ONLY 300 MINTED AND FLOWN

Apollo 8 was the second manned mission of the Apollo program, and marked a pivotal escalation of the Space Race. From December 21-28 of 1968, the crew, comprised of Commander Frank Borman, Command Module Pilot James Lovell, and Lunar Module Pilot William Anders, became the first three humans to fly to the Moon, successfully executing a trans-lunar injection, before entering the lunar orbit, and orbiting the celestial body for 20 hours. This medallion accompanied CMP Jim Lovell aboard this historic undertaking.

Jim Lovell's provenance letter reads: "I hereby confirm and certify that Apollo 8 Silver Robbins Medal serial number 136 is one that was flown to the moon with me aboard the mission December 21-27 1968. Apollo 8 was the first mission to travel to the moon and the first mission to have

ever left the bonds of earth's gravity. This medal has been in my collection of personal mementos since the mission."

\$ 12,000-18,000

76

EARTHRISE

REPRESENTING VOSTOK 6, APOLLO 7-17, AND THE SOYUZ-APOLLO PROGRAM Large color photograph, 16 by 20 inches.

SIGNED and INSCRIBED by 21 astronauts and cosmonauts, and one Mission Control director, including a Moonwalker from each lunar landed mission, the first woman in space, and the first spacewalker:

VALENTINA TERESHKOVA ("VOSTOK - 6"). WALTER CUNNINGHAM ("APOLLO 7"), WALTER SCHIRRA ("APOLLO 7"), FRANK BORMAN ("APOLLO 8"), JAMES LOVELL ("APOLLO 8"), JIM MCDIVITT ("APOLLO 9 | GEMINI IV"), RUSSELL SCHWEICKART ("APOLLO 9"), TOM STAFFORD ("APOLLO X"), BUZZ ALDRIN ("APOLLO XI"), GENE KRANZ (""WHITE" FLIGHT"), MICHAEL COLLINS ("APOLLO XI CMP"), ALAN BEAN ("APOLLO 12"), RICHARD GORDON ("APOLLO XII"), FRED HAISE ("APOLLO 13"), EDGAR MITCHELL ("APOLLO 14"), AL WORDEN ("APOLLO 15"), DAVE SCOTT ("APOLLO 15"), CHARLIE DUKE ("APOLLO 16"), JOHN YOUNG ("APOLLO 16 CDR"), GENE CERNAN ("APOLLO XVII CDR"), HARRISON SCHMIDT ("APOLLO 17"), and ALEXEI LEONOV ("VOSHKOD- | SOYZ-APOLLO").

\$ 4,000-6,000







77

EARTHRISE

INSCRIBED BY THE CREW OF APOLLO 8 TO SENATOR RALPH YARBOROUGH

Large vintage color photograph, 193/4 by 133/4 inches, matted and framed to 253/4 by 213/4 inches, SIGNED by FRANK BORMAN, JAMES LOVELL, and WILLIAM ANDERS on the mat, and INSCRIBED by the crew "TO SENATOR YARBOROUGH | WITH BEST WISHES FROM THE APOLLO 8 CREW."

Ralph Yarborough, known as the "patron saint of Texas liberals," was a Democratic politician who represented the state the U.S. Senate from 1957 to 1971.

\$ 5,000-8,000

78

APOLLO 8 - EARTHRISE, "A VERY MERRY CHRISTMAS"

Color photograph, 153/4 by 20

SIGNED and INSCRIBED by FRANK BORMAN: "Each and every one of us wish each and every one of you a very merry Christmas and we'll be landing early Friday morning ... Merry Christmas from Apollo 8 FRANK BORMAN Apollo 8 CDR"

\$ 3,000-5,000

79

APOLLO 8 - EARTHRISE, "GOOD NIGHT TO YOU ALL"

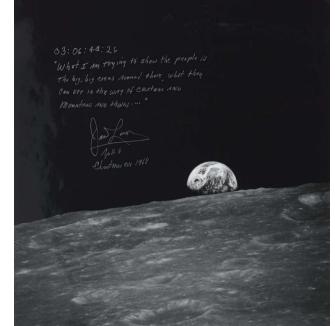
Color photograph, 20 by 215% inches

SIGNED and INSCRIBED by JIM LOVELL: "Good night to you all - all on the good Earth" JAMES LOVELL Apollo 8"

When the spacecraft cam out from behind the Moon, Frank Borman, Jim Lovell, and William Anders witnessed "Earthrise" for the first time in human history.

\$ 3,000-5,000





80

APOLLO 8 - EARTHRISE

Black and white photograph, 20 by 16 inches.

SIGNED and INSCRIBED by JIM LOVELL:

"03: 06: 44: 26 | 'What I'm trying to show the people is the big, big areas around there, what they can see in the way of craters and mountains and things...'

JAMES LOVELL Apollo 8 Christmas eve 1968"

\$ 3,000-5,000

81

APOLLO 8 - SATURN V ON THE LAUNCH PAD

Color photograph, 20 by 16 inches.

SIGNED and INSCRIBED by JIM LOVELL and FRANK BORMAN: "JAMES LOVELL Apollo 8 CMP | FRANK BORMAN Apollo 8 CDR"

The Saturn V rocket quietly waits for its passengers Jim Lovell, Frank Borman, and William Anders to board for liftoff. Apollo 8 was the second manned mission in the Apollo program, and the first mission to orbit the Moon.

\$ 3.000-5.000



81







83

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

VINTAGE NASA "RED NUMBER" PHOTOGRAPH OF EARTHRISE

EARTH EMERGING OVER THE LUNAR **HORIZON**

Vintage "NASA Red Number" color photograph, 8 by 10 inches, with "A Kodak Paper" watermark, and technical and rights information on verso. The identification number "NASA AS8-14-2383" is printed in red near the upper left, and is stamped in the verso.

The iconic image of "Earthrise" captured by William Anders aboard Apollo 8. "There was nothing in the plan for an Earthrise photo," Anders noted. "Indeed, we didn't even see an actual Earthrise until, on our third orbit, we changed the spacecraft's orientation to heads up and looking forward. As we came round the back side of the moon, where I had been taking pictures of craters near our orbital track, I looked up and saw the startlingly beautiful sight of our home planet "rising" up above the stark and battered lunar horizon. It was the only color against the deep blackness of space. In short, it was beautiful, and clearly delicate."

\$ 3.000-5.000

83

APOLLO 8

EARTHRISE, CHRISTMAS EVE. 1968

Vintage Chromogenic print on fiber-based Kodak paper with "A Kodak Paper" watermark on verso, 133/4 by 103/4 inches. NASA negative number AS8-14-2383.

THE FIRST EARTHRISE TO BE SEEN BY HUMAN EYES. A remarkable image of Earthrise taken by Apollo 8 Lunar Module Pilot William Anders after emerging from the dark side of the moon on their third orbit. Anders said of the incredible moment: "We'd spent most of our time on Earth training about how to study the Moon, how to go to the Moon; it was very lunar oriented. And yet, when I looked up and saw the Earth coming up on this very stark, beat-up lunar horizon, and Earth that was the only color that we could see, a very fragile-looking Earth, a very delicate looking Earth, I was immediately almost overcome by the thought that here we came all this way to see the Moon, and yet the most significant thing we're seeing is our own home planet, the Earth." (Poole)

REFERENCES

Poole, Robert. Earthrise: How Man First Saw the Earth, p. 2; Schick and Van Haaften, The View From Space: American Astronaut Photography 1962-1972, p. 98.

\$ 2,000-3,000



FLOWN ON APPLLOG

Bider John A. J. Rolls











84

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 9 LUNAR MODULE PILOT RUSSELL SCHWEICKART

FLOWN ON APOLLO 9

COMPLETE GROUP OF TWENTY-THREE FAMOUS OUOTATIONS

FLOWN group of 23 famous quotations, organized by Schweickart into 6 identified subsets, printed on onionskin paper, ranging in size from 3 by 4 to 3 ¾ by 8 inches, each SIGNED and INSCRIBED by RUSTY SCHWEICKART: "Flown on Apollo 9."

Subset 1: Elizabeth Barrett Browning, Robert Nathan, Bishop John A. J. Robinson, Thornton Wilder. Subset 2: Truman B. Douglass, Julian Huxley, William James, Bertrand Russell. Subset 3: Winston Churchill, Lao-tse, John F. Kennedy, Thornton Wilder. Subset 4: Martin Buber, Fredreich Nietzche, Bertrand Russell, Alfred Lord Tennyson. Subset 5: Anonymous, Isiah 43.19, Robert Kennedy, Bertrand Russell. Subset 6: John Evelyn, Mimi Lee, Thornton Wilder

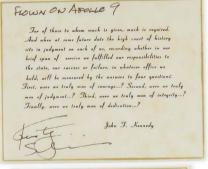
"There is only one way to know what one knows and that is to risk one's convictions in an act, to commit them in a responsibility." — Thornton Wilder

This set of inspirational quotations spent ten days in space aboard Apollo 9, from 3-13 March 1969. Schweickart assembled this selection prior to launch over months of Sunday nights reading at home. He carried these quotations with him aboard Apollo 9 with the intention to honor a representation of human history and wisdom beyond his individual experience. In a credo written shortly after Schweickart's space flight, he elaborated on his motivation for bringing these quotations into space:

"I suppose that this statement of Julius Caesar's [quoted above] caught my eye because it says something about the way I'd like to view myself. I suppose that that's why all of us adhere to whatever religious or philosophic credo we espouse. Somehow, by recognizing and acknowledging the "glimpse" of truth within the idea we absorb into our beings another brick to become a part of the highly individual structure of our ideals."

For Schweickart's complete statement, please refer to our online catalogue.

\$ 8.000-10.000







84 (DETAIL)





OF



85

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 9 LUNAR MODULE PILOT RUSSELL SCHWEICKART

FLOWN ON APOLLO 9

LUNAR MODULE PILOT RUSSELL SCHWEICKART'S APOLLO 9 SILVER ROBBINS MEDALLION

FLOWN Apollo 9 Robbins Medallion #127, NGC MS 65 (certificate number: 4715796-024), sterling silver, 25 mm in diameter. Obverse features the mission insignia with the Saturn V rocket, command service module, and lunar module, reverse engraved with mission dates ("March 3-13 1969"), and serial number 127. With a Typed Letter Signed by RUSSELL SCHWEICKART on his personal letterhead.

Rusty Schweickart's provenance letter reads, in full: "I hereby certify that Apollo 9 silver Robbins Medallion, serial # 127, was flown with me aboard the Apollo 9 mission in 1969. This medallion has been in my personal collection since the mission."

\$ 6,000-8,000

86

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 9 LUNAR MODULE PILOT RUSSELL SCHWEICKART

FLOWN ON APOLLO 9

UNITED STATES OF AMERICA FLAG

FLOWN cloth flag of the United States of America, 4 by 5½ inches. SIGNED and INSCRIBED by RUSTY SCHWEICKART along the bottom four bars: "Flown on Apollo 9."

\$5,000-7,000



DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 9 LUNAR MODULE PILOT RUSSELL SCHWEICKART

FLOWN ON APOLLO 9

UNITED NATIONS FLAG

FLOWN cloth United Nations flag, 4 by 6 inches, depicting the U.N. emblem, a polar projection world map surrounded by olive branches. SIGNED and INSCRIBED by RUSTY SCHWEICKART in black marker on the left side: "Flown on Apollo 9."

\$ 3,000-4,000

88

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 9 LUNAR MODULE PILOT RUSSELL SCHWEICKART

FLOWN ON APOLLO 9

LARGE FRAGMENT OF KAPTON FOIL

Large FLOWN Kapton gold foil fragment, approx. 3 by 6 inches. Used in flight, with attendant wear. With a Typed Letter Signed by RUSSELL SCHWEICKART on his personal letterhead.

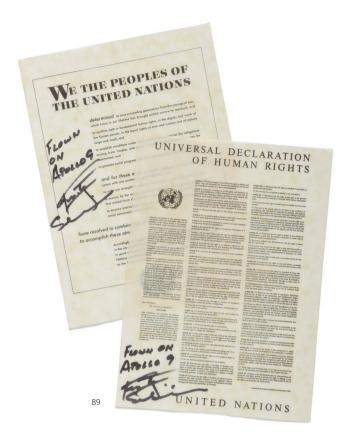
Removed from the Lunar Module Spider, the first LM to fly manned.

Rusty Schweickart's provenance letter reads: "I hereby certify that the accompanying Lunar Module Kapton gold foil insulation remnant was flown aboard and a part of the Apollo 9 lunar module Spider. This medallion has been in my personal collection since the mission."

\$ 3,000-4,000



88









DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 9 LUNAR MODULE PILOT RUSSELL SCHWEICKART

FLOWN ON APOLLO 9

UNITED NATIONS CHARTER AND "UNIVERSAL DECLARATION OF HUMAN RIGHTS"

Two FLOWN documents printed on onionskin paper, each 7 by 5 inches, both SIGNED and INSCRIBED by RUSTY SCHWEICKART in black marker: "Flown on Apollo 9."

TWO MILESTONE DOCUMENTS RELATING TO HUMAN RIGHTS, EACH HAVING SPENT TEN DAYS IN EARTH'S ORBIT ON APOLLO 9.

Established in the aftermath of World War II, the United Nations' primary objectives, as laid out in their charter, are "to save succeeding generations from the scourge of war ... reaffirm faith in fundamental human rights ... and to promote social progress." *The Universal Declaration of Human Rights* was further proclaimed in 1948, "as a common standard of achievements for all peoples and all nations. It sets out, for the first time, fundamental human rights to be universally protected."

\$ 2,000-3,000

90

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 9 LUNAR MODULE PILOT RUSSELL SCHWEICKART

FLOWN ON APOLLO 9

RUSSELL SCHWEICKART'S APOLLO 9 COMMAND MODULE PIN

FLOWN metal charm in the shape of the Command Module, approximately 12 by 20 mm, with a pin, clasp, and chain on the reverse for use as a tie tack. With a Typed Letter Signed by RUSSELL SCHWEICKART on his personal letterhead.

Rusty Schweickart's provenance letter reads: "I hereby certify that the accompanying small Command Module pin, was flown with me aboard the Apollo 9 mission in 1969. It has been in my personal collection since the mission."

\$ 2,000-3,000

91

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 9 LUNAR MODULE PILOT RUSSELL SCHWEICKART

FLOWN ON APOLLO 9

EMBROIDERED MISSION INSIGNIA PATCH

FLOWN embroidered patch, 3 ½ inches in diameter, depicting a Saturn V rocket orbited by the Lunar Module and Command Service Module, with the crew surnames and mission name around the perimeter. SIGNED and INSCRIBED by RUSTY SCHWEICKART on the reverse in black marker: "Flown on Apollo 9."

\$ 2.000-3.000

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 9

COMMANDER JAMES MCDIVITT'S FLOWN APOLLO 9 SILVER ROBBINS MEDALLION

FLOWN Apollo 9 Robbins Medallion #229, NGC MS 64 (certificate number: 4068608-001), sterling silver, 25 mm in diameter. Obverse features the mission insignia with the Saturn V rocket, Command Service Module, and Lunar Module, reverse engraved with the mission dates ("March 3-13 1969"), and serial number. With a Typed Letter Signed by JAMES A MCDIVITT on his personal letterhead.

ONE OF ONLY 350 MINTED AND FLOWN

Apollo 9 was the third manned mission in the Apollo program. It was also the first flight of the Command/Service Module (CSM) with the Lunar Module, as illustrated in the design of the mission insignia.

James McDivitt's provenance letter reads: "I certify that this Robbins Medallion - #229/#350 was flown aboard Apollo 9, from March 3-13th, 1969. This medallion came from my personal collection."

\$ 6,000-8,000

93

APOLLO 9 - CSM "GUMDROP" ABOVE **EARTH**

Vintage color photograph, labeled "AP 908" at bottom left corner, 163/4 by 203/4 inches.

SIGNED and INSCRIBED by RUSTY SCHWEICKART: "RUSTY SCHWEICKART Apollo 9 CSM Gumdrop as seen from LM - 3 Spider"

Apollo 9 was the third manned mission in the Apollo program. It was also the first flight of the Command/Service Module (CSM) with the Lunar Module. SCHWEICKART served as Lunar Module Pilot, and the present image depicts the CSM (nicknamed "Gumdrop") as taken from the Lunar Module (nicknamed "Spider").

\$ 2,000-3,000

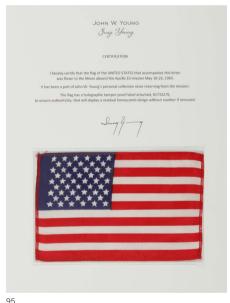






93





95

96

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, COMMAND MODULE PILOT OF APOLLO 10, VIA HIS ESTATE

FLOWN ON APOLLO 10

"GRUMMAN" EMBROIDERED MISSION INSIGNIA PATCH

FLOWN embroidered shield-shaped patch, 4¹/₄ by 4 inches overall, depicting the roman numeral X alongside the Command Service Module and Lunar Module, with earth visible

in the background, and the mission name and crewmember surnames ("Stafford | Young | Cernan") around the perimeter of the shield against a teal background. Affixed to a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads, in full: "I hereby certify that the Apollo 10 "Grumman" Embroidered Mission patch that accompanies this letter was flown to the Moon aboard

94

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, COMMAND MODULE PILOT OF APOLLO 10, VIA HIS ESTATE

FLOWN ON APOLLO 10

LARGE UNITED STATES OF AMERICA FLAG

FLOWN cloth flag of the United States of America, 73/4 by 113/4 inches, affixed with a tamper-proof label numbered 1733282; previously folded as expected. With a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads, in full: "I hereby certify that the flag of the UNITED STATES that accompanies this letter was flown to the Moon aboard the Apollo 10 mission May 18-26, 1969. It has been part of John W. Young's personal collection since returning from the mission. The flag has a holographic tamper-proof label attached, #1733282, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 7.000-9.000

95

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, COMMAND MODULE PILOT OF APOLLO 10, VIA HIS ESTATE

FLOWN ON APOLLO 10

UNITED STATES OF AMERICA FLAG

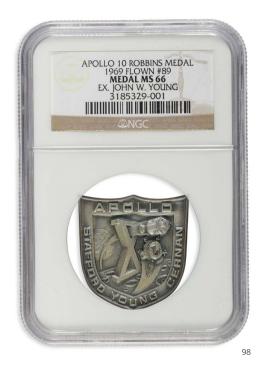
FLOWN cloth flag of the United States of America, 4 by 61/4 inches. Displayed on a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads: "I hereby certify that the flag of the UNITED STATES that accompanies this letter was flown to the Moon aboard the Apollo 10 mission May 18-26, 1969. It has been a part of John W. Young's personal collection since returning from the mission. The flag has a holographic tamper-proof label attached, #1733279, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 4,000-6,000

the Apollo 10 mission May 18-26, 1969. This patch was part of John W. Young's personal collection since the mission. The protective package holding the patch is sealed with a holographic tamper-proof label, #1745092, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 2,000-4,000





DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, COMMAND MODULE PILOT OF APOLLO 10, VIA HIS ESTATE

FLOWN ON APOLLO 10

"POST-FLIGHT" EMBROIDERED MISSION **INSIGNIA PATCH**

FLOWN embroidered shield-shaped patch, 41/2 by 4 inches overall, depicting the roman numeral X alongside the Command Service Module and Lunar Module, with earth visible in the background, and the mission name and crewmember surnames ("Stafford | Young | Cernan") around the perimeter of the shield against a light blue background. Affixed to a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads, in full: "I hereby certify that the Apollo 10 "Post-Flight" Embroidered Mission patch that accompanies this letter was flown to the Moon aboard the Apollo 10 mission May 18-26, 1969. This patch was part of John W. Young's personal collection since the mission. The protective package holding the patch is sealed with a holographic tamper-proof label, #1745103, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 2,000-4,000

98

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 10

COMMAND MODULE PILOT JOHN YOUNG'S FLOWN APOLLO 10 SILVER **ROBBINS MEDALLION**

FLOWN Apollo 10 Robbins Medallion #89, NGC MS 66 (certificate number: 3185329-001), sterling silver, 29 by 31 mm. Obverse features the mission insignia with the roman numeral X alongside the Command Service Module and Lunar Module with Earth visible in the background, reverse engraved with the mission dates ("May 18-26, 1969") and serial number. With an Autograph Letter Signed by JOHN YOUNG on his letterhead.

ONE OF ONLY 300 MINTED AND FLOWN

Upon their return to Earth on May 26, 1969, Apollo 10 astronauts Tom Stafford (CDR), John Young (CMP), and Gene Cernan (LMP), established the all-time record for the highest speed ever attained by a crewed vehicle -24,791 nautical miles per hour, making this medallion one of the fastest flown space artifacts in existence

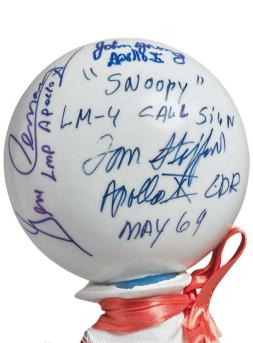
John Young's provenance letter reads: "I hereby certify and confirm that Silver Robbins medal, serial number 95, is one that was flown to the Moon aboard the Apollo 16 Command Module, April 16-27 1972. This medal has been part of my personal collection since the mission."

\$8,000-10,000











MASCOT OF THE APOLLO 10 LM CREW

Snoopy Astronaut doll, produced in China by Determined Distributions of San Francisco for United Feature Syndicate, 1969. Plastic and fabric, 10 inches tall; a few minor smudges or scuffs to interior of helmet. With the original display box.

SIGNED and INSCRIBED: "GENE CERNAN | LMP APOLLO X"; "JOHN YOUNG | APOLLO X"; and ""SNOOPY" | LM-4 CALL SIGN | TOM

STAFFORD | APOLLO X CDR | MAY 69" on the back of Snoopy's helmet.

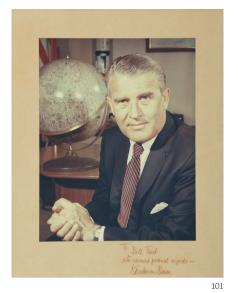
SIGNED AND INSCRIBED BY THE APOLLO 10 CREW

From the *Peanuts* comic strip, the beagle *Snoopy* in a space suit and helmet. *Peanuts* creator Charles Schulz gave his full blessing to NASA for *Snoopy* to be adopted as the mascot for the Manned Flight Awareness (MFA) Program. MFA used *Snoopy* as a

"spokesperson" to emphasize such topics as flight safety and good quality control during spacecraft manufacturing.

The Apollo X LM crew of Commander Tom Stafford and Gene Cernan named their Lunar Module *Snoopy* partly to bring greater recognition to the MFA program. In the same spirit, Apollo X Command Module Pilot John Young named his spacecraft *Charlie Brown*.

\$ 5,000-8,000







FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

FLOWN ON APOLLO 10

PEACOCK FEATHER AND TWO EASTMAN STAMPS, ACCOMPANIED BY A LETTER OF AUTHENTICATION SIGNED BY THE CREW

Peacock feather, approximately 61/4 by 7 inches. Two Eastman 3¢ U.S. postage stamps, 21/4 by 11/16 (joined), in glassine envelope. One page typed letter, to Philip M. Mikoda, 8 by 101/2 inches on NASA letterhead, dated "JAN 21 1971" and SIGNED by TOM STAFFORD, JOHN YOUNG, and GENE CERNAN, and INSCRIBED and SIGNED along the lower margin: "BEST REGARDS. TO BILL TAUB. | MY FAVORITE PHOTOGRAPHER | OF SPACE PEACOCKS | PHILIP MIKODA".

FLOWN PEACOCK FEATHER AND STAMPS. ACCOMPANIED BY A LETTER SIGNED BY THE APOLLO 10 CREW

"DEAR PHIL: THIS LETTER IS TO CONFIRM THE THE ARTICLES THAT WE CARRIED FOR YOUR ONBOARD THE COMMAND AND SERVICE MODULE #106 CALLED CHARLIE BROWN DURING OUR LUNAR FLIGHT FROM MAY 18 TO MAY 26, 1969. THIS DOCUMENT AUTHENTICATED THE FACT THAT WE CARRIED...10 GEORGE EASTMAN COMMEMORATIVE STAMPS...AND, OF COURSE, PEACOCK FEATHERS...'

The G.A.F. Corporation, located in Binghamton, New York, supplied NASA with high-speed, high resolution films for print, slides, and color print paper. They were the first to receive undeveloped rolls of film directly from the space missions. G.A.F.'s liaison with NASA was Philip M. Mikoda, who also served as an adviser on matters pertaining to photography in the Manned Space Program.

101

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

WERNHER VON BRAUN

Vintage color photograph, image taken by Bill Taub, 105/8 by 133/4 inches; matted and framed to 175/8 by 213/4 inches. Not examined out of

Portrait of Wernher von Braun, taken by Bill Taub. SIGNED and INSCRIBED on the mat board by VON BRAUN: "TO BILL TAUB| WITH WARMEST PERSONAL REGARDS — | WERNHER VON BRAUN"

\$ 2,000-3,000

102

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

WERNHER VON BRAUN

Vintage black and white photograph, 103/8 by 131/4 inches; matted and framed to 173/4 by 213/4 inches. Not examined out of frame.

Portrait of von Braun with Senior NASA Photographer Bill Taub. SIGNED and INSCRIBED on the mat board by VON BRAUN: "TO BILL TAUB| WHO WAS ALWAYS THERE. | WITH FONDEST PERSONAL REGARDS — | WERNHER VON BRAUN.'

\$ 2,000-3,000

103

WERNHER VON BRAUN

Typed letter signed "Wernher", to Col. Edwin E. "Buzz" Aldrin discussing Buzz's novel, von Braun's book "Space Frontier", and their shared love of scuba diving

1 page, 71/4 by 101/2 inches, on Fairchild Industries letterhead, 6 May 1975. With retained copy of Buzz Aldrin's response.

A LETTER TO THE ARCHITECT OF THE AMERICAN SPACE PROGRAM TO APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN.

It reads, in full:

"Dear Buzz,

Enclosed find Xerox copies of pages 204 through 210 of my book "Space Frontier" which deal with the problems of space flight at relativistic velocities. I hope that these pages will be useful for your novel.

I had meant to send you the whole book but found I was down to my last copy. To compensate for this, I am enclosing a copy of the latest edition of "History of Rocketry & Space Travel" in which your own historic role is duly immortalized (see index). Please accept this book also as a token of appreciation for signing that magnificent photo of the moon for

Our diving trip was great fun. Hope we can go for another diving expedition together in the nottoo-distant future.

Cordially,

Wernher"

\$ 2.000-3.000

END OF SESSION ONE

\$ 4.000-6.000





APOLLO 11

LOTS 104-152

104

APOLLO 11

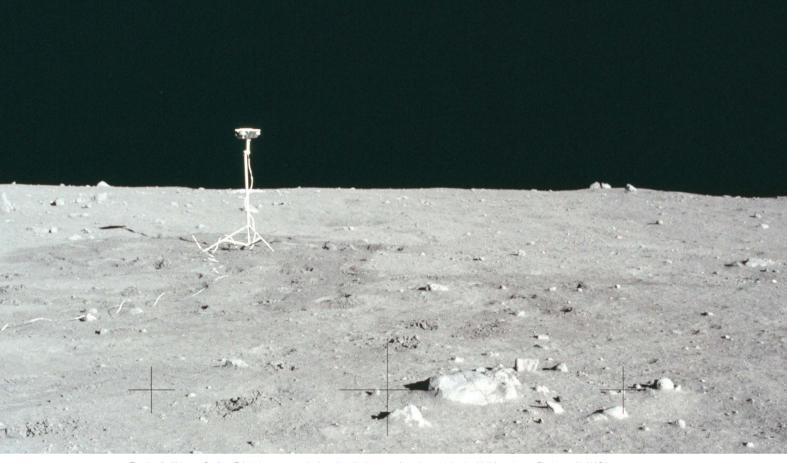
Original, first-generation NASA videotape recordings of the Apollo 11 lunar EVA

Three metal reels (each 10½ in. diameter) of Ampex 148 High Band 2-inch Quadruplex videotape, the tapes with video of the Apollo 11 lunar EVA recorded on 20 July 1969 at Mission Control, Manned Spaceflight Center, Houston, Texas, directly from narrow-band slow scan videotape converted to NTSC for network broadcast using Ampex VR-660B video recorders. The three tapes with running times of 45:04, 49:00, and 50:15 minutes, respectively, covering virtually the entire period of the EVA and including about 9 minutes at the beginning of reel 1 of Mission Control

waiting for the lunar-surface camera to be be deployed; the audio quality of all of the tapes is excellent. Each reel of videotape is housed in its original red-and-black manufacturer's box with hinged lid (11% x 11% x 2% in.), the boxes also with printed adhesive labels reading "APOLLO 11 EVA | July 20, 1969 REEL 1 [-3]" and "VR2000 525 Hi Band 15 ips." Each videotape also bears matching serial code labels on both the box and the metal reel: "133335–219" (reel 1), "134951–47" (reel 2), "134088–17" (reel 3).

THE EARLIEST, SHARPEST, AND MOST ACCURATE SURVIVING VIDEO IMAGES OF MAN'S FIRST STEPS ON THE MOON: ORIGINAL NASA VIDEOTAPE RECORDINGS OF THE APOLLO 11 LUNAR EVA — UNRESTORED, UNENHANCED, AND UNREMASTERED.





The Apollo 11 Lunar Surface Television camera, deployed on the lunar surface. Image taken by Neil Armstrong. Photo credit: NASA

This primary witness to mankind's greatest technological achievement was inadvertently rescued by an engineering student from Lamar University in Beaumont, Texas, from the destruction visited upon the slow-scan videotapes of the historic first moon walk and preserved ever since. Viewed only three times since June 1976 (perhaps the only times since they were first recorded late in the evening on 20 July 1969 at NASA's Mission Control Center, Houston, Texas), these three reels of 2-inch Quadruplex videotape justify a statement made during the mission by Capsule Communicator Charlie Duke to Apollo Command Module Pilot Michael Collins. Duke had told Collins, who was aboard Columbia in lunar orbit, that he was just about the only person in the world without television coverage of his crewmates' planting of the United States flag on the moon. In response, Collins asked, "How is the quality of the TV?" "Oh," replied the CAPCOM, "it's beautiful, Mike, it really is."

If these videotapes do not quite transport viewers to the lunar surface with Neil Armstrong and Buzz Aldrin, they certainly put you in front of the big screen monitor at Mission Control on the evening of 20 July 1969, with images clearer and with better contrast than those that the more than halfbillion-person television audience saw on their home sets. Home viewers watched video that had been transmitted over a 1,600-mile relay of microwave transmission towers to the major television networks in New York City, with each transfer causing a bit of deterioration to the picture quality. In contrast, Mission Control saw the same video that is on these 2-inch quad videotapes: moving pictures sent directly to Houston from closed circuit TV transmissions from the lunar surface beamed to 64-meter-diameter radio telescopes at the Parkes and Honeysuckle Creek Observatories in New South Wales and Canberra, Australia, respectively, and NASA's own similar-sized antenna in Goldstone, California.



Still image from footage of the engineers at Mission Control prior to landing

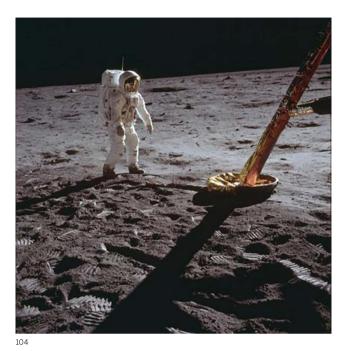


Still image from footage

Below Buzz Aldrin descending the ladder of the Lunar Module Photo credit: NASA

Below Buzz Aldrin next to a landing strut of the Lunar Module "Eagle". Photo credit: NASA





This direct transmission originated from a Westinghouse TV camera that NASA had commissioned specifically to transmit images back to Earth from the lunar surface. Since the camera had to be deployed before Armstrong and Aldrin exited the Lunar Lander if it was truly going to capture their first steps on the surface of the moon, the camera was stowed in a shock-proof and insulated mount on the Lunar Landing Module's (LM) Modularized Equipment Stowage Assembly (MESA). Armstrong released the MESA when he first peered out of the Lunar Module, so that the camera would be in position to capture his slow descent down the ladder and onto the lunar surface. The two astronauts later removed the camera from the LM and mounted it on a tripod to capture a wider view of the LM and their activities and experiments.

The Westinghouse lunar-surface camera shot ten frames per second, using only one-tenth of the bandwidth of the 30-frames-per-second format then standard for television broadcasts (known as NTSC). The transmissions to Earth began when Buzz Aldrin engaged the Westinghouse camera circuit breaker. While the crew was prepared to deploy an erectable S-Band antenna to facilitate transmission, that proved unnecessary: since they landed in alignment with the receivers at Honeysuckle Creek and Goldstone, they were able to transmit the video directly back to Earth using an adjustable high-gain antenna on the Lunar Module.

The high-resolution TV images received at the Parkes Observatory were recorded onto a total of forty-five large diameter reels of narrow-band slow scan (SSTV) videotape. The images were simultaneously transmitted from Australia to NASA Mission Control in Houston, where they were converted to NTSC for network broadcast, and recorded using Ampex VR-660B video recorders onto 2-inch wide reel-to-reel Quadruplex videotape, INCLUDING THE THREE

VIDEOTAPES OF THE APOLLO 11 LUNAR EXTRA-VEHICULAR ACTIVITIES-MORE COMMONLY KNOWN AS MAN'S FIRST WALK ON THE MOON—BEING OFFERED HERE. These first-generation recordings are sharper and more distinct than the few tapes that have survived from the contemporary network television broadcasts, all of which endured some loss of video and audio quality with each successive transmission from microwave tower to microwave tower.

The story of how these videotapes have survived is an intriguing and compelling chapter in the history of the Apollo program. The deep historical significance of the content of the videotapes is belied by their mundane appearance: three red and black cardboard boxes, 113/8 x 113/8 x 23/4 inches, labelled "AMPEX 48 High Band" and "AMPEX VIDEO TAPE," each containing a 10 1/4-inch-diameter reel of 2-inch-wide quad videotape. Apart from their labels, so unremarkable did these videotapes appear, that Gary George, the Lamar University engineering student who essentially salvaged them, did not even attempt to play them for thirty-two years after he acquired them.

Young Mr. George was awarded a cooperative work internship at the NASA Johnson Space Center in June 1973. During his internship, he would occasionally attend government surplus auctions with coworkers, and in June 1976, at an auction at Houston's Ellington Air Force Base, he purchased, for a bid of \$217.77, a single lot consisting of some 1,150 reels of magnetic tape whose "Owning Agency Or Reporting Office" was NASA. Among all these reels were about sixty-five boxes of 2-inch, reel-to-reel videotapes of the type used by television stations. Since a new reel of Ampex tape then cost about \$260, and since the tapes could be re-recorded, Gary intended to sell the used-but still usable—tapes to local TV stations near the Lamar campus.

He did sell a number of tapes, and donated others to Lamar

and to a local church that televised its Sunday services. But many of the smaller-format tapes had to be sold for scrap or simply thrown away. Gary's father had noticed that in addition to the manufacturer's labelling, three of the boxes had smaller printed labels stuck on them identifying them as "APOLLO 11 EVA | July 20, 1969 REEL 1 [–3]" and "VR2000 525 Hi Band 15 ips." His dad suggested that these particular tapes might be worth hanging on to, and Gary took his father's advice.

But although Gary George has kept the three videotapes with him over the course of the past forty-three years, he gave them little thought until early 2008, when a Texas ski club colleague—who also happened to be a NASA video engineer—mentioned to Gary that the space agency was trying, unsuccessfully, to locate its original videotapes of the Apollo 11 EVA in anticipation of the fortieth anniversary of the first manned moon landing. Mr. George was put in contact with NASA about his tapes, but ultimately an agreement could not be reached about what to do with them—or even how to view them.

Left to his own devices, Mr. George was able to contact video archivist David Crosthwait of DC Video in Burbank, California. The DC Video studio had equipment capable of playing the now-vintage videotapes. In October 2008, Gary George's videotapes were played at DC Video, very possibly for the first time since they had been recorded. Miraculously, the tapes were in faultless condition, displaying a picture quality superior to any other existing contemporaneous videotapes. In December 2008, Mr. George's tapes were played for the second time since he bought them in 1976, and were digitized directly to 10-bit uncompressed files, retaining their original 525 SD4/3 specifications and downloaded onto a one terabyte hard drive (which is included as a part of the sale of these three reels of videotape). This was the last time these reel-to-reel videotapes were played until Sotheby's specialists for this auction viewed them in order to confirm their quality.

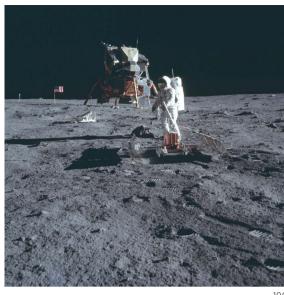
As for NASA, the agency abandoned its search after concluding that the forty-five reels of SSTV high-resolution recordings of the Apollo 11 EVA had been "degaussed," or, put more plainly, erased and recorded over. And any duplicate 2-inch Quadruplex videotape recorded by NASA, similar to those purchased by Mr. George, had either met the same fate or—perhaps worse—been irretrievably damaged due to poor storage protocol. NASA marked the ruby anniversary of Apollo 11 in 2009, by contracting with Lowry Digital to restore and enhance the footage of the EVA that had been saved by CBS Television.

FOR THE GOLDEN ANNIVERSARY OF THE "GIANT LEAP FOR MANKIND," FIRST-GENERATION VIDEOTAPES OF THIS HISTORIC EVENT, NEITHER ADULTERATED NOR DIGITALLY ENHANCED, ARE AVAILABLE FOR VIEWING FOR THE FIRST TIME SINCE JULY 20, 1969.

From Neil Armstrong's first step to Buzz Aldrin's bounding down the LM ladder shortly after him; from Aldrin's exuberant bouncing around on the surface of the moon to demonstrate the effects of lunar gravity to the remarkable "long distance phone call" with the President of the United States; from the astronauts' solar wind experiment to their deploying the American flag on the surface of the moon; from the collection of soil and rock samples to the photographing of the "magnificent desolation" of the lunar landscape—this is the Apollo 11 moon walk as seen that historic evening of July 20, 1969, by the staff of Mission Control.

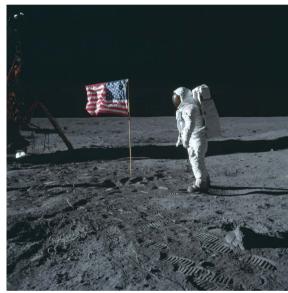
\$1,000,000-2,000,000

Buzz Aldrin conducting lunar surface experiments. Photo credit: NASA



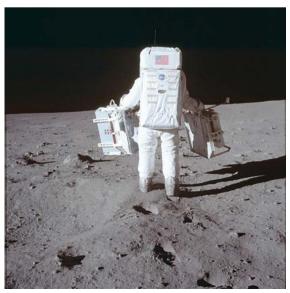
102

Buzz Aldrin, next to the American Flag on the lunar surface. Photo credit: NASA



104

Buzz Aldrin with the lunar samples. Photo credit: NASA





Kennedy Space Center Firing Room 1 during lift-off of Apollo 11. Image credit: NASA

SATURN V / APOLLO FIRING ROOM CONTROL PANELS

USED TO LAUNCH THE SATURN V ROCKET FROM THE KENNEDY SPACE CENTER FIRING ROOM 1, LAUNCHING 7 APOLLO MISSIONS, INCLUDING THE THREE MOST HISTORIC: APOLLO 8 (FIRST HUMANS TO ORBIT THE MOON), APOLLO 11 (FIRST HUMANS TO LAND ON THE MOON), AND APOLLO 17 (LAST HUMANS TO LAND ON THE MOON)

A collection of 20 original Apollo Firing Room Control Panels from the Kennedy Space Center Firing Room 1, which launched the Saturn V rocket, carrying Apollo 4 (unmanned), and the crews of Apollo 8, 11, 13, 15, 16, and 17.

The majority of the consoles come from Area B, which housed the primary test, checkout, monitoring, and control functions for the Saturn V launch vehicle, with a few from Area A, which was the location for the consoles that provided information necessary for the supervision of

the test and launch process. Area B was divided into 5 rows, A-E, while area A was divided into 4 areas, A-D. The collection consists of:

Seven (7) Monitoring Console Panels, used to display information pertaining to countdown & launch sequence events; Two (2) panels from the Instrument Unit, which contained the guidance and monitoring equipment for the rocket while it was in flight; Five (5) console panels for the S-IC, the first stage of the Saturn V Rocket; Two (2) console panels for the S-II, the second stage of the Saturn V; Four (4) console panels for the S-IVB, the third stage of the Saturn V, all as follows:

MONITORING CONSOLE PANELS:

- 1. [Control Keyboard] Status Lights/Command Functions/Editing Panel. [Area/Row BD] (16 3 4 x 13 3 4 x 4 3 4 inches).
- 2. Countdown Clock 1 [For timing the S-IC first stage]. ETR FY inventory stickers, red label reading "Property of USA/PAN/AM/ASD. 08 (606)-68-C-004" [Area A]

- 3. Countdown Clock 2. [For timing the S-II second stage]. ETR FY inventory stickers, red label reading "Property of USA/PAN/AM/ASD. 08 (606)-68-C-004" [Area A] (coupled together with item 2 above, together measuring 14 ½ x 20 ¼ x 7 ¼ inches.)
- 4. Countdown Clock 3 [For timing the S-IVB third stage]. ETR FY inventory stickers, partial red label reading "Property [illegible, but: of USA/PAN/AM/ASD. 08 (606)-68-C-0040]" [Area A]
- 5. Range Time. [For timing overall launch time]. ETR FY inventory stickers, red label reading "Property of USA/PAN/AM/ASD. 08 (606)-68-C-0040" [Area A] (coupled together with item 3 above, together measuring 14 ½ x 20 ¼ x 7 ¼ inches.)
- 6. Test Supervisor Assembly. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. TEST SUPERVISOR ASSEMBLY. ASSY NO: AOM10136. CONTROL NO: NASW-410. SERIAL NO. 0004. ACCEPT DATE: 5-66.







105 (4&5)







105 (8)

MFD BY: E. CO., DAYTONA BEACH." NASA-KSC inventory sticker, modification labels. [Area/Row AB, Rack 8] (19 \times 10 $\frac{1}{2}$ \times 7 inches.)

7. Events Display. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. EVENTS DISPLAY PANEL. ASSY NO.: 40M09762-21. CONTR NO.: NAS-W-410. SERIAL NO.: 0041. MFD BY: SPACO FOR G.E." Contractor label: "McDonnell Douglas Astronautics Company"; NASA-KSC inventory sticker, testing, and inspection labels. [Area/Row BA, Rack 9] (19 x 17 ½ x 19 ½ inches.)

INSTRUMENT UNIT PANELS

8. Guidance Computer Panel. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. GUIDANCE COMPUTER. ASSY NO.: 50m36495-11. CONTR NO. NAS-W-410. SERIAL NO. 0002. MFD BY: CPC FOR GE." Testing, inspection, & modification labels. [Area/Row BC, Rack 11] (19 x 12 ½ x 19 ½ inches.)

9. I[nstrument]U[nit] Operations. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. IU OPERATIONS ASSEMBLY. ASSY NO. 40M10187-3. CONTR NO.: NASW-410. SERIAL NO.: 0005. ACCEPT DATE: 4-66." Red label reading: "1103A4A1", NASA-KSC inventory stickers, modification labels, inspection stamps. [Area B] (19 x 5 ½ x 6 ½ inches.)

S-IC CONSOLE PANELS

10. S-IC Hydraulics. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. S-IC HYDRAULIC ASSY. ASSY NO.: 40M07484-3. CONTR NO.: NAS-W-410. SERIAL NO.: 0003. MFD BY: HAYES FOR GE." Contractor label: "Boeing NASA 5608", NASA-KSC inventory sticker, modification and inspection labels. KSC Disposition sticker: "Area/Row BA, Rack 01, Disposition 5". (19 x 12 x 19½ inches.)

11. S-IC Ground Pneumatics. NASA console tag: "NASA GEORGE C. MARSHALL SPACE

FLIGHT CENTER US. SIC PNEUMATICS PANEL. ASSY NO.: 40M07409-5, SERIAL NO.: 0004. MOD NO. 40M59910. MEAS NO. 601-113."Modification and inspection labels, NASA-KSC inventory stickers. Contractor label: "Boeing NASA 5608." KSC Disposition sticker: "Area/Row BA, Rack 04, Disposition 5". (19 x 8 /2 x 191/2 inches.)

12. S-IC Engine Deflection. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. SIC ENGINE DEFLECTION PANEL. ASSY NO.: 40M04784-5. CONTR NO.: NAS-W-410. SERIAL NO.: 0005. MFD BY: EBSCO FOR G.E." Modification and testing labels, NASA-KSC and IBM inventory and surplus stickers. [Area/Row BD, Rack 11] (19 x 14 x 19½ inches).

13. S-IC Cutoff Sensors.NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. S-1C CUTOFF SENSORS. R/D 602-106A5. ASSY NO.: 40M10544-7. CONTR NO.: 02675-1. SERIAL NO. 0003." Modifications and location labels, NASA-KSC inventory label. [Area/Row BA, Rack 14] (19 x 12½ x 19½ inches).







105 (10)



105 (11)



105 (12)



105 (13)



105 (14)

14. S-IC Fuel System. NASA console tag "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. S-1C FUEL PANEL. ASSY NO.: 40M07646-9, CONTR NO.: NAS-W-410, SERIAL NO.: 0004. MFD BY: ASD/NSO HUNTSVILLE.' Modifications, testing, and inspection labels. Contractor label: "Boeing NASA 5608", NASA-KSC inventory and surplus labels. KSC Disposition sticker: "Area/Row BA, Rack 6, Disposition 5". (19 x $17^{1/2}$ x $19^{1/2}$ inches).

S-II CONSOLE PANELS

15. S-II Engine Deflection Assembly. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. S-II ENGINE DEFLECTION ASSEMBLY. ASSY NO .: 40M04781-5. CONTR NO.: NAS-W-410. SERIAL NO.: 0004. MFD BY: EPSCO FOR G.E." Modifications and testing labels, black label reading "OIS/C2FE", NASA-KSC and IBM inventory labels. KSC Disposition sticker: "Row BD, Rack 17, Disposition 5". (19 x 121/4 x 191/2 inches)

16. S-II Recirculation. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. S-II RECIRCULATION ASSEMBLY. ASSY NO.: 40M08616-5. CONTR NO.: NASW-410. SERIAL NO: 0004. MFD BY: G.E. CO. DAYTONA BEACH. ACCEPT DATE: 3-66." Modifications, testing and calibration labels, NASA-KSC inventory labels. KSC Disposition sticker: "Area/Row BA, Rack [illegible], Disposition [illegible]". (19 x $12\frac{1}{4}$ x $19\frac{1}{2}$ inches).

S-IVB CONSOLE PANELS

17. S-IVB APS Launch and Monitor. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. S-IVB LAUNCH AND MONITOR ASSY. ASSY NO. 40M10218-23. MOD NO. J. CONTR NO. NASW 410. SERIAL NO.: 002 MFD BY: G.E. CO DAYTONA BEACH. "Modifications, testing, and maintenance labels, NASA-KSC inventory labels. KSC Disposition sticker: "Area/Row BB, Rack 16, Disposition 5". (19 x 17½ x 19½ inches).

18. S-IVB GH/GN Control. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. S-IVB GH/GN CONTROL ASSEMBLY. ASSY NO.: 40M09298-11. CONTR NO.: NASW-410. SERIAL NO. 0005.MFD BY: G.E. COMPANY, DAYTONA BEACH. ACCEPT DATE: 5-66." Contractor label: "McDonnell Douglas Astronautics Company", NASA-KSC inventory sticker, modifications, maintenance, testing, and operational check labels. [Area/ Row BB, Rack 18] (19 x 17½ x 19½ inches).

19. S-IVB Engine Deflection. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. ENGINE DEFLECTION. ASSY NO. 40M05710-11. CONTR NO.: NASW-410. SERIAL NO.: 0004. MFD BY: EPSCO FOR G.E." Modifications, testing, and NASA-KSC and IBM inventory labels. KSC Disposition sticker: "Area/Row BD, Rack 15, Disposition 5". (19 x 12 x 19½ inches)

20. S-IVB Stage Pressure. NASA console tag: "NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER US. 602-406A7. ASSY NO.: 40M09113. CONTR NO.: 1B72394 BC. SERIAL NO.: 0002. MFD BY: GENERAL ELECTRIC. ACCEPT DATE:

76







105 (17)







105 (20)

105 (18)

10/16/3". Modifications and maintenance labels, NASA-KSC inventory labels. KSC Disposition sticker: "Area/Row BB, Rack 21, Disposition 5". Yellow Serviceable Materiel tag dated 1983. (19 x $17^{1}/_{2}$ x $19^{1}/_{2}$ inches).

THE CONTROL PANELS USED TO LAUNCH THE SATURN V ROCKET, CARRYING 7 APOLLO MISSIONS, INCLUDING APOLLO 8 (THE FIRST HUMANS TO ORBIT THE MOON), APOLLO 11 (THE FIRST HUMANS TO LAND ON THE MOON), APOLLO 13 (THE CREW THAT ALMOST DIDN'T RETURN), AND APOLLO 17 (THE LAST HUMANS TO LAND ON THE MOON).

The John F. Kennedy Space Center (KSC) is one of ten NASA field centers, and has been, since December 1969, NASA's primary launch center for human spaceflight. It is the location of Launch Complex 39, built for the awesome Saturn V rocket, the largest and most powerful operational launch vehicle ever built. Launch Complex 39 has been used to launch every single human spaceflight, including all 6 Apollo manned lunar landing missions, Skylab, ASTP, and the Space Shuttle program.

The Launch Control Center for Launch Complex 39 contains 4 Firing Rooms, with the first 3 having been built out during the Apollo program. Firing Room 1 was the first of the rooms to be equipped, and after the launch of the unmanned Apollo 4 (AS-501) in November 1967, it went on to control the launches of Apollo 8, 11, 13, 15, 16, and 17. Apollos 9, 12, and 14 were launched out of Firing Room 2, and Apollo 10 out of Firing Room 3. After the Apollo program, Firing Room 1 went on to control the first launch of the Space Shuttle, with Columbia's maiden flight on April 12, 1981. In 2006, it was re-named the "Young-Crippen Firing Room", in honor of the crew of STS-1.

The Saturn V hardware, including all stages of the rocket, and the control panels, were built at the George C. Marshall Space Flight Center (MSFC) in Huntsville, Alabama, under the supervision of the master architect of the American Space Program, Wernher von Braun. They were then then shipped down for Launch at Kennedy Space Center.

The first lunar landing was one of the greatest group efforts in the history of mankind, with NASA and its various contractors employing over 400,000 people. 440 of these employees manned the consoles of the firing room during each Apollo launch, with another 60 in the Operations and Checkout building at Kennedy Space Center. The prime contractors for the various stages manned the consoles for their stages, with Boeing covering the S-IC, Rockwell the S-II, and Douglas the S-IVB.

REFERENCES

See related lot 109, the first page from the FLOWN *Apollo 11 Flight Plan*, beginning with the word "LIFTOFF", which was accomplished using these control panels.

PROVENANCE

Ex Estate of NASA Electrical Design Engineer Charles Bell; surplussed and de-accessed by NASA

\$ 200,000-300,000



APOLLO 11 FLOWN COMMAND MODULE "COLUMBIA" BOOST COVER RELEASE PORT LABEL

FROM THE ACCESS HATCH OF APOLLO 11 COMMAND MODULE "COLUMBIA"

FLOWN Apollo 11 Boost Cover Release Port Label, recovered from the Crew Access Hatch of Command Module "Columbia" after recovery on July 24th, 1969, 123 x 106 mm, comprised of two layers, one of Kapton foil with gold side facing downwards, topped by second later bearing actual label. Burn-marks resulting from re-entry into Earth's atmosphere.

The Apollo 11 spacecraft was launched atop the Saturn V rocket on July 16th, 1969. It was made up of three parts: the Command Module, nicknamed the "Columbia," and the Service Module (both manufactured by North American Aviation, later North American Rockwell); and the Lunar Module, nicknamed "Eagle" (manufactured by Grumman Aircraft Company). The Lunar Module itself was a two stage spacecraft, with a descent stage, used to land on the lunar surface, and a descent stage,

used to re-ascend from the lunar surface and dock with the Command/Service Module.

The Command Module "Columbia" was the only part of the Apollo 11 spacecraft to return to Earth intact; the Service Module was jettisoned just prior to re-entry into the Earth's atmosphere, while the descent stage of the Lunar Module was left behind on the lunar surface, and the ascent stage of the Lunar Module was jettisoned in lunar orbit, left to crash back onto the lunar surface.

The whole world held its breath as "Columbia" re-entered the Earth's atmosphere, and splashed down in the North Pacific Ocean on July 24th, 1969. The Command Module "Columbia", along with its crew, Mission Commander Neil Armstrong, Lunar Module Pilot Edwin "Buzz" Aldrin, and Command Module Pilot Michael Collins, were safely recovered by the USS Hornet. The "Columbia" was then offloaded from the recovery ship, and then taken to the deactivation/decontamination phase, the "Columbia" was stripped of its protective Kapton foil and outer labels; after

deactivation and decontamination, Command Module "Columbia" was sent on a tour around the United States before being transferred to the Smithsonian in 1972.

The Boost Cover Release Port Label was salvaged by Charles "Chuck" E. McKim, one of the Operational Team Leaders on the recovery and deactivation/decontamination teams from North American Aviation/Rockwell International

The "Rescue Arrow", also salvaged from the Crew Hatch of "Columbia", sold at RR Auctions in 2017 for \$147,572.

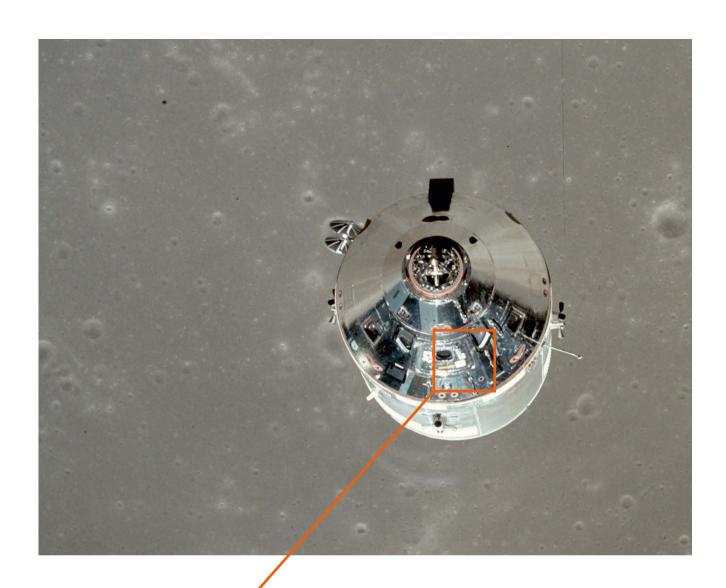
Images of the "Columbia" Crew Access Hatch can be seen on the Smithsonian website at: https://airandspace.si.edu/collection-objects/hatch-crew-apollo-11

PROVENANCE

Ex Charles "Chuck" E. McKim, Operational Team Leader on the recovery and deactivation/decontamination team at Rockwell International (formerly North American Aviation).

\$ 125,000-150,000

78



Above
The Apollo 11 Command/
Service Module
photographed from the
Lunar Module in lunar orbit.
Image credit: NASA



Right The Apollo 11 Comand Module Columbia aboard the recovery ship USS Hornet. Image credit: NASA





107

FLOWN TO & USED ON THE LUNAR SURFACE DURING APOLLO 11

6 items mounted together on a special presentation board, 19½ by 15¾ inches, SIGNED AND INSCRIBED to Terry Slezak by NEIL ARMSTRONG: "TO TERRY SLEZAK - / A 'DIRTY' PHOTOGRAPHER/ WITH BEST WISHES./ NEIL ARMSTRONG," SIGNED BY BUZZ ALDRIN, and SIGNED AND INSCRIBED by MICHAEL COLLINS "MANY THANKS - / MICHAEL COLLINS." As listed below:

1. USED ON THE LUNAR SURFACE. Metal "Mag. S" label (1 by 1½ inches), taken from the left side of the Apollo 11 Lunar Surface Hasselblad 70 mm Film Magazine "S", which was carried out onto the lunar surface in Tranquility Base during Neil Armstrong and Buzz Aldrin's EVA on Apollo 11, and then dropped onto the lunar surface by Neil Armstrong as he loaded equipment back onto the Lunar Module using the Lunar Equipment Conveyor (LEC).

The Apollo 11 lunar surface Hasselblad 70 mm Film Magazine "S" was transferred from NASA to the Smithsonian National Air and Space Museum in 1970, where it is still housed, and can be seen at the following link, clearly missing its leftside "Mag. S" label: https://airandspace. si.edu/collection-objects/film-magazine-hasselblad-70mm-apollo-11-lunar-surface-0. The "Mag. S" label can be seen in-situ, before

being removed by the Apollo 11 crew and gifted to Slezak, in item 4 below.

2. WRITTEN ON THE LUNAR SURFACE, Autograph manuscript signed "BUZZ" (5½ by 3½ inches), written in the Lunar Module following he and Armstrong's historic moonwalk, and then stowed along with the magazines in the "70mm Mag" outer decontamination bag, being a description of the contents of the three most important lunar surface film magazines, and stating as regards "Mag. S": "Except for 1st few frames in orbit this is the Most important Lunar Surface EVA film... Develop R then Q then S. Buzz." TO OUR KNOWLEDGE, THIS IS THE FIRST DOCUMENT TO HAVE BEEN ENTIRELY HANDWRITTEN AND SIGNED WHILE ON THE LUNAR SURFACE.

3. FLOWN piece of Skin from the Apollo 11 Command Module "Columbia" (1/2 by3/4 inch), mounted onto 5 by 3 inch card.

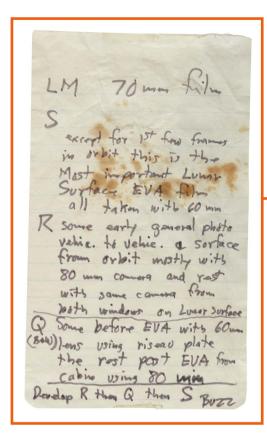
4, 5, & 6. Vintage photographs of: Buzz Aldrin walking on the moon (taken with Film "Mag S"; Slezak holding Hasselblad film "Mag. S" in one hand, showing his other hand stained with moondust (hence Armstrong's reference "To a Dirty Photographer"); Slezak in quarantine, Magazine "S" in hand, with flown autograph letter signed from Aldrin (item 2 above) visible inside of the film magazine outer decontamination bag, labeled "70 MM MAGS".

INCREDIBLE LUNAR SURFACE ARTIFACTS FROM APOLLO 11, INCLUDING THE FIRST

AUTOGRAPH MANUSCRIPT TO BE WRITTEN ON THE LUNAR SURFACE. A unique presentation gifted from the Apollo 11 Crew to Terry Slezak, the "Dirty Photographer" who later came to be known as "The first man to touch moondust with his bare hands". ITEMS FLOWN TO THE LUNAR SURFACE ARE EXCEPTIONALLY RARE, AND THOSE ITEMS ACTUALLY USED OUT ON THE LUNAR SURFACE EVEN MORE SO. WE KNOW OF NO OTHER DOCUMENTS TO HAVE BEEN ENTIRELY HANDWRITTEN AND SIGNED WHILE ON THE SURFACE OF THE MOON.

After their moonwalk, Neil Armstrong and Buzz Aldrin loaded up the gear that was to come back with them to Earth, including the lunar surface cameras and moon rocks. These items were placed onto a conveyor belt, known as the Lunar Equipment Conveyor (LEC). In the course of doing so, the Hasselblad pack containing Film Magazine "S" fell off the LEC and landed on the lunar surface, becoming covered in moon dust. Armstrong & Aldrin explained the circumstances of this in the Apollo 11 Technical Crew Debriefing:

"Armstrong: Concerning the LEC, I had neglected to lock one of the LEC hooks which normally wouldn't have caused any trouble. ...However, for an unknown reason when I got the SRC [Sample Return Container, i.e. Rock Boxes] about half way up, the Hasselblad pack just fell off... When it fell onto the surface, it was covered with surface material...





Above Terry Slezak in the Lunar Receiving Lab, showing moon dust on his hand from the Apollo 11 film Magazine S. Photo credit: NASA



Aldrin: Did the film magazine hit the pad or drop right to the surface?

Armstrong: I think it hit the surface clear of the pad, on the right side, which would be the spacecraft's left. I wasn't worried about the contingency sample because that was inside a bag [The Sample Return Bag, sold in these rooms in 2017 for \$1.8 million]. If anything was going to catch fire, it was going to be my whole suit because it was just covered in the stuff."

The recipient of this presentation, Terry Slezak, a Manned Spacecraft Center (MSC) photographic technician assigned to the Crew Reception Area (CRA) of the Lunar Receiving Lab (LRL), became, in the course of his duties, the first man to touch moon dust with his bare hands. One of Slezak's duties was to unload and clean the astronauts cameras. post flight, sterilize the flown film magazines. and make quick prints of the photographs so that the photos could be checked and explained by the astronauts while the images were still fresh in their minds. When doing so for the Apollo 11 magazines, he opened the outer decontamination bag, and found Buzz Aldrin's note describing the contents of the film magazines inside. When he then removed the plastic seal from "Mag. S," described by Buzz as "the Most Important Lunar Surface EVA Film." he found that moon dust had collected in the film cartridge, and came spilling out, covering his hands with moon dust. Slezak recounted the events in an interview done for

the NASA Johnson Space Center Oral History Project:

"...Finally I started unpacking the film, which was double-bagged in plastic containers. Inside of there were the Beta Cloth containers that the film magazines were in, like an ammunition belt. We inventoried these through the window of the biological barrier... And when I came to Magazine S, I opened the Beta Cloth belt, and in there was a note from Buzz Aldrin. He said "This is the magazine that Neil [A. Armstrong] had dropped on the surface, but this was the most important magazine." When I pulled it out it was all covered in this black material - looked like lampblack almost - it was really dark black with little bright speckly things, which turned out to be little bits of glass from the lunar surface. So everybody said 'What is that?' I said, 'It's Moon dust. That's the only place it's been.' So they had to shoot a picture of me with the Moon dust on my hand. Then, according to protocol, the other people in the room had to leave and I had to strip off my clothing and clean off all the work surfaces with Clorox bleach, then go to the showers.... So the next day, I found my picture on the front page of the newspaper. That's how I became the first man in the world to touch the Moon dust!"

To commemorate the event, the crew of Apollo 11 created this presentation as a gift for Slezak. It is very interesting to note that the FLOWN Apollo 11 Data File contained a "Photographic Timeline" (see lot 111) which gave very specific

directions on the intended use for each film magazine. It would seem that the reason for Aldrin's present manuscript note is that he and Armstrong seem to have deviated from the Photographic Timeline, as "Mag S", which we now know to contain the most important lunar surface EVA images, was originally intended to take pre-EVA Panoramic pictures through the LM, and that "Mag R" was slated for the Lunar EVA photos. One can only imagine how excited the pair were, so much so that they forgot to switch "Mag S" out for "Mag R" - luckily for all of us, there were still plenty of shots left.

REFERENCES

Apollo 11 Technical Crew Debriefing (U).
Houston, Texas: Manned Spacecraft Center,
July 31, 1969, p. 78; NASA Johnson Space
Center Oral History Project Oral History
Transcript. Terry Slezak. Interviewed by
Rebecca Wright. Boerne, Texas — July 29,
2009

See related lot 111 for the "Photographic Timeline" sheet from the FLOWN Apollo 11 Data File.

PROVENANCE

Superior, 2001, lot 821 (sold with piece of scotch tape covered in moon dust, collected by Slezak without authorization from NASA. Tape with moon dust no longer present).

\$ 50,000-70,000

"MISSION RULES"

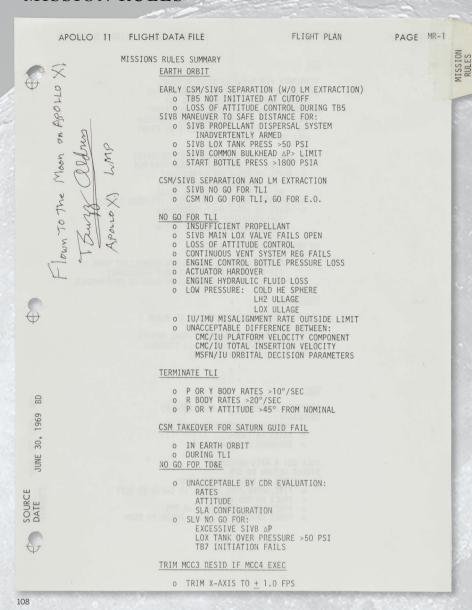


Photo of the Moon taken during Apollo 11. Image Credit: NASA

108

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

TWO FLOWN APOLLO 11 DATA FILE SHEETS

"MISSION RULES SUMMARY" — THE CRUCIAL, LIFE-SAVING RULES TO FOLLOW IN THE EVENT OF A LOSS IN SPACECRAFT FUNCTIONALITY

TWO FLOWN sheets from the Apollo 11 Flight Data File, Part. No. SKB32100080-201 S/N 1001, pp. MR-1/2 & MR-3/4, printed recto & verso. NASA/MSC, June 30, 1969. 10½ by 8 inches. EACH SHEET SIGNED AND INSCRIBED BY BUZZ ALDRIN: "FLOWN TO THE MOON ON APOLLO XI. BUZZ ALDRIN. APOLLO XI LMP."

With a Typed Letter Signed by BUZZ ALDRIN.

ONE OF THE MOST CRUCIAL DOCUMENTS ON THE SPACECRAFT — THE MISSION RULES TO BE FOLLOWED IN THE EVENT OF SPACECRAFT MALFUNCTIONS. The Mission Rules were developed to help expedite the crew's decision making process in the event of significant loss of spacecraft functions, providing them with alternate courses of action to follow. Keeping the crew safe was the number one priority, followed by the optimization of the chances of completing the mission objectives. This document would have been crucial in the event of disastrous loss of spacecraft capability, as it would have allowed the crew to decide upon the correct course of

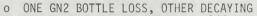
action, even under the extreme stress of an emergency situation. A reminder of the deep, strategic planning that went into every aspect of the missions.

BUZZ ALDRIN'S letter reads: "This certificate of authenticity certifies that the accompanying "Mission Rules Summary" pages, MR-1/2 & MR-3/4 from the Apollo 11 Flight Data File, Part #SKB32100080-201, S/N 1001, were flown to the Moon and used aboard the command module "Columbia."

On July 16th, 1969, Neil Armstrong, Mike Collins and I lifted off from Pad 39A at the John F. Kennedy Space Center on our journey to perform humankind's first landing on the Moon at the Sea of Tranquility. As part of the PAGE MR-2

LOI

TERMINATE FOR THE FOLLOWING REASONS: ON FREE RETURN TRAJECTORY (PERFORM THE 15 MIN ABORT IF IN MODE I OR II)
ON HYBRID TRAJECTORY MODE I, THE FIRST
HALF OF THE GAP, AND MODE III (PERFORM THE 15 MIN ABORT IF IN MODE I OR FIRST HALF OF THE GAP)



- o EITHER SPS PORPELLANT TANK < 160 PSI
- o REFER TO SPS-1 MALF PROCEDURE FUEL/OXIDIZER AP >20 PSI
- PC <80 PSI OR A 10 PSI DECAY
 O ANY BALL VALVE FAILS CLOSED (IN MODE I ONLY)
- o REFER TO SPS-1 MALF PROCEDURE: FUEL/OXIDIZER AP >20 PSI PC <80 PSI OR A 10 PSI DECAY

ON HYBRID TRAJECTORY MODE II

- O PRESSURE DECAY IN EITHER SPS PROPELLANT TANK TO 115 PSI (REFER TO SPS-1 MALF PROCEDURE)
- o PHYSIOLOGICAL INDICATIONS OF ERRATIC PERFORMANCE

UNDOCKING

LLS MISS DISTANCE: <0.5° OUT OF PLANE +2° AZIMUTH (MAY BE CORRECTED BY ADDITIONAL MNVRS) FIVE SATISFACTORY MARKS ON LLS LANDMARK (ONE REV SLIP IN UNDOCKING)

DOI

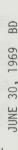
IGNITION AUTOMATIC (NO CREW BACKUP) TERMINATE:

- o ATTITUDE DEVIATIONS >5°
- o RATES >5°/SEC
- o OVERBURN 2 SEC OR 2 FPS

NULL DOI X AXIS RESIDUALS DIRECT RETURN TO CSM

- o LOSS OF BOTH COOLANT LOOPS
 - o FIRE, SMOKE, FREE GYLCOL IN CABIN OR SUIT
 - o PGNCS OR AGS FAILS
 - o PGNCS/AGS Δ RESIDUALS >2 FPS
- o PGNCS RESIDUALS >2 FPS, PRIOR TO TRIM









PDI

IGNITION:

- O ULLAGE AUTOMATIC (NO CREW BACKUP)
- O DPS IGNITION AUTOMATIC (MANUAL DACKUP TIG <7.5 SEC)

ABORT BEFORE LO GATE:

NO LR DATA BY H <10,000 FEET:

- o LR FAILS BEFORE CONVERGENCE
- O LR DATA ACCEPTED AND CONVERGED CONTINUOUS TO P64 (CONTINUE MISSION IF LOCK LOSS IN P64)
- O LR DATA ACCEPTED AND CONVERGED W/SUBSEQUENT DROPOUT-CONTINUE TO P64.

LANDING RADAR REGAINED IN P-64:

DELTA H < 1000 FEET BETWEEN PGNS & LR-CONTINUE MISSION

DELTA H >1000 FEET BETWEEN PGNS & LR-**ABORT**

LANDING RADAR NOT REGAINED AT P64-ABORT O LATE LR LOCKON WITH DATA BEING INCORPORATED

AND CONVERGING-CONTINE TO P-64 DELTA H < 1000 FEET BETWEEN PGNS & LR-CONTINUE MISSION

DELTA H >1000 BETWEEN PGNS & LR - ABORT

FAILURE TO ENTER P64 WHEN TG=60 SECONDS

PGNS FAILURE LIMIT PRIOR TO LR DATA GOOD AGS/PGNCS AV

PGNCS/MSFN AV (SWITCH TO AGS)

- INITIAL % COMMAND THRUST NOT 150-170%
- NO LANDING SITE VISIBILITY BY P64 +60 SEC.
- NO THROTTLE RECOVERY BY P63/P64 PROGRAM SWITCH +60 SEC.
- VIOLATION OF THE TIME BIASED (20 SEC) DPS ABORT BOUNDARY
- FAILURE TO ACHIEVE FPT BY NOMINAL TIG +26 SEC

LO GATE TO TD

O NO GUIDANCE CONSIDERATIONS CAUSE ABORT AFTER CREW TAKEOVER

ASCENT

PGNCS TO AGS SWITCHOVER:

- O CREW RECOGNIZED PGNCS FAILURE
- o PGNCS NAVIGATION ERRORS CAUSE: AGS INSERTION HP <40,000 FEET

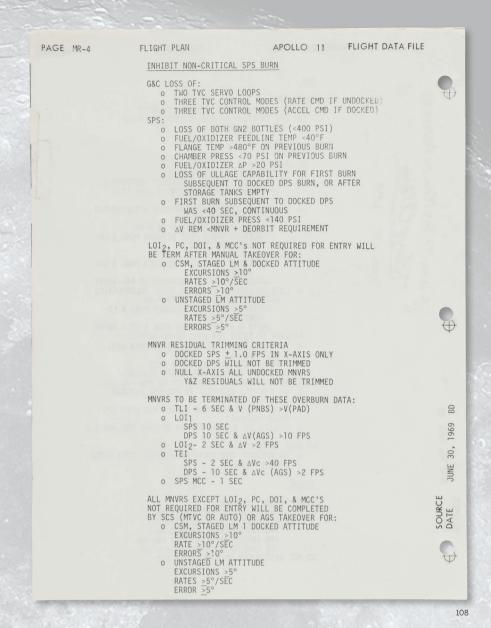
AGS INSERTION HA >TARGET +40 NM AGS INSERTION WEDGE ANGLE >1.0°

NO MCC SWITCHOVER AFTER TGO <30 SEC

80 30, 1969

SOURCE





Flight Data File that we carried on the flight, the "Mission Rules Summary" was essential to our decision-making capability in the event of an anomaly in flight.

Briefly, Mission Rules were our procedural definitions which provided us with guidelines to control whether we could continue with our flight, switch to a preplanned alternative mission or return to Earth. The accompanying two leaves were a summary of the critical rules that would determine our next course of action in the event of a failure of equipment at a certain point during the mission.

These four pages summarized the significant segment of flight during our journey to a lunar landing. Each event title is underlined with the reasons behind each decision to terminate the primary mission and either switch to an alternate mission or end the flight, starting with issues that occurred within "EARTH ORBIT."

These pages were our "failsafe" that allowed both Mission Control and the crew to work as a team. Mission Control received spacecraft telemetry and had the expertise and experience to analyze any unusual occurrence aboard the spacecraft. We, as the crew, in the spacecraft and were in a firsthand position to observe the phenomenon. Using the "Mission Rules" allowed us to work together to complete our mission objective of being the first humans to land on the Moon.

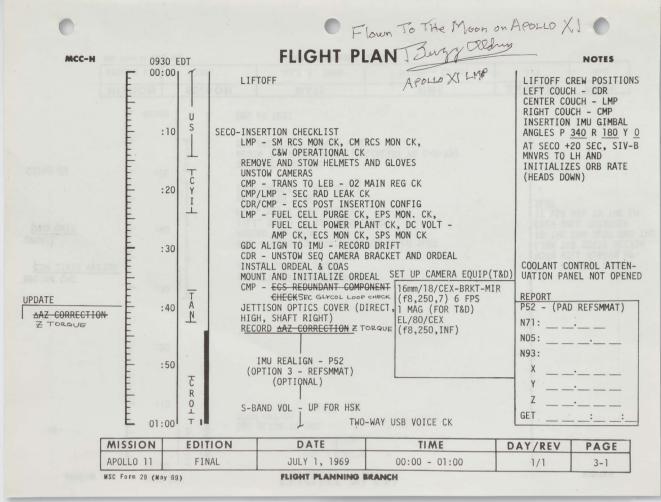
In 2012, Congress allowed Apollo Era astronauts to keep disposable items like the Apollo 11 Flight Data File from their mission as personal mementos. This historic page has remained a treasured part of my private space collection for 50 years, ever since NASA presented it to me after my return from the Moon in 1969.

These Mission Rules Summary pages numbered MR-1/MR-2 and MR-3/4 are some of the few objects used in lunar orbit and is also a rare example of an astronaut flight certified object used on the first landing on the Moon."

REFERENCES

NASA. Apollo 11 Stowage List. Mission AS 506 CM 107/LM-5. Houston: Manned Spacecraft Center, July 15, 1969, page 82

\$ 30.000-50.000



109

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ AI DRIN

FLOWN APOLLO 11 FLIGHT PLAN SHEET

"LIFTOFF" — THE BEGINNING OF THE FIRST MISSION TO LAND ON THE MOON

FLOWN sheet from the Apollo 11 Flight Plan,
Part No. SKB32100080-350, S/N 1001, pp.
3-1/2, printed recto & verso. NASA/MSC,
July 1, 1969. 10½ by 8 inches. SIGNED AND
INSCRIBED BY BUZZ ALDRIN: "FLOWN TO THE
MOON ON APOLLO XI. BUZZ ALDRIN. APOLLO
XI LMP." With a Typed Letter Signed by BUZZ
ALDRIN.

"LIFTOFF" —THE FIRST PAGE OF THE FLOWN APOLLO 11 FLIGHT PLAN. This sheet and the following lot (110 - the final page from the Flown Apollo 11 Flight Plan, which ends with the word "SPLASHDOWN") are the Alpha and the Omega of the FLOWN Apollo 11 Flight Plan. The present sheet details the crucial timeline of

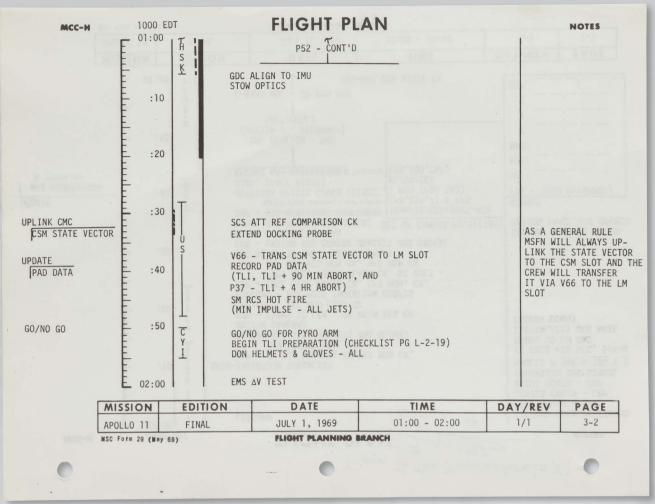
activities to be performed by the crew during the first two hours from moment 0:00, after Mission Control's "Good luck, and Godspeed", when Mission Commander Neil Armstrong, Lunar Module Pilot Buzz Aldrin, and Command Module Pilot Michael Collins were launched into space by the awesome Saturn V Rocket, and hurtled on their way to accomplish mankind's greatest achievement.

BUZZ ALDRIN'S letter reads in part: "This certificate of authenticity certifies that the accompanying Page 3-1/2 from the Apollo 11 Flight Plan, Part No. SKB32100080-350, S/N 101 was flown to the Moon and used aboard the Command Module "Columbia."

On July 16th, 1969, Neil Armstrong, Mike Collins and I lifted off from Pad 39A at the John F. Kennedy Space Center on our journey to perform humankind's first landing on the Moon at the Sea of Tranquility. During our lunar voyage, we were guided by our flight plan, which contained a timeline with instructions as to our tasks during each phase of the mission.

Page 3-1/2 of the Apollo 11 Flight Plan starts with our liftoff to the Moon at 09:32 am EDT. This first page of the Flight Plan represents the launch of the 1st planned crewed landing on the Moon. The page starts the entire flight plan with the word, "LIFTOFF" at 0:00 Ground Elapsed Time (GET). This page represents the beginning of our mission to land on the Moon.

At 00:10 GET (or 10 minutes) into the mission, the page shows the term "SECO" which stands for Second Engine Cut Off. "SECO" means that the final rocket engine boosting us into Space has shut down, and we were on orbit around the Earth (Our SECO was at 11:42 minutes into the flight). Once on orbit, the page shows our first tasks of the trip. As I was in the center couch, my job was to check the command and service modules' (CM/SM) Reaction Control System (RCS) gauges as well as the Caution & Warning Light panel (C&W) to confirm that each system was operational. Mike (Collins) was to move to the Lower Equipment Bay (LEB) to check our Oxygen flow, do a check of our radiator leak check, and to prepare to align our navigation



system (IMU). While Mike and I unstowed our Hasselblad 70mm Cameras for use in Earth orbit, Neil (Armstrong) was setting up the 16mm Data Acquisition Camera (DAC or SEQ CAMERA) as well as the ORDEAL (Orbital Rate Display Earth and Lunar) unit. All these chores took place in the first 30 minutes of our time in Earth Orbit.

Approximately 40 minutes after initial liftoff, Mike was to perform a "P52." P52 was a significant realignment of the Inertial Measurement Unit (IMU). By looking at specific stars, we were able to make any corrections to our guidance system that may have occurred due to the vibration and G-forces generated during our ride on the Saturn V into orbit.

On the reverse of the page, page 3-2, shows tasks that we needed to complete to prepare for Trans Lunar Insertion (TLI) and the beginning of our journey out to the Moon.

Our navigation tasks complete, we had to prepare to TLI and Transposition, Docking, and Extraction (TD&E) of the lunar module. Mike finished the P52 and established a State Vector (Spacecraft attitude and direction in Space). We also transferred the State Vector information from the CM "Columbia" to our LM "Eagle" The "Notes" section on the page states that the ground will send us their state vector computation used in the CM and that information transmitted to the LM via a computer command.

We hot fired the RCS to make sure that the maneuvering rockets on the CM functioned properly, put back on our helmets and gloves, tested the Entry Monitoring System (EMS) which would tell us any change in velocity of our spacecraft stack during TLI and TD&E as we

flew on our rendezvous with the Moon. As can be seen, we accomplished a lot during our first two hours in Space.

In 2012, Congress allowed Apollo Era astronauts to keep disposable items like the Apollo 11 Flight Plan from their mission as personal mementos. This historic page has remained a treasured part of my private space collection for 50 years, ever since NASA presented it to me after my return from the Moon in 1969.

This Flight Plan page numbered 3-1/2 is one of the few objects used in lunar orbit and is also a rare example of an astronaut flight certified object used on the first landing on the Moon."

REFERENCES

NASA. Apollo 11 Stowage List. Mission AS 506 CM 107/LM-5. Houston: Manned Spacecraft Center, July 15, 1969, page 2. See related lot 105, a collection of 20 of the Control Panels used to launch Apollo 11, from the Kennedy Space Center Firing Room 1

\$ 30,000-50,000

Liftoff of Apollo 11. Image credit: NASA

"SPLASHDOWN"

Splashdown of the Command Module Columbia in the Pacific Ocean concluding a successful Apollo 11 mission. Image credit: NASA

110

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

FLOWN APOLLO 11 FLIGHT PLAN SHEET

"SPLASHDOWN" — THE CREW OF APOLLO 11 MAKES IT HOME ALIVE, FULFILLING THE GOAL SET BY PRESIDENT JOHN F. KENNEDY OF "LANDING A MAN ON THE MOON AND RETURNING HIM SAFELY TO EARTH."

FLOWN sheet from the Apollo 11 Flight Plan,
Part No. SKB32100080-350, S/N 1001, p.
3-134/135, printed recto & verso. NASA/MSC,
July 1, 1969. 10½ by 8 inches. SIGNED AND
INSCRIBED BY BUZZ ALDRIN: "FLOWN TO THE
MOON ON APOLLO XI. BUZZ ALDRIN. APOLLO
XI LMP". With a Typed Letter Signed by BUZZ
ALDRIN

"SPLASHDOWN" - THE LAST PAGE OF THE FLOWN APOLLO 11 FLIGHT PLAN. This sheet and the preceding lot (109, the first page from the Flown Apollo 11 Flight Plan, which begins with the word "LIFTOFF") are the Alpha and the Omega of the FLOWN Apollo 11 Flight Plan, the manual used by the Apollo 11 Crew to guide them on mankind's greatest journey. This sheet details the crucial timeline of activities to be performed during the final two hours of the mission including iettisoning the Service Module, and re-entry into Earth's atmosphere, travelling at a speed of 36,000 feet per second, before finally splashing down in the Pacific Ocean, where the crew and the Command Module "Columbia" were recovered by the USS

BUZZ ALDRIN'S letter reads in part: "This certificate of authenticity certifies that the accompanying Page 3-134/135 from the Apollo 11 Flight Plan, Part No. SKB32100080-350, S/N 101 was flown to the Moon and used aboard the Command Module "Columbia."

On July 24, 1969, the crew of Apollo 11 was on the verge of returning to Earth after its first humans walked upon the surface of the Moon at "Tranquility Base." Thus, completing the late President John F. Kennedy's challenge to America to "...commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to the Earth."

During our lunar voyage, we were guided by our flight plan, which contained a timeline with instructions as to our tasks during each phase of the mission. Page 3-134/135 is the last page of the Apollo 11 mission timeline. This page represents the timing of our final tasks of the flight ending with our safe splashdown in the Pacific Ocean at 12:49 pm EDT.

The two pages numbered 3-134 and 3-135 shown on the leaf represent the last hour and forty-nine minutes of our mission. By this point, we were traveling 17,322 feet per second, and we were 11,463 miles from Earth. We had several tasks to perform in that last hour to land safely.

One of the first chores to perform was for Mike to start the primary and secondary evaporators. The evaporators would be needed after the service module (SM) had been jettisoned to continue to cool the command module. They boiled water warmed by the spacecraft's interior heat and vent it out into space. We warmed up the Reaction Control Systems (RCS), we checked the amperage on the pyrotechnic battery that would fire the explosive bolts to separate the SM from our command module (CM) and wrote down the Pre-Advisory Data (PAD) for our entry.

We uploaded are revised spacecraft attitude from mission control to the CM guidance computer. This data would point us in the proper direction so we would enter the Earth's atmosphere at the correct angle. The Entry Monitor System (EMS) was loaded with data for the PAD and started.

Our re-entry to Earth had now begun. The Apollo Guidance Computer started our re-entry procedure with P61, the entry preparation which measured our CM's acceleration (we would hit the atmosphere at 36,000 feet per second) as well as review all data that had been loaded in the last PAD update. Next would come P62, which performed the CM and SM separation maneuver. At that point, Mike, who was now lying in the left couch, maneuvered the CM into the re-entry attitude.

Now flying at our highest rate of speed at a little over 36,000 per second (the same speed at which we escaped Earth's gravitational pull on the way to the Moon). As our CM started to intersect with the high reaches of the upper atmosphere and we started to build up G-forces, our computer switched to the entry programs. We were now dropping back into Earth's atmosphere on our way to splashdown, which was still over a thousand miles away. We have turned to the last page in the flight plan, page 3-135, and we followed the tasks as we flew "Columbia" to our landing point.

Page 3-135 lists all the steps and times that we would go through until the end of the flight.

At 400,000 feet in altitude, we would start to feel the effects of deacceleration in the force of "G's." Within 90 seconds we would hit our maximum g-forces on our bodies during the descent. The P64 program handled the spacecraft's re-entry as it continued its flight through the atmosphere in a flight path that would carry us over a thousand miles from where we entered the atmosphere to the landing area.

Once we had slowed down to suborbital velocity, our computer switched to the final program of the flight, P67. We regained our communications link with Houston after the ionizing blackout. Finally, the drogue chutes deployed. At 10,000 feet above the ocean, our three main parachutes deployed, and we started our final descent to the vicinity of the recovery forces. At 12:49 pm EDT, we impacted the surface of the Pacific Ocean.

The final line on the page gives the planned Earth entry angle of 6.5 degrees, the Lift over Drag ratio (L/D) of the spacecraft of .295 (the L/D ratio for a Boeing 747 is 15). We passed through the Entry Interface traveling at 36,195 feet per second, and our predicted distance to our splashdown point was 1,285 miles. In reality, due to stormy weather at our original landing point, we had to fly just over 1,400 miles from our atmospheric entry point to splashdown. That was the furthest distance that any Apollo CM ever flew, and we landed less than two miles from our predicted landing point.

In 2012, Congress allowed Apollo Era astronauts to keep disposable items like the Apollo 11 Flight Plan from their mission as personal mementos. This historic page has remained a treasured part of my private space collection for 50 years, ever since NASA presented it to me after my return from the Moon in 1969.

This Flight Plan page numbered 3-134/135 is one of the few objects used in lunar orbit and is also a rare example of an astronaut flight certified object used on the first landing on the Moon."

REFERENCES

NASA. *Apollo 11 Stowage List. Mission AS 506 CM 107/LM-5*. Houston: Manned Spacecraft Center, July 15, 1969, page 2.

See related lot 106, the FLOWN Apollo 11 Boost Cover Release label, salvaged from the Command Module "Columbia" after splashdown.

\$ 25,000-35,000

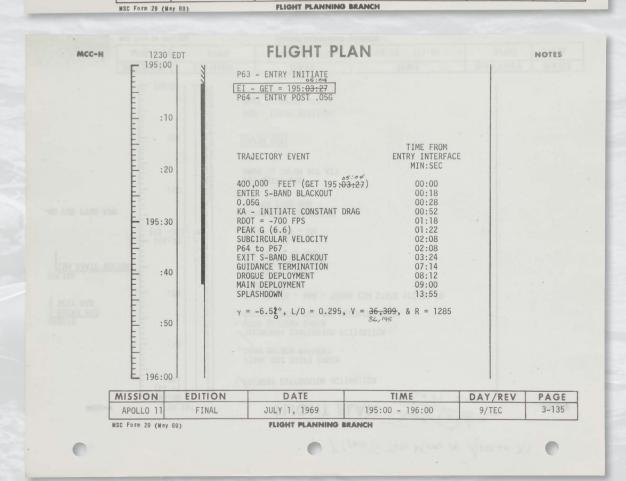
Trounto THE MOON ON APOLLO XI FLIGHT PLAN BUSY Oldus APOLLO X) LIMP NOTES MCC-H 1130 EDT 194:00 (EI -1 HR) PRIMARY EVAPORATOR ACTIVATION FINAL GDC DRIFT CHECK TERM CM RCS PRFHEAT :10 SECONDARY EVAPORATOR ACTIVATION
PYRO BATTERY CHECK
RECORD ENTRY PAD AND RECOVERY DATA UPDATE FENTRY PAD RCVY PAD P27 UPDATE - V66 - TRANS CSM STATE VECTOR TO :20 LM SLOT SET DET TO RRT EMS INITIALIZATION RSI ALIGN TO GDC UPLINK CSM STATE VECTOR CM RCS CK - 194:30 (EI -30) ENTRY BATTS - ON SEPARATION CHECKLIST GO FOR PYRO ARM GO FOR PYRO ARM :40 P61 ENTRY PREP MNVR TO CM/SM SEP ATT CM/SM SEP :50 P62 - ENTRY ATTITUDE MNVR TO ENTRY ATT L 195:00 EDITION DATE TIME DAY/REV PAGE MISSION

JULY 1, 1969

194:00 - 195:00

APOLLO 11

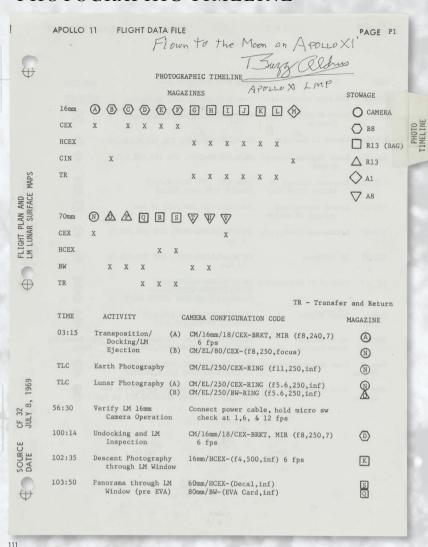
FINAL



9/TEC

3-134

"PHOTOGRAPHIC TIMELINE"



Buzz Aldrin's boot print on the lunar surface, taken with the 70 mm lunar surface camera during Apollo 11. Image credit: NASA

111

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

FLOWN APOLLO 11 DATA FILE SHEET

"PHOTOGRAPHIC TIMELINE" — DETAILS ON THE FILM MAGAZINES USED TO DOCUMENT MANKIND'S FIRST LUNAR LANDING

FLOWN sheet from the Apollo 11 Flight Data File, Part No. SKB32100080-201 S/N 1001, pp. P1/2, printed recto & verso. NASA/MSC, July 8, 1969. 10½ by 8 inches. SIGNED AND INSCRIBED BY BUZZ ALDRIN: "FLOWN TO THE MOON ON APOLLO XI. BUZZ ALDRIN. APOLLO XI LMP." With a Typed Letter Signed by BUZZ ALDRIN.

THE PHOTOGRAPHIC TIMELINE FOR MANKIND'S FIRST LUNAR LANDING. This sheet contains the detailed instructions on camera configurations and film magazines

to be used to photographically document the Apollo 11 Mission, from Earth and Lunar photography, to lunar descent, panoramic shots from the LM window, EVA Crew activities, lunar mapping photography, rendezvous, and more.

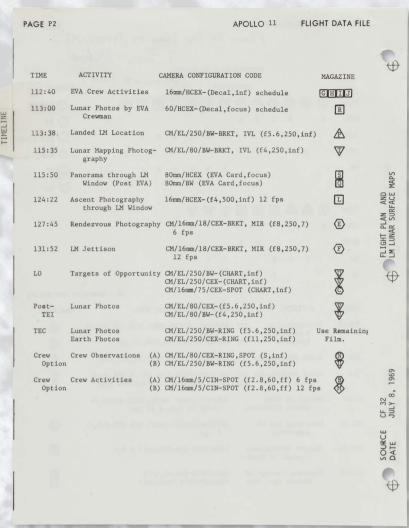
BUZZ ALDRIN'S letter reads: "This certificate of authenticity certifies that the accompanying Page P1/P2 from the Apollo 11 Flight Data File, Part No. SKB32100080-201 S/N 1001 was flown to the Moon and used aboard the Command Module "Columbia."

On July 16th, 1969, Neil Armstrong, Mike Collins and I lifted off from Pad 39A at the John F. Kennedy Space Center on our journey to perform humankind's first landing on the Moon at the Sea of Tranquility. During our lunar voyage, we took many photographs of as a visual record of each phase of our mission as this was a photographic record of our first steps upon the Moon.

It was essential to visually document such events as the lunar landing, landmarks on the Earth and the Moon, and our lunar spacewalk. As with all the space flights, we had instructions in our Flight Data File (FDF) of what activities we were to photograph, which cameras to use, and which film magazines had to use during those sessions.

Page P1/P2 of the Photographic Timeline for the FDF was our guide to where, when, and how to take photographs on Apollo 11. This simple two pages on a single leaf provided the information in diagram and timeline form that we needed to perform our photographic tasks.

The diagram on page P1 of the Photographic Timeline represents each film magazine that we carried on the Moon, where each magazine was stored, the type of film that was in each magazine, and where each magazine was stowed within our command module (CM). We carried modified Hasselblad 70mm 500EL



SLR cameras as well as Mauer 16mm Data Acquisition Cameras (DAC) in both the CM and lunar module (LM). The diagram has separate lines for the 16mm DAC on the top and the Hasselblad 70mm cameras on the bottom. Each magazine for both camera types is lettered in alphabetic order starting with "A" through "M" for the 16mm DAC magazines and "N" through "V" for the 70mm SLR cameras. The symbols that surround each letter are to allow us to locate each magazine in a stowage locker. The symbology key is located on the side of the diagram. The film type is located on the left side of the chart, CEX, HCEX, and CIN for the 16mm DAC and CEX, HCEX and BW for the 70mm SLR. CEX and HCEX are color films, and BW is for Black and White film. Finally, the TR is not a film type but told us which magazines would be transferred between the CM and the LM after our EVAs on the lunar surface were complete.

The timeline on the bottom half of P1 and the entire page of P2 were the instructions for time of photographs, the activity that we were to

photograph (or film), the camera type as well as the lens and film type, the camera settings, and the magazine to be used. As an example, the first activity was the first docking between the CM and LM. The configuration states that the 16mm DAC and 70mm SLR camera was to be used in the CM with an 18mm lens on the DAC and an 80mm on the SLR. Color film for both cameras, the lens and shutter settings for each camera. The last column told us which film magazine to use and where to find it. The Timeline page was easy to follow, but so important because, in the end, our mission is remembered due to the photographs taken during our flight.

In 2012, Congress allowed Apollo Era astronauts to keep disposable items like the Apollo 11 Flight Data File from their mission as personal mementos. This historic page has remained a treasured part of my private space collection for 50 years, ever since NASA presented it to me after my return from the Moon in 1969.

This Flight Data File page numbered P1/P2 is one of the few objects used in lunar orbit and is also a rare example of an astronaut flight certified object used on the first landing on the Moon."

REFERENCES

NASA. *Apollo 11 Stowage List. Mission AS 506 CM 107/LM-5*. Houston: Manned Spacecraft Center, July 15, 1969, page 82

See related lot 107, the label from the LUNAR SURFACE FLOWN Film Magazine "S" referenced on this sheet, as well as a the LUNAR SURFACE document written by Buzz Aldrin while in the LM, with instructions on the development of the film in Magazines S, R, and Q, as they had deviated from the instructions listed on the present sheet.

\$ 15,000-20,000





113

11

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

FLOWN TO THE MOON ON APOLLO 11 BUZZ ALDRIN'S UNITED STATES FLAG CARRIED ON APOLLO 11

FLOWN silk stars and stripes United States flag. 4 by 6 inches. SIGNED AND INSCRIBED BY BUZZ ALDRIN directly on flag on two white bars: "FLOWN TO THE MOON ON APOLLO XI. BUZZ ALDRIN." With a Typed Letter Signed from BUZZ ALDRIN.

Buzz Aldrin's letter reads: "This certificate of authenticity certifies that the accompanying Apollo 11 United States Flag was flown to the Moon aboard the command module "Columbia."

In July of 1969, I landed on the Moon as part of the Apollo 11 crew. To help commemorate this historic milestone, I chose to personally carry the accompanying 4x6 inch American Flag with me in my Personal Preference Kit (PPK). This flag symbolizes our great nation and, as such, I proudly carried it with me to the Moon."

\$ 15.000-20.000

113

DIRECTLY FROM THE PERSONAL COLLECTION
OF APOLLO 11 LUNAR MODULE PILOT BUZZ
ALDRIN

FLOWN TO THE MOON ON APOLLO 11 BUZZ ALDRIN'S FLOWN APOLLO 11 BETA CLOTH MISSION EMBLEM - SIGNED BY HIM

FLOWN Apollo 11 crew emblem printed on $4^{1/2}$ by $4^{1/4}$ inch swatch of white Beta-cloth depicting an eagle flying over the surface of the moon, claws gripping an olive branch. Emblems of this type were worn on all of the Apollo 11 astronauts' space suits. With a Typed Letter Signed by BUZZ ALDRIN.

SIGNED AND INSCRIBED BY BUZZ ALDRIN: "FLOWN TO THE MOON ON APOLLO XI. BUZZ ALDRIN."

Buzz Aldrin's letter reads: "This certificate of authenticity certifies that the accompanying Apollo 11 Mission Emblem Beta Cloth Patch was flown to the Moon aboard the command module "Columbia."

In July of 1969, I landed on the Moon as part of the Apollo 11 crew. To help commemorate this historic milestone, I chose to personally carry the accompanying Apollo 11 Beta Cloth Mission Patch with me in my Personal Preference Kit (PPK). This Beta Cloth represents our mission emblem as well as the fireproof cloth that we used as part of our equipment. As such, I proudly carried this patch with me to the Moon.

This Apollo 11 Mission Emblem Beta Cloth Patch has remained a treasured part of my personal space collection since 1969."

\$ 7,000-10,000





114

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ AI DRIN

FLOWN TO THE MOON ON APOLLO 11

BUZZ ALDRIN'S APOLLO 11 FLOWN CREW-SIGNED DOW-UNICOVER "APOLLO XI FIRST STEP" COVER, NUMBER EEA-31

FLOWN color-cacheted Dow-Unicover "Apollo XI the First Step" cover, 6½ by 3½ inches, with 6 cent United States Flag stamp, cancellation stamp dated August 11, 1969 at Webster, Texas. Below cancellation is stamped: "Delayed in Quarantine at Lunar Receiving Laboratory. M.S.C. - Houston, Texas". Written at upper left, in Aldrin's hand: "EEA-31/ CARRIED TO THE MOON ON APOLLO 11." SIGNED BY: NEIL ARMSTRONG, BUZZ ALDRIN, and MICHAEL COLLINS. Additionally SIGNED AND INSCRIBED on flap: "FROM MY PERSONAL COLLECTION. BUZZ ALDRIN. APOLLO XI LMP".

With a Typed Letter Signed from BUZZ ALDRIN.

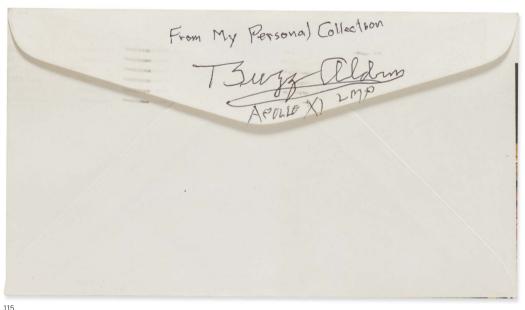
FLOWN TO THE MOON ON APOLLO 11 AND SIGNED BY THE FULL CREW, NUMBER EEA-31 FROM ALDRIN'S PERSONAL COLLECTION. The crew of Apollo 11 splashed down in the Pacific Ocean on July 24th, 1969. After they were recovered by the USS Hornet, the crew, along with their equipment were placed in quarantine. There were only a total of 214 covers flown on the Apollo 11 mission, which were all sent to be cancelled at the nearest post office once they were released from quarantine. Of these flown covers, three different cachet designs are known; Type-1, the present "Spacecraft Center Stamp Club" design, showing astronauts on the lunar surface with the EASEP (see lot 115); Type-2, the Dow-Unicover" the present Apollo XI First Step" design; and Type-3, the Apollo 11 Mission Emblem type (see lot 116).

Buzz Aldrin's letter reads in part: "This Dow-Unicover cachet commemorative postal cover was carried to the Moon during July 16-24, 1969 on the Apollo 11 mission. The lunar module Eagle made the first manned lunar landing on July 20, 1969.

The cover has been in my private collection since 1969 and was signed by the Apollo 11 crew, Neil Armstrong, Michael Collins and myself. I have written on the cover that is was "Carried to the Moon on Apollo 11" and added my initials "EEA" with the number 31, which is a serial number for this group of covers from my personal collection. As noted on the reverse of the cover, it is from my personal collection."

\$ 20,000-30,000





115

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

FLOWN TO THE MOON ON APOLLO 11

BUZZ ALDRIN'S APOLLO 11 FLOWN CREW-SIGNED COMMEMORATIVE COVER, NUMBER EEA-1

FLOWN Color-cacheted "NASA Manned Spacecraft Center Stamp Club Official Commemorative Cover of the First Manned Lunar Surface Exploration", 6½ by 3½ inches, with 6 cent United States Flag stamp, cancellation stamp dated August 11, 1969 at Webster Texas. Below cancellation, is stamped: "Delayed in Quarantine at Lunar

Receiving Laboratory. M.S.C. - Houston, Texas." Written at upper left, in Aldrin's hand: "EEA-1/ CARRIED TO THE MOON ON APOLLO 11." SIGNED BY: NEIL ARMSTRONG, BUZZ ALDRIN, and MICHAEL COLLINS. Additionally signed and inscribed on flap: "FROM MY PERSONAL COLLECTION. BUZZ ALDRIN. APOLLO XI LMP." With a Typed Letter Signed from BUZZ ALDRIN.

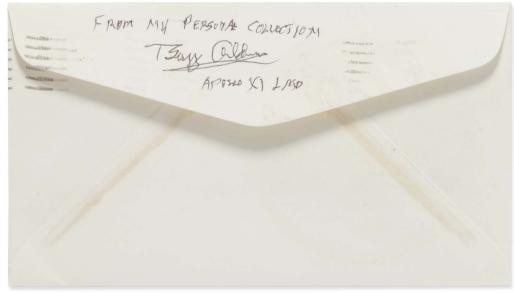
FLOWN TO THE MOON ON APOLLO 11 AND SIGNED BY THE FULL CREW, NUMBER EEA-1 FROM ALDRIN'S PERSONAL COLLECTION.

Buzz Aldrin's letter reads in part: "This NASA Manned Spacecraft Center Stamp Club commemorative postal cover was carried to the Moon during July 16-24, 1969 on the Apollo 11 mission. The lunar module Eagle made the first manned lunar landing on July 20, 1969.

The cover has been in my private collection since 1969 and was signed by the Apollo 11 crew, Neil Armstrong, Michael Collins and myself. I have written on the cover that is was "Carried to the Moon on Apollo 11" and added my initials "EEA" with the number 1, which is the first cover of the series from my personal serial number system for this group of covers. As noted on the reverse of the cover, it is from my personal collection."

\$ 15,000-20,000





116

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

FLOWN TO THE MOON ON APOLLO 11

BUZZ ALDRIN'S APOLLO 11 FLOWN CREW-SIGNED APOLLO 11 EMBLEM COVER

FLOWN color-cacheted Apollo 11 Mission Emblem cover, 6½ by 3¾ inches, with 6 cent United States Flag stamp, cancellation stamp dated August 11, 1969 at Webster, Texas. Below cancellation is stamped: "Delayed in Quarantine at Lunar Receiving Laboratory. M.S.C. - Houston, Texas". Written at upper left, in Aldrin's hand: "EEA-23/ CARRIED

TO THE MOON ON APOLLO 11". SIGNED BY: NEIL ARMSTRONG, BUZZ ALDRIN, and MICHAEL COLLINS. Additionally SIGNED AND INSCRIBED on flap: "FROM MY PERSONAL COLLECTION. BUZZ ALDRIN. APOLLO XI LMP". With a Typed Letter Signed from BUZZ ALDRIN.

FLOWN TO THE MOON ON APOLLO 11 AND SIGNED BY THE FULL CREW, NUMBER EEA-23 FROM ALDRIN'S PERSONAL COLLECTION.

Buzz Aldrin's letter reads, in part: "This Apollo 11 Mission Emblem commemorative postal cover was carried to the Moon during July 16-24, 1969 on the Apollo 11 mission. The lunar module Eagle made the first manned lunar landing on July 20, 1969.

The cover has been in my private collection since 1969 and was signed by the Apollo 11 crew, Neil Armstrong, Michael Collins and myself. I have written on the cover that is was "Carried to the Moon on Apollo 11" and added my initials "EEA" with the number 23, which is a serial number for this group of covers from my personal collection. As noted on the reverse of the cover, it is from my personal collection."

\$ 15,000-20,000









117

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

APOLLO 11 - ALDRIN'S CREW SIGNED INSURANCE COVER

POSTMARKED ON THE LUNAR LANDING DAY - JULY 20, 1969

A color-cacheted Apollo 11 Life Insurance Cover, 61/2 by 31/2 inches, 8 cent Apollo 8 Earthrise "In the Beginning" stamp, cancellation stamp dated July 20, 1969 at Houston, Texas. Cachet featuring two astronauts on the lunar surface with the EASEP, SIGNED BY: NEIL ARMSTRONG, BUZZ ALDRIN, and MICHAEL COLLINS. Additionally SIGNED AND INSCRIBED on flap: "FROM MY PERSONAL COLLECTION. BUZZ ALDRIN. APOLLO XI LMP." With a Typed Letter Signed by BUZZ ALDRIN

SIGNED by NEIL ARMSTRONG, MICHAEL COLLINS, and BUZZ ALDRIN prior to their Apollo 11 lunar landing mission.

With BUZZ ALDRIN'S provenance letter in which he describes the story of this cover: "This Manned Spacecraft Center Stamp Club postal cover with a lunar exploration scene and a small Apollo 11 emblem is one of the 'insurance covers' signed by the Apollo 11 crew prior to our launch in July 1969. Since we were unable to obtain adequate life insurance due to the high risk nature of being an astronaut, we signed this group of covers and evenly distributed them to our families for safe keeping while we performed our mission. If an unfortunate event prevented our safe return, the covers would have provided a limited financial means of support to our families.

The cover displayed above has been in my private collection since 1969. It was signed by the Apollo 11 crew- Neil Armstrong, Michael Collins, and myself prior to our launch. The cover was postmarked on the lunar landing day of Apollo 11 at Houston, Texas, on July 20, 1969. Just a few hours after landing. Neil Armstrong and I became the first humans to walk on another celestial body - the Moon."

\$ 8.000-12.000

118

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

BUZZ ALDRIN'S JAMES CARTER INAUGURATION DAY COVER

POSTMARKED ON THE DAY OF ALDRIN'S **47TH BIRTHDAY**

A black & white cacheted James E. Carter and First Lady Rosalynn Carter Inauguration Day cover, cache featuring their portraits, 61/2 by 33/4 inches, 13 cent United States 13-Star Flag stamp, cancellation stamp dated January 20, 1977, Washington D.C. Below cancellation stamp, in Aldrin's hand:"[arrow] Age 47. Birthday." SIGNED: BUZZ ALDRIN. Additionally SIGNED AND INSCRIBED on flap: "FROM MY PERSONAL COLLECTION. BUZZ ALDRIN. APOLLO XI LMP". With a Typed Letter Signed from BUZZ ALDRIN.

\$ 500-1,000





FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 11

LUNAR MODULE PILOT BUZZ ALDRIN'S FLOWN APOLLO 11 SILVER ROBBINS **MEDALLION**

FLOWN Apollo 11 Robbins Medallion #439, NGC MS 65 (certificate number: 4068612-001), sterling silver, 28 mm in diameter. Obverse features the mission insignia with the bald eagle on the lunar surface, reverse engraved with launch, landing, and return dates ("July 16, 1969 | July 20, 1969 | July 24, 1969") and serial number. With a typed letter signed by BUZZ ALDRIN on his Starcraft Enterprises letterhead.

ONE OF ONLY 440 FLOWN OF 450 MINTED - A FLOWN RELIC FROM THE SPACEFLIGHT THAT LANDED MAN ON THE MOON — ORIGINALLY FROM THE COLLECTION OF LMP BUZZ ALDRIN

On July 16th, 1969 at 9:32 EDT the world watched as the Apollo 11 space vehicle launched, carrying on board its crew: Mission Commander Neil Armstrong, Lunar Module Pilot Edwin "Buzz" Aldrin, Jr., and Command Module Pilot Michael Collins. After a 21/2 hour checkout period, the Saturn V rocket's third stage injected Command Service Module (CSM) Columbia and Lunar Module (LM) Eagle into the translunar phase of the mission, and at approximately 76 hours, the spacecraft was inserted into lunar orbit. At 100 hours the LM was undocked, and about 90 minutes later, the descent orbit insertion maneuver was performed with a near 30 second burn of the descent propulsion system. Approximately 70 minutes later, Neil Armstrong and Buzz Aldrin touched down onto the lunar surface aboard the Eagle in the Sea of Tranquility.

FLOWN relics from Apollo 11 are among the most prized in this collecting field. As the fifty years anniversary of the first lunar landing nears, the present lot affords an exciting opportunity to recapture the magic of that occasion, as Armstrong and Aldrin stepped out into the Sea of Tranquility, and into the unknown.

Buzz Aldrin's provenance letter reads: "This is to certify that the silver medallion (serial #439) was flown aboard the Apollo XI mission to the moon and that it is from my personal collection."

\$ 40.000-60.000

SUR-29

CDR BTH LMP & CDR RFAC 00 1969 1969 16, June Basic Date Changed ____ LMP & BTH CDR

Remy PLSS fm rechrg sta & put on cab flr Secure ISA Transfer helmets to recharge station Place PLSS on engine cover Route LM umbilicals in front of PGA Attach OPS to top of PLSS - lock Hold PLSS/OPS for donning prep Remove cover from EVCS antenna connector Connect OPS antenna lead to EVCS and lock Verify sublimator exhausts are clear Unstow upper and lower PLSS donning straps Unstow PLSS elec umb 02 & H20 hoses Unstow battery cable Xfer batt prot cover to cable stowage cnctr Connect battery cable to battery Remov PLSS RCU cnctr cover and stow in LHSSC Ver OPS reg checkout gage reads <2.5 psi Unstow OPS 02 hose nozzle Secure PLSS thermal cover Turn left and back into PLSS Don PLSS/OPS by securing PLSS upper and lower straps to PGA Unstow RCU, hold, and turn right to face LMP Connect PLSS 02 hoses - lock

WARNING Before connecting RCU to PLSS,

all elec PLSS cont must be in off position

Pump - off Fan - off Mode sel sw - 0 (off) Connect RCU electrical to PLSS Attach RCU to PLSS straps and PGA - lock Verify these PLSS sw and valve positions Diverter vlv - min (up) 02 shutoff vlv - off (up) Feedwater vlv - closed (up) Pump - off

Fan - off

Mode sel sw - 0 (off)

120

120

ORIGINALLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

APOLLO 11 CHECKLIST SHEET USED ON THE LUNAR SURFACE

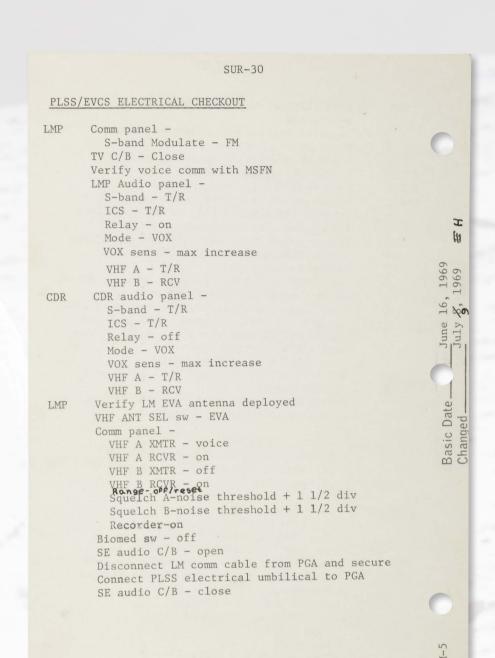
PREPARATIONS TO WALK ON THE MOON

LUNAR SURFACE FLOWN sheet from the Apollo 11 LM Lunar Surface Checklist, Part No. SKB32100074-363, S/N 1001, page SUR-29 / SUR-30. A single sheet (8 by 5½ inches) having crew activities which enables Neil Armstrong and Buzz Aldrin to step out onto the lunar surface. Printed recto and verso. NASA/ MSC, June 16, 1969, revised June 30, 1969. SIGNED AND INSCRIBED BY BUZZ ALDRIN "CARRIED IN EAGLE TO THE LUNAR SURFACE ON APOLLO XI. BUZZ ALDRIN." With a Typed Letter Signed by BUZZ ALDRIN using his personal stationary.

STEP-BY-STEP PROCEDURES TO ALLOW NEIL ARMSTRONG AND BUZZ ALDRIN TO EXIT THE LM AND WALK ON THE MOON. Steps listed on this sheet were performed just minutes before Neil Armstrong descended the ladder on Lunar

Module Eagle's front landing strut, becoming the first man to set foot upon the Moon. These steps included space suit preparations, removal of the PLSS (Portable Life Support Systems, or "back-packs") from storage, and securing the PLSS to the spacesuits. The PLSS were an absolutely vital compnent of the space suit, providing oxygen, water, and cooling for the suits during EVAs (Extra-Vehicular Activities, or Moonwalks).

BUZZ ALDRIN'S SIGNED provenance letter reads: "Accompanying this letter is a sheet



numbered SUR-29 and SUR-30 from the Apollo 11 LM Lunar Surface Checklist. The entire checklist was carried to the surface of the Moon in Lunar Module Eagle during the first lunar landing on July 20, 1969.

SUR-29 lists steps that Neil Armstrong (CDR) performed to remove the PLSS (Portable Life Support System) or "back packs" from their storage area. We then placed them on our space suits via donning straps. Each PLSS provided oxygen, power, and cooling for our space suits. We then connected the oxygen and water hoses as well as the RCUs (Remote Control Units).

Side SUR-30 lists the PLSS/EVCS Electrical Checkout procedures. There steps were required to verify proper PLSS and space suit operation prior to exiting the LM. This part of the checklist was the beginning of the step by step procedures to allow Neil and myself to exit the LM and walk on the Moon.

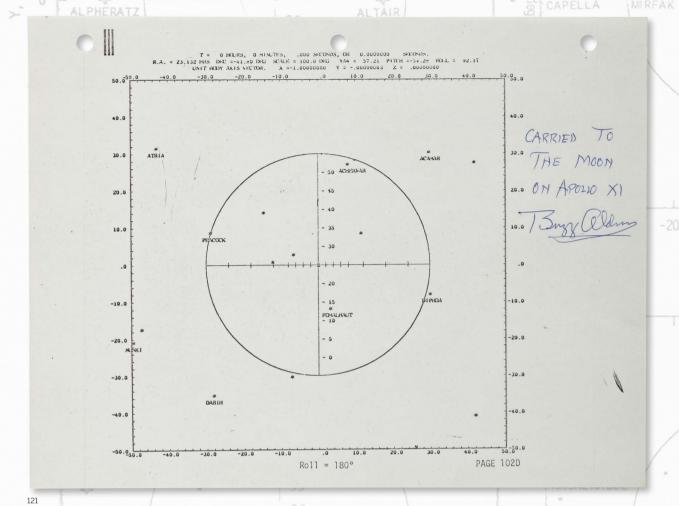
The complete checklist was a vital document to the success of our mission. It provided information on steps required to operate equipment and experiments associated with the first lunar landing.

This sheet has been in my private collection since 1969. I have written on the side SUR-29: "Carried in Eagle to the Lunar Surface on Apollo XI" and signed it along the left side."

REFERENCES

NASA. *Apollo 11 Stowage List. Mission AS 506 CM 107/LM-5.* Houston: Manned Spacecraft Center, July 15, 1969, page 37

\$ 40,000-60,000



ORIGINALLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

FLOWN APOLLO 11 FLIGHT PLAN SHEET

A STAR CHART USED DURING THE FLIGHT

FLOWN sheet from the *Apollo 11 Flight Plan*, Part No. SKB32100080-201, S/N 1001, figure 9.2-5, printed on recto only, 10½ by 8 inches. NASA/Manned Spacecraft Center, July 1, 1969. SIGNED AND INSCRIBED BY BUZZ ALDRIN: "CARRIED TO THE MOON ON APOLLO XI. BUZZ ALDRIN." With a Typed Letter Signed by BUZZ ALDRIN using his personal stationary.

ONE OF THE FEW PRINTED CELESTIAL NAVIGATION AIDS TO BE CARRIED ON THE APOLLO 11 MISSION. This star chart played a key role in ensuring the safety of the Apollo 11 crew, as it allowed them to verify their lunar trajectory and update their guidance computer after their second Mid Course Correction engine burn, putting them on the correct path back home to Earth after their historic first lunar landing.

BUZZ ALDRIN'S letter reads: "Enclosed with this letter is a sheet that was added to the Apollo 11 Flight Plan, Part No. SKB32100080-350, S/N 1001 prior to launch which is labeled: 'Figure 9.2-5. - Scanning telescope - PTC altitude - (g.e.t. = 26:00:00)." It was inserted just after page 3-18 and 3-18a of this manual and is part of the entire document that was carried to the Moon in Command Module Columbia on the first lunar landing mission during July 16 to 24, 1969.

Our flight plan scheduled a MCC2 of Mid
Course Correction engine burn number 2 at
about 26 hours into the mission. Burns of this
type were planned to refine our trajectory
to and from the Moon. This was a SPS
(Service Propulsion System) engine burn of
approximately 3 seconds and changed our
projected pericynthion of 175 nautical miled
to approximately 60 nautical miles when both
Columbia and Eagle passed behind the Moon
prior to going into lunar orbit.

This sheet illustrates six different star pattern views that were visible through our scanning

telescope at 26 hours Ground Elapsed Time (GET) while we were in PTC or Passive Thermal Control . PTC was simply a rotation of our docked CSM/LM combination along a common axis to keep an even distribution of temperatures on our vehicles which were being heated by the sun. these start chart patterns allowed Neil Armstrong, Mike Collins, and myself to verify our lunar trajectory and update our guidance computer at that time.

The flight plan was probably the single most important document related to the success of our mission. It provided a time schedule of crew activities and spacecraft maneuvers to accomplish the first lunar landing.

This page has been in my private collection since 1969. I have written: "Carried to the Moon on Apollo XI" and signed it along the bottom of the page..."

REFERENCES

NASA. Apollo 11 Stowage List. Mission AS 506 CM 107/LM-5. Houston: Manned Spacecraft Center, July 15, 1969, page 82

\$10,000-15,000

121

SO PTC REFSMMA NAVI 平 ENUS B X, deg (c) Roll - 120° (b) Roll = 60°. POLARIS X, deg X, deg (f) Roll - 300°. (d) Roll - 180° (e) Roll - 240° on - PTC attitude Moon APOLLO XI on 122

ORIGINALLY FROM THE PERSONAL COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN BOLLA

122

FLOWN APOLLO 11 FLIGHT PLAN SHEET

A STAR CHART USED DURING THE FLIGHT

FLOWN sheet from the Apollo 11 Flight Plan, Part No. SKB32100080-350, S/N 1001, page 102D, printed on recto only (10½ by 8 inches). NASA/MSC, July 1, 1969. SIGNED AND INSCRIBED BY BUZZ ALDRIN "CARRIED TO THE MOON ON APOLLO XI. BUZZ ALDRIN." With a Typed Letter Signed by BUZZ ALDRIN using his personal stationary.

ONE OF THE FEW PRINTED CELESTIAL NAVIGATION AIDS TO BE CARRIED ON THE APOLLO 11 MISSION. This star chart played a key role in ensuring the safety of the Apollo 11 crew, as it was used to verify that they were safely on the way home to Earth after their historic first lunar landing.

PTC attitude - (g. e. t. = 26:00:00).

BUZZ ALDRIN'S letter reads: "Enclosed with this letter is a sheet that was added to the Apollo 11 Flight Plan, Part No. SKB32100080-350, S/N 1001 prior to our launch, which is labeled: "PAGE 102D." It was inserted just after page 3-102 of this manual and is part of the entire document that was carried to the Moon in Command Module Columbia on the first lunar landing mission during July 16 to 24, 1969.

This sheet illustrates what was the expected view through our scanning telescope while we perform and IMU (Inertial Measurement Unit) alignment just after our TransEarth Injection (TEI) burn which brought us back from the Moon. That spacecraft burn had to work. If it did not, Neil Armstrong, Michael collins, and myself would remain in lunar orbit, never to return to Earth. Mike took a navigational reading after locating the stars named FOMALHAUT and

ACHERNAR. After a series of star sightings, these "readings" would provide our IMU with a new "platform" of our location in space after the TEI burn... The flight plan was probably the single most important document related to the success of our mission. It provided a time schedule of crew activities and spacecraft maneuvers to accomplish the first lunar landing.

This page has been in my private collection since 1969. I have written:" Carried to the Moon on Apollo XI" and signed it along the top right side of the page..."

REFERENCES

NASA. *Apollo 11 Stowage List. Mission AS 506 CM 107/LM-5.* Houston: Manned Spacecraft Center, July 15, 1969, page 82

\$ 10.000-15.000





123

ORIGINALLY FROM THE COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

FLOWN APOLLO 11 COMMAND MODULE SKIN FRAGMENT

An approximately $\frac{1}{4}$ by $\frac{3}{4}$ inch FLOWN mylar segment mounted on an $8\frac{1}{2}$ by 1 inch Typed Letter Signed by BUZZ ALDRIN.

This Mylar foil material served as a thermal protection layer on the very outer surface of the Command Module *Columbia*. It was exposed to the vacuum of space for some 195 hours including almost 60 hours in lunar orbit, and traveled over 500,000 miles.

BUZZ ALDRIN'S letter reads, in part: "This segment of Mylar insulation was removed from the Apollo 11 Command Module Columbia after splashdown by NASA recovery personnel back in July 1969. It was presented to me as a memento from the flight...

Some 22 hours after landing Neil and I lifted off the lunar surface to return to Mike Collins in Columbia. Later that same day, we released Eagle's remaining Ascent Stage, and performed the long engine burn with Columbia's Service Propulsion System to begin our journey home.

This Mylar experienced the searing heat of re-entry into the earth's atmosphere on July 24, 1969. Most of the Mylar coating burned off during this period, but some parts remained, as displayed on this letter."

\$ 2,000-3,000

124

ORIGINALLY FROM THE ALDRIN FAMILY SPACE COLLECTION

APOLLO 11 - ALDRIN FAMILY CREW SIGNED INSURANCE COVER

POSTMARKED ON THE LUNAR LANDING DAY - JULY 20, 1969

An Apollo 11 Life Insurance Cover measuring approximately 4 by 6 inches with a cachet featuring two astronauts exploring the lunar surface with their Lunar Module and planet earth in the background. Postmarked at Houston, Texas on the date of the Apollo 11 lunar landing and moon walk, July 20, 1969. The envelope is displayed on a typed provenance letter on Buzz Aldrin Family letterhead.

SIGNED BY NEIL ARMSTRONG, BUZZ ALDRIN, AND MICHAEL COLLINS.

With Aldrin Family typed provenance letter, which reads:

"Prior to Apollo 11's launch, crew members Neil Armstrong, Buzz Aldrin, and Michael Collins were presented with special Apollo 11 Postal Covers by the NASA Manned Spacecraft Center Stamp Club. The Covers were produced for the crew to sign together in pre-flight quarantine, shortly before the launch to the Moon, and then leave behind with their families as a form of life insurance that could be sold should they fail to return.

In the pre-launch hours, the crew signed the Covers and gave them to a trusted emissary. Some of the Covers were then postmarked at the Cape on July 16, 1969, the day of launch, with the remainder postmarked in Houston on July 20, 1969, the day of landing.

The signatures of Neil Armstrong, Michael Collins, and Buzz Aldrin were therefore affixed to this Postal cover within days of Armstrong and Aldrin's first historic walk on the Moon!

These covers played an integral role in the flight, giving the crew confidence they had left behind a tangible asset that could be sold, if needed, to raise money for their families. This permitted them to focus completely on their mission, which culminated in mankind's first historic lunar landing on July 20, 1969."

\$ 7.000-9.000

. .,...

APOLLO 11 CREW — SIGNED BY ARMSTRONG, ALDRIN, & COLLINS

Three 9½ by 7½ inch color photographs of the Apollo 11 crew, each in their EVA suits posing in front of a large photograph of the moon. Framed and matted together with an Apollo 11 patch, a NASA patch, and an engraved brass plaque to 28½ by 18 inches.

SIGNED by NEIL ARMSTRONG, BUZZ ALDRIN, and MICHAEL COLLINS, and INSCRIBED: "BUZZ ALDRIN Apollo XI" and "MICHAEL COLLINS Apollo XI"

\$ 6,000-9,000

126

ALDRIN WITH OLD GLORY ON THE MOON

NEIL ARMSTRONG CAPTURES THE IMAGE THAT SYMBOLIZES THE NATIONAL GOAL OF LANDING MEN ON THE MOON — SIGNATURES FROM ENTIRE CREW PRESENT

Color photograph, 15 by 19 inches (sight), SIGNED and INSCRIBED by BUZZ ALDRIN: "BUZZ ALDRIN | APOLLO XI LMP" and MICHAEL COLLINS: "MICHAEL COLLINS | APOLLO XI CMP" framed together with NEIL ARMSTRONG'S SIGNATURE, NASA "Meatball," and Apollo 11 emblem patches, matted and framed to 23½ by 23¾ inches; not examined out of frame.

WITH SIGNATURES OF THE FULL APOLLO 11 CREW

\$ 4,000-6,000

127

APOLLO 11 - BUZZ ALDRIN AT TRANQUILITY BASE

Color photograph, 113% by 75% inches, mounted on mat board and framed together with an Apollo 11 patch to 241% by 203% inches.

SIGNED and INSCRIBED on the mat board: "NEIL ARMSTRONG Apollo 11; BUZZ ALDRIN Apollo XI; MICHAEL COLLINS Apollo XI"

Buzz Aldrin on the lunar surface, signed by the crew members of Apollo 11.

\$ 4,000-6,000



125



126





128



129



130

APOLLO 11 CREW SIGNED WSS LITHO

Vintage color lithograph, 10 by 8 inches with NASA caption printed on the verso, mated together with Ap patch.

SIGNED by NEIL ARMSTRONG, BUZZ ALDRIN, and MICHAEL COLLINS. INSCRIBED by COLLINS "MICHAEL COLLINS Apollo XI CMP" and by ALDRIN "BUZZ ALDRIN July 20, 1969 AD"

A wonderful vintage WSS (white space suit) lithograph of the Apollo 11 crew with an image of the lunar surface in the background.

\$ 4,000-6,000

129

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

EAGLE'S RETURN FROM THE LUNAR SURFACE

MICHAEL COLLINS' ICONIC IMAGE, SIGNED BY THE **ENTIRE CREW**

Vintage color photograph, a full frame Hasselblad image 73/8 inches square in size, mounted on board. One or two minor nicks to edge of image, minor smudging to Armstrong signature. SIGNED by NEIL ARMSTRONG, MICHAEL COLLINS, and BUZZ ALDRIN

SIGNED BY THE APOLLO 11 CREW. Eagle's ascent stage approaching Columbia, captured by Command Module Pilot, Mike Collins.

\$ 4,000-6,000

130

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER **BILL TAUB**

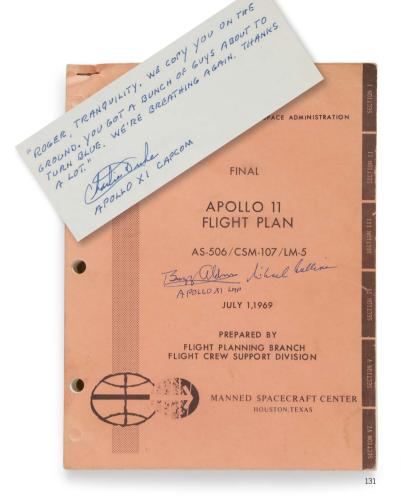
COMMEMORATIVE PLAQUE FROM PRESIDENT'S DINNER HONORING APOLLO 11 **ASTRONAUTS**

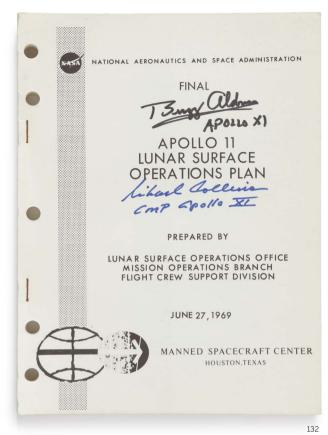
"WE CAME IN PEACE FOR ALL MANKIND"

Brushed steel plaque, 75/8 by 53/4 inches, with engraved inscription reading "HERE MEN FROM THE PLANET EARTH | FIRST SET FOOT UPON THE MOON | JULY 1969, A.D. | WE CAME IN PEACE FOR ALL MANKIND", with Apollo 11 emblem printed on Beta-cloth, 33/8 inches in diameter, matted and framed together to 125/8 by 155/8 inches, SIGNED on the mat by MICHAEL COLLINS, BUZZ ALDRIN and NEIL ARMSTRONG, and INSCRIBED: "TO BILL TAUB - WHO RECORDED IT ALL, | BEST WISHES."

SIGNED BY THE APOLLO 11 CREW AND PRESENTED TO NASA SENIOR PHOTOGRAPHER BILL TAUB. Less than a month after the Apollo 11 crew had returned from their historic mission, a dinner was thrown in their honor at the Century City Plaza Hotel. It was an official White House dinner, and in addition to President Richard Nixon presiding over the evening, the soiree was attended by 44 governors, 14 members of the cabinet, 83 countries were represented by their ambassadors.

\$3,000-5,000





THE COMPLETE APOLLO 11 FLIGHT PLAN

OUTLINING THE NECESSARY STEPS TO ACCOMPLISH MAN'S FIRST LUNAR LANDING

Final Apollo 11 Flight Plan, AS-506/CSM-107/LM-5. Houston, TX: NASA/MSC Flight Planning Branch, Flight Crew Support Division, July 1, 1969. Over 300 pp. $10^{1/2}$ by 8 inches. Orange card stock covers, punched, with staple at top. Some minor soiling and wear.

SIGNED and INSCRIBED by BUZZ ALDRIN "APOLLO XI LMP" (both on front cover), MICHAEL COLLINS, and CHARLIE DUKE (Acknowledgements page): "ROGER, TRANQUILITY. WE COPY YOU ON THE | GROUND. YOU GOT A BUNCH OF GUYS ABOUT TO | TURN BLUE. WE'RE BREATHING AGAIN. THANKS | A LOT." | CHARLIE DUKE | APOLLO XI CAPCOM'

The complete step-by-step timetable for Man's first lunar landing, the flight plan is divided into 6 sections covering general information, samples of flight manoeuvre update pads, a detailed timeline, consumables, test objectives, and a summary.

\$ 4,000-6,000

132

APOLLO 11 STEP BY STEP PLANS FOR SURFACE EXPLORATION

INCLUDES THE PROCEDURE TO COLLECT THE FIRST LUNAR SOIL SAMPLE

Apollo 11 Lunar Surface Operations Plan, Final Edition. Houston, TX: NASA/MSC, June 27, 1969. vii, 184 pp. Diagrams and charts with 4 folded tables. 10 1/2 by 8 inches. Card stock covers, punched and stapled.

SIGNED and INSCRIBED "BUZZ ALDRIN | APOLLO XI" and "MICHAEL COLLINS | CMP APOLLO XI" (front cover)

The present document details not only the nominal (expected) procedures for man's first moonwalk, or Extra Vehicular Activity (EVA), but such contingencies as if only one astronaut could perform the exploration, for either a full 2 hours and 40 minutes or only a 49 minute minimum time period. Some 60 pages and two fold-out tables cover the nominal EVA, with some 25 pages and two additional fold-out tables scripting the other possibilities. Tasks such as physical movement on the surface, television deployment, photography, spacecraft inspection, lunar geology, experiment deployment, and EVA termination are extensively described. Perhaps most important from a science and human perspective was the return of lunar material, the procedure for which is described in detail.

\$ 4,000-6,000

NEIL ARMSTRONG

Six United States Passports issued to Neil Armstrong from 1954 to 1979, including his Special and Diplomatic Passport used while going through astronaut training

1. Passport. United States of America. Green cloth with Department of State Seal pattern, lettered in gold (6½ x 3¾ inches). Issued May 7th, 1954. Signed "NEIL ALDEN ARMSTRONG" on signature page, and "NEIL ALDEN ARMSTRONG" over photograph. Listing his occupation as "Student."

2. Special Passport. United States of America. Green cloth with Department of State Seal pattern, lettered in gold (6½ x 3¾ inches). Issued October 6th, 1960. Signed "NEIL A. ARMSTRONG" on signature page, and "NEIL A. ARMSTRONG" over photograph. Listing his official status as: "PROCEEDING ABROAD ON OFFICIAL BUSINESS FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION." Brasil, Panama, Guatemala, 1960-65.

3. Diplomatic Passport. United Stated of America. Navy blue leatherette, lettered in gold (6 x 3¾ inches). Issued Sept. 22, 1966. Signed "NEIL ALDEN ARMSTRONG" on signature page, and "NEIL A. ARMSTRONG" over photograph. Indicating that the bearer is: "AN ASTRONAUT ON A SPECIAL DIPLOMATIC MISSION FOR THE PRESIDENT OF THE UNITED STATES." Venezuela, Brasil, Paraguay, Colombia, Ecuador, Chile, Peru, Argentina, Uruguay, Bolivia. 1966.















133

4. Passport. United States of America. Green leatherette, lettered in gold (6 x 3¾ inches). Issued Sept. 16, 1969. Signed "NEIL A. ARMSTRONG" on signature page, and "NEIL A. ARMSTRONG" over photograph. Greece, UK, France, South Africa, Spain, 1972-74.

5. Passport. United States of America. Green leatherette, lettered in gold (6 x 3¾ inches). Issued Sept. 5, 1974. Signed "NEIL A. ARMSTRONG" on signature page, and "NEIL A. ARMSTRONG" over photograph. Philippines, UK, Spain, France, Ireland, Ecuador, Norway, Australia. 1974-79.

6. Passport. United States of America. Navy blue leatherette, lettered in silver (43/4 x 31/2 inches). Issued July 26, 1979. Signed "NEIL A. ARMSTRONG" on signature page, and "NEIL A. ARMSTRONG" over photograph. UK, Ireland, Canada, France, Sweden, South Africa, 1979-1984.

SIX US PASSPORTS ISSUED TO NEIL ARMSTRONG; AN INCREDIBLE RECORD OF THE TRAVELS OF THE FIRST MAN TO WALK ON THE MOON, DEMONSTRATING ONE OF THE MANY WAYS THAT BECOMING AN ASTRONAUT CHANGED HIS LIFE.

The first passport was issued in 1954 while Armstrong was a junior at Purdue University, after having served as an aviator in the Navy and serving in the Korean War; he seemed too focused on his studies to travel during this period, as the passport bears no exit/entry stamps.

We see a change in the Special Passport, which he used from 1960-1965 while conducting official business abroad for NASA. Armstrong joined the Naval Advisory for Aeronautics (NACA) in 1955, and became part of the second group in the NASA Astronaut Corps in 1962, going on to train at the Panama Jungle Survival School on Albrook Air Force Base in the Panama Canal Zone. This Special Passport shows his entry and exit dates into Panama, as well as travel completed by him in the neighboring countries of Brazil and Guatemala. We see quite a dramatic uptick in his travel in the Diplomatic Passport, used by him starting in 1966 while on special diplomatic missions for the President of the United States. It shows extensive entries and exits not only to and from Panama, but nearly every country in South America. The fourth passport was issued just one month after the launch of the Apollo 11 mission, and this along with the last two passports show a shift in the countries Armstrong traveled to, seeing him making frequent visits to multiple countries in Europe, South Africa, Australia, and the Phillipines, with the only south American visit being to Ecuador, being a mix of trips for vacation and business.

\$ 30,000-50,000

APOLLO 11 - MAN ON THE MOON

Vintage color photolithograph, 16 by 20 inches, bearing the printed caption: "Man on the Moon-Astronaut Edwin E. Aldrin, Jr. as photographed by Astronaut Neil Armstrong while placing the lunar seismometer on the lunar surface, July 20, 1969 | 69-HC-683 National Aeronautics and Space Administration", with original NASA shipping envelope.

SIGNED by NEIL ARMSTRONG, a vintage NASA photo of BUZZ ALDRIN setting the Passive Seismic Experiment, which was designed to detect lunar "moonquakes" and provide information about the internal structure of the moon.

\$8,000-12,000

135

ARMSTRONG, NEIL

Vintage color lithograph, 8 by 10 inches, with NASA logo and caption printed on the verso, with letter on NASA letterhead, signed by NASA Office of Public Affairs representative Fern Lee Pickens.

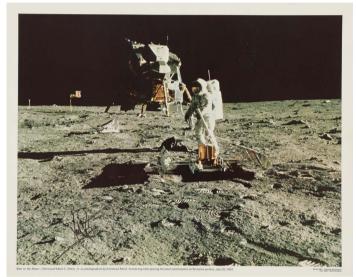
Photograph SIGNED by NEIL ARMSTRONG.

A NASA portrait of a "reluctant American hero."

REFERENCES

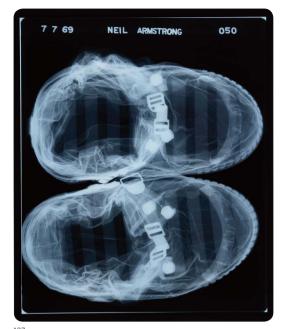
Agence France-Presse, *The National*, 26 August 2012

\$ 2,500-3,500









X-15A-2

THE ADVANCED MANNED RESEARCH AIRCRAFT

Vintage color photolithograph, 133/8 by 113/8 inches, SIGNED by NEIL ARMSTRONG, MIKE ADAMS, VINCE CAPASSO ("PROG ENG -X-15-3"), BILL DANA, WILLIAM KNIGHT, JOHN B. MCKAY, MILT THOMSON, RON WAITE (?), and INSCRIBED "DAVE- | COME BACK WITH A | DEGREE- YOUR FRIENDS IN | FLT. OPS."

In the joint X-15 hypersonic research program that NASA conducted with the Air Force, the Navy, and North American Aviation, Inc., the aircraft flew over a period of nearly 10 years and set the world's unofficial speed and altitude records of 4,520 mph (Mach 6.7) and 354,200 feet in a program to investigate all aspects of piloted hypersonic flight. Information gained from the highly successful X-15 program contributed to the development of the Mercury, Gemini, and Apollo piloted spaceflight programs as well as the Space Shuttle program.

\$ 2.000-3.000

137

APOLLO 11 — QUALITY CONTROL

PRE-FLIGHT X-RAY OF NEIL ARMSTRONG'S SPACESUIT COVER LAYER BOOTS, 7 JULY 1969

X-Ray, 14 by 17 inches, numbered 50 and bearing the date "7 7 69"; some scattered minor scratches, consistent with use.

"ONE SMALL STEP FOR MAN..."

Taken just 11 days before the Apollo 11 launch by Jack Weakland, a member of the Nondestructive Evaluation Group (NDE) at NASA. Weakland worked in the X-Ray Lab from 1968-1979, where he tested equipment for a number of Apollo missions, including Apollo 7 and Apollo 11. In an oral history conducted in 2001, Weakland described the rationale behind this quality control measure: "We x-rayed all of the suits, we x-rayed all those things to verify that there were no sharp objects left in them during the manufacturing process, make sure the zippers, when they zipped them up, the seal would form perfectly into the zippered threads"

This x-ray shows Armstrong's cover layer boots, an extravehicular overshoe that was designed to be worn over his spacesuit boots while walking on the Moon.

PROVENANCE

Jack R. Weakland, NASA X-Ray Technician -Present Owner

\$ 2.500-3.500

APOLLO 11 - BUZZ ALDRIN AT TRANQUILITY BASE

Large color photograph, 20 by 16 inches.

SIGNED and INSCRIBED by BUZZ ALDRIN in silver ink: "'Here men from planet Earth first set foot upon the moon!' BUZZ ALDRIN Apollo XI." An iconic image of Buzz Aldrin take by Neil Armstrong, whose reflection is visible in the visor of Aldrin's spacesuit.

\$ 6.000-9.000

139

APOLLO 11 - ALDRIN DESCENDS TO THE LUNAR SURFACE

Large color photograph, 20 by 16 inches.

SIGNED and INSCRIBED by BUZZ ALDRIN in gold ink: "'Magnificent desolation' BUZZ ALDRIN." Aldrin prepares to step off Lunar Module Eagle to become the second human to set foot upon the moon.

\$ 6.000-9.000

140

VINTAGE NASA "RED NUMBER" PHOTOGRAPH OF EAGLE'S RETURN FROM THE LUNAR SURFACE

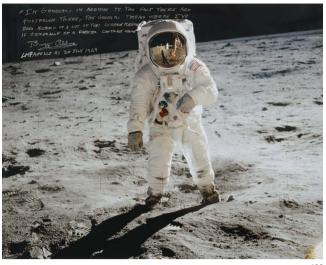
MICHAEL COLLINS TAKES THIS IMAGE WITH EARTHRISE IN THE BACKGROUND

Vintage "NASA Red Number" color photograph, 8 by 10 inches with "A Kodak Paper" watermark on verso. The identification number "NASA AS11-44-6642" is printed in red near the upper left corner. A full frame Hasselblad photograph 7 inches square in size.

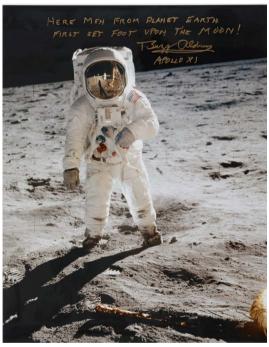
SIGNED by BUZZ ALDRIN

Neil Armstrong and Buzz Aldrin in Lunar Module Eagle's ascent stage approach Michael Collins in Command/Service Module *Columbia* for docking some 4 hours after leaving the Moon's surface. Armstrong and Aldrin had just made Man's first landing on the Moon just 26 hours earlier and explored the surface for nearly 2 and ½ hours.

\$ 4,000-6,000



138













142



143

141

APOLLO 11

LM Descent Monitoring Chart, 16 July 1969 Launch Date - Landing Site NO. 2. Sheets 1, 2, & 3A. Prepared Under the Direction of the Department of Defense by the Aeronautical Chart and Information Center, United States Air Force for NASA, 1969.

Three Lunar Module Descent Monitoring Chart Sheets, (21 by $10^{1/2}$ inches, 48 by $12^{1/2}$ inches, and $35^{1/2}$ by $12^{1/2}$ inches). Scale 1:630,000 at the Equator. Creases where folded. Sheet 2 SIGNED and INSCRIBED by BUZZ ALDRIN.

FIRST EDITION of these Apollo Landing Site maps, prepared from data compiled by Lunar Orbiter photography. SIGNED AND INSCRIBED ACROSS SECOND CHART BY BUZZ ALDRIN: "LMP COMMENTS DURING EAGLE'S DESCENT. BUZZ ALDRIN/ GO.... AT 4 MINUTES.... DESCENT LOOKS GOOD! SEQUENCE CAMERA ON."

The charts are identical to the Lunar Orbiter based photography charts carried by Neil Armstrong and Buzz Aldrin inside Lunar Module (LM) Eagle. They combine to create a continuous chart over six feet long with numerous lunar land mark locations identified in bold black wording. Both sheets have the planned descent path marked with a solid white line down the middle of the chart.

\$ 4.000-6.000

142

THE APOLLO 11 LM ASCENT MONITORING CHART

WITH AN EXTENSIVE INSCRIPTION BY BUZZ ALDRIN

LM Ascent Monitoring Chart - Sheet 3 B, 16 July 1969 Launch Date - Landing Site No. 2. First edition, 35¾ by 12½ inches, scale 1: 630,000 at the Equator. Prepared under the direction of the Department of Defense by the Aeronautical Chart and Information Center for NASA.

SIGNED and INSCRIBED by BUZZ ALDRIN: "NUMBER 1 | ON THE RUNWAY" | BUZZ ALDRIN | APOLLO XI LMP'

The present lithographic chart was printed for use by astronauts, as well as the mission director and mission control. Plotting the planned flight path of Lunar Module Eagle after liftoff from the lunar surface, the chart illustrates one of the most important objective of the Apollo 11 mission—the safe return of the crew from the Moon.

\$ 2,500-3,500

143

APOLLO 11 - BUZZ ALDRIN AT TRANQUILITY BASE

Large color photograph, 16 by 20 inches

SIGNED and INSCRIBED by BUZZ ALDRIN: "In general, in addition to the fact there are footprints there, the general terrain where I've been kicking up a lot of the surface material is generally of a darker contrast color BUZZ ALDRIN LMP Apollo XI 20 July 1969"

The Apollo program's most iconic image: Buzz Aldrin on the lunar surface taken by Neil Armstrong, moments after Aldrin became the second human to set foot on the moon.

\$ 3,000-5,000

APOLLO 11 - ALDRIN WITH THE STARS AND STRIPES

Large color photograph, 16 by 20 inches

SIGNED and INSCRIBED by BUZZ ALDRIN: "Tranquility Base. The first American flag on the moon BUZZ ALDRIN Apollo XI"

Aldrin stands next to the United States flag after deployment on the lunar surface. This photograph best symbolizes the accomplishment of John F. Kennedy's goal of landing a man on the Moon.

\$ 3.000-5.000

145

ORIGINALLY FROM THE COLLECTION OF APOLLO 11 LUNAR MODULE PILOT BUZZ ALDRIN

APOLLO 11- LAUNCH CHECKLIST TRAINING SHEET

CORRECTION TO "PKG TEMP" MADE BY MICHAEL COLLINS

Apollo 11 Launch Operations Checklist, page 2-7 / 2-8, a single sheet consisting of Insertion Checklist steps to be carried out by Neil Armstrong, Michael Collins, and Buzz Aldrin. Printed recto and verso. NASA/MSC, April 15, revised June 16, 1969. 8 x 5½ inches. With a Typed Letter Signed by Buzz Aldrin, on his letterhead.

Checklist sheet SIGNED and INSCRIBED by BUZZ ALDRIN: "Used in Training for APOLLO XI. BUZZ ALDRIN."

BUZZ ALDRIN'S provenance letter reads in part:

"Accompanying this letter is a page numbered 2-7 and 2-8 from the CSM 107 (Apollo 11) Launch Operations Checklist, SKB32100080-306. The pages are part of the complete manual that was used in the Command Module Apollo Mission Simulator at the Manned Spacecraft Center in Houston, Texas. The page is from Section 2 titled: Boost-Insertion-TLI.

The entire checklist, including this actual page, was used by all three Apollo 11 crew members: Neil Armstrong, Michael Collins, and myself. This section in particular was extensively used by Neil Armstrong and Michael Collins who sat in the left and center seats during the Saturn V launch phase. Neil had the command responsibility to initiate an abort if the launch profile deviated from the planned events outlines in this checklist section.

The launch profile was the most intense training we as a crew performed together. The simulator teams would give us all types of warning messages and problems to solve during a simulated launch. The simulator was an excellent learning device and this checklist was an important tool to insure our correct performance. This training was a key step which enabled our flight to make the first manned lunar landing on July 20, 1969.

Side 2-7 has the Insertion Checklist steps to be done by Neil, Mike, and myself. There are over 35 steps to be carried out. Side 2-8 has the Sys Monitoring & Checking steps to be done by Mike. He made the "55-210" corrections and circle mark on this page."

\$ 2,000-3,000

146

APOLLO 11 - EARTHRISE

Color photograph, 16 by 165/8 inches

SIGNED and INSCRIBED by MICHAEL COLLINS: "MICHAEL COLLINS Apollo XI July 20, 1969"

The Moon's surface and iconic earthrise view as seen from Apollo 11 in lunar orbit.

\$ 2,000-3,000



144











147

11) First throw the three

148



149







PAUL CALLE

ARMSTRONG SUITING UP ON MORNING OF APOLLO 11 LAUNCH, 16 JULY 1969

Pen-and-ink on paper, 9 by 12 inches, SIGNED lower left ("Paul Calle") and dated "July 16, 1969."

An original sketch by Calle of Neil Armstrong suiting up before the launch of the Apollo 11 mission. On July 16, 1969, Paul Calle was with the Apollo 11 astronauts as they had breakfast and prepared for their historic expedition to the moon. He was the only artist to document the activities of Armstrong, Collins, and Aldrin as they suited up for their mission. His on the spot pen-and-ink sketches stand as an artistic impression of three men destined to make history for all mankind.

PROVENANCE

Ex Paul Calle Collection

\$ 10,000-15,000

148

PAUL CALLE — NEIL ARMSTRONG ARTIST'S PROOF OF CALLE'S "FIRST MAN ON THE MOON"

Lithographic print, $12 \frac{3}{4}$ by $8 \frac{1}{4}$ inches, "A/P First Man on the Moon" in pencil to lower right.

SIGNED by NEIL ARMSTRONG and PAUL CALLE.

A lithograph of the famous Calle artwork of Neil Armstrong stepping onto the moon, used on the $1969\ 10\phi$ stamp.

PROVENANCE

Ex Paul Calle Collection

\$ 4,000-6,000

149

PAUL CALLE

ORIGINAL PENCIL SKETCH FOR THE "FIRST MAN ON THE MOON" POSTAGE STAMP, 1969

Pencil on paper, 14 by 11 inches, SIGNED lower right ("Paul Calle").

In 1962, Calle was among the first artists selected to participate in the NASA Art Program. While his involvement with NASA began with the Gemini missions, his best-known work remains the present image, which served as the design for the iconic "First Man on the Moon" U.S. postage stamp.

PROVENANCE

Ex Paul Calle Collection

\$ 4,000-6,000

PAUL CALLE

A GROUP OF 3 APOLLO 11 POSTAL COVERS WITH ORIGINAL MISSION SKETCHES, SIGNED

3 sketches, pencil on paper envelopes, 9 5/8 by 6 1/4 inches, each SIGNED ("Paul Calle"), with "First Man on the Moon" stamp cancelled "FIRST DAY OF ISSUE", Moon Landing postmark dated July 20, 1969, and Washington, D.C. postmark, dated September 9, 1969.

Paul Calle famously designed the United States' 1969 "First Man on the Moon" airmail stamp, and the present envelopes feature sketches Neil A. Armstrong, Michael Collins, and Edwin E. "Buzz" Aldrin Jr.—the three astronauts who embarked on the Apollo 11 mission—suiting up before the launch.

PROVENANCE

Ex Paul Calle Collection

\$ 2,500-3,500

151

APOLLO 11

ARCHIVE OF 94 VINTAGE GELATIN SILVER PRINTS RELATING TO THE APOLLO 11 MISSION, 1969

An archive of 94 vintage gelatin silver prints, 1969, each 10 by 8 inch or the reverse, in very good condition, the great majority with blue NASA captions on versos, several with the neat label of a photo agency on versos. By subject, the archive comprises: Training and prelaunch preparations (30 photographs); 16 July: suiting up, launch preparations and liftoff (14 photographs); Lunar orbit, landing, moonwalk, Earth and Moon (34 photographs); Recovery, quarantine, moon rocks (16 photographs).

A COMPREHENSIVE ARCHIVE OF VINTAGE GELATIN SILVER PRINTS WHICH TOGETHER TELL THE STORY OF THE APOLLO 11 MISSION, FROM TRAINING, TO LAUNCH, TO LANDING, TO RETURN HOME. Notable for many classic images including the famous "Visor Shot" of Buzz Aldrin standing in the Sea of Tranquility, the Bootprint, Aldrin descending the ladder of the LM, Aldrin next to the American Flag on the lunar surface, the deployment of the lunar surface experiments, the shadow of the LM on the lunar surface, portraits of Armstrong and Aldrin in the LM after their moonwalk, the LM Eagle with the moon in the background, the splashdown of Command Module Columbia in the Pacific Ocean, the astronauts in quarantine, and more.

\$ 4,000-6,000

APOLLO 11

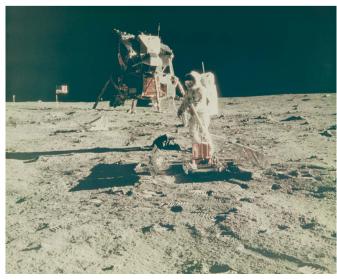
Buzz Aldrin deploying the Early Apollo Scientific Experiments Package (EASEP), 20 July, 1969

Vintage Chromogenic print on fiber-based paper with "A Kodak" watermark on verso, 16 by 20 inches. NASA negative number AS11-40-5949.

Taken by Neil Armstrong using his 70 mm lunar surface Hasselblad camera during he and Buzz Aldrin's moonwalk. Pilot Buzz Aldrin is seen deploying the Passive Seismic Experiments Package (PSEP), the Laser Ranging Retro-Reflector (LR-3), deployed earlier by Aldrin, is seen to the left, with the American flag and the Lunar Module *Eagle* in the background.

\$ 2.000-3.000





APOLLO 12

LOTS 153-157







153

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 12

LUNAR MODULE PILOT ALAN BEAN'S FLOWN APOLLO 12 SILVER ROBBINS MEDALLION

FLOWN Apollo 12 Robbins Medallion #114, NGC MS 64 (certificate number: 2389592-001), sterling silver, 32 mm in diameter. Obverse features the mission insignia with a clipper ship arriving at the Moon, reverse engraved with launch, landing, and return dates ("November 14, 1969 | November 19, 1969 | November 24, 1969"), and serial number. With Autograph Letters Signed by ALAN BEAN and Sue Bean.

ONE OF ONLY 262 MINTED AND FLOWN

Of the run of medallions created for Apollo 12, the first 82 were struck from a silver ingot salvaged from a 1715 shipwreck off Cape Canaveral (the "Spanish Plate Fleet" medallions). Serial numbers 83-262 can be distinguished by the addition of a Sterling silver hallmark, lacking in serial numbers 1-82

Al Bean's provenance letter reads: "I hereby certify that the silver Apollo 12 Robbins Medallion identified by the number 114 flew aboard Yankee Clipper, our command module, into lunar orbit, 60 miles above the moon, on our Apollo 12 mission in November 14-24, 1969."

\$10.000-12.000

154

ORIGINALLY FROM THE COLLECTION OF APOLLO 12 MISSION COMMANDER CHARLES "PETE" CONRAD

FLOWN TO THE LUNAR SURFACE ON APOLLO

LUNAR SURFACE FLOWN LUNAR MODULE DATA CARD CLAMP

FLOWN TO THE LUNAR SURFACE, Lunar Module Data Card Clamp, approx. 23/4 by 2 by 21/4 inches, etched with "P/N SEB32100099-301 | S/N 1024 | ASSY" with Velcro square adhered to one side; minor wear consistent with use. Displayed in an elaborate acrylic box with Velcro mount, with a photograph of the lunar surface showing the path of Apollo 12 LM Intrepid, and facsimile LM Data Card Book, acrylic cover bears additional translucent descriptive text. With a Typed Letter Signed by PETE CONRAD on Odyssey Group letterhead, dated May 31, 1994.

FLOWN TO THE LUNAR SURFACE ABOARD APOLLO 12 LUNAR MODULE INTREPID

This Data Card Clamp, which was used to secure the critical lunar surface data cards, spent over 31 hours on the Lunar Surface. It, along with the other items in the Lunar Module, was exposed to lunar dust after Alan Bean and Pete Conrad returned from their extensive lunar surface explorations, their suits covered in sticky moondust, which adhered to everything they came into contact with. The material was so sticky that a special vacuum was needed to remove the material, which was impossible to completely remove, and thus, pretty much everything that was housed in the Lunar Module will have trace amounts of lunar material adhering to it.

Pete Conrad's provenance letter reads: "I Pete Conrad, hereby state that Lot #210 (Apollo XII Clamps used in the Lunar Module) as featured in the Odyssey Auctions, February 27, 1994 catalog is authentic and as described."

REFERENCES

NASA. *Apollo 12 Stowage List. Mission AS-507 CM 108/LM-6*. Houston: Manned Spacecraft Center, November 18, 1969, p. 40

\$ 6,000-9,000

155

ORIGINALLY FROM THE COLLECTION OF KENNETH KLEINKNECHT, MANAGER FOR APOLLO CSM

FLOWN ON APOLLO 12

FLOWN HEAT SHIELD PLUG IN LUCITE

Apollo 12 heat shield plug, approx. 40 by 30 by 30 mm. Encased in a Lucite cylinder 23/4 inches tall and 3 inches in diameter, "#22" etched at bottom of plug. The base of the cylinder in engraved: "APOLLO 12 | NOV. 14-24, 1969." Some minor scuffing to acrylic encasement.

Kenny Kleinknecht was a pioneer of aerospace engineering and technology, serving as part of the original Space Task Group before transferring to the Manned Spacecraft Center where he served as the Mercury Program Manager, Deputy Manager for the Gemini Program, Manager for Apollo Program Command and Service Modules, Skylab Program Manager, Director of Flight Operations and Vehicle Manager for the first Columbia Shuttle flight.

REFERENCES

See: Smithsonian National Air and Space Museum, Wall of Honor: https://airandspace.si.edu/support/wall-of-honor/kenneth-s-kleinknecht

\$ 2,500-3,500

156

APOLLO 12 - ALAN BEAN COLLECTING LUNAR SOIL SAMPLES

Black and white photograph, 16 by 20 inches.

SIGNED by ALAN BEAN: "ALAN BEAN Apollo 12"

An incredible image of Alan Bean holding a special environmental sample container filled with lunar soil. A Hasselblad camera is mounted on the chest of his spacesuit, and Pete Conrad, who took this image, is clearly reflected in Bean's helmet visor.

\$ 2,000-3,000

157

APOLLO 12 - ALAN BEAN AT SHARP CRATER WITH THE HANDTOOL CARRIER

Black and white photograph, 20 by 16 inches.

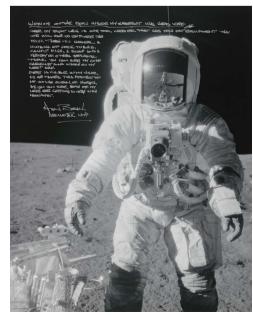
SIGNED and INSCRIBED by ALAN BEAN: "Working on the moon inside my spacesuit was hard work[.] Near my right leg is our tool carrier that has much of the equipment that we will use to explored the moon. There is a hammer, a number of core tubes, sample bags, a scoop and a variety of other geological tools. You can see my cuff checklist and watch on my left arm. Pete is visible in my visor as he takes this portrait of me on the Ocean of Storms. As you can see, both of my legs are getting dirty with moon dust. ALAN BEAN Apollo XII LMP."

\$ 2,000-3,000









APOLLO 13

LOTS 158-179



158

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

LM ORBIT MONITOR CHART

FLOWN lunar surface map, printed in black and white, folded and adhered in 10 sections, 20 pp., $10\frac{1}{2}$ by 8 when folded, first page printed with the text: "LM ORBIT MONITOR CHART | APOLLO 13 | LAUNCH DATES 11 APRIL OR 10 MAY 1970 | SKB 32100082-373 | S/N 1001 | 1st Edition 1 March 1970." With three annotations in red pen, noting the Apollo 11 (page 13) and Apollo 12 (page 3) landing sites, and the Powered Descent Initiation "PDI X" (page 8), and one annotation in pen marking the location of Mt. Marilyn (Lovell's wife); slight discoloration to strip of transparent tape connecting the ends of the map (between pages 1-2).

SIGNED and INSCRIBED by JAMES LOVELL on the first page, "Flown."

This map was used for lunar surface landmark orientation and identification.

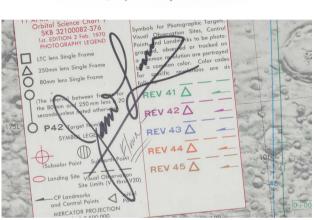
REFERENCES

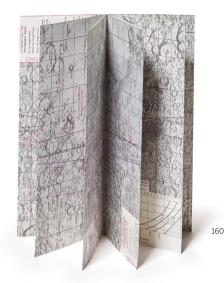
NASA. *Apollo 13 Stowage List. Mission AS 508 CM 109/LM-7.* Houston: Manned Spacecraft Center, April 21, 1970, page 5

\$ 10,000-14,000











159

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

FLOWN ORBITAL SCIENCE CHART F

FLOWN lunar surface map, printed in black, white, and colors, folded and adhered in 12 sections, 24 pp., 12 by 7½ inches when folded, printed with the text: "ORBITAL SCIENCE CHART F | APOLLO 13 REV 40-46 | 11 APRIL 1970 1st ED 2 February 1970 | PART NO. SKB 32100082-376 | SN 1001," a color-coded photography legend, and graph charting sextant photography shutter speeds. With numbering in red pen to each page ("F1, F2, F3," etc.), "Interval" noted in red pen on page F10, an "X" with a dotted circle next to crater Billy on page F16; minor creasing and wear at outer folds.

SIGNED and INSCRIBED by JAMES LOVELL on the first page, "Flown."

REFERENCES

NASA. *Apollo 13 Stowage List. Mission AS 508 CM 109/LM-7.* Houston: Manned Spacecraft Center, April 21, 1970, page 4

\$ 7,000-10,000

160

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

FLOWN ORBITAL SCIENCE CHART CONTINGENCY FLIGHT CHART

FLOWN lunar surface map, printed in black, white, and colors, folded and adhered in 6 sections, 12 pp., 12 by 5 inches when folded, printed with the text: "SKB 32100082-326 | S/N 1001 | 11 April 1970 Launch Date | 1ST EDITION 4 MARCH 1970," with a color-coded photography legend, and graph charting sextant photography shutter speeds, "Far Side" written in pen on second page; slight discoloration to strip of transparent tape connecting the ends of the map (on last page).

SIGNED and INSCRIBED by JAMES LOVELL on the first page, "Flown."

Back-up chart with lunar landmarks, and detailed images of the far side of the Moon.

REFERENCES

NASA. Apollo 13 Stowage List. Mission AS 508 CM 109/LM-7. Houston: Manned Spacecraft Center, April 21, 1970, page 4

\$ 5,000-8,000



161





ANTE IGA	ANTE	ENNA
(PITCH)	P.	Υ
0 10 20 30 40 50 60 60 70 80 90 100 110 1120 130 140 150 160 170 180 190 210 220 220 220 220 220 220 230 240 330 330 340 340 340 340 340 340 340 3	113 99 85 71 28 28 20 12 5 3 10 17 25 34 44 -555 67 87 286 227 216 207 199 192 184 177 170 163 155 146 136 125 L LAUNCH	-43 -44 -47 -43 -40 -36 -31 -11 -18 -11 -17 -23 -30 -35 -40 -44 -45 -44 -41 -36 -31 -37 -38 -9 -9 -9 -9 -9 -9 -35 -39



DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

MISSION EMBLEM BETA CLOTH

FLOWN mission emblem Beta cloth, 8 by 8 inches, featuring the mission insignia with three horses traveling from the Earth to the Moon with the Sun in the background. "Ex Luna, Scientia" is Latin for "From the Moon, Knowledge." With a Houston, Texas, April 17 1970 cancellation (the splashdown date for Apollo 13) on a 10 cent First Man on the the Moon stamp. Some very minor fraying at the edges, as excepted.

SIGNED and INSCRIBED by JAMES LOVELL: "This patch on board Apollo 13 in its flight around the moon April 11-17 1970."

\$ 4.000-6.000

162

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

AB EMBLEM MISSION PATCH

FLOWN embroidered mission patch, 4 inches in diameter, featuring the mission insignia with three horses traveling from the Earth to the Moon with the Sun in the background. "Ex Luna, Scientia" is Latin for "From the Moon, Knowledge." SIGNED by JAMES LOVELL on the reverse in black marker. With a Typed Letter Signed by JAMES LOVELL on Lovell Communications letterhead.

Jim Lovell's letter of provenance reads: "I certify that this Apollo 13 Embroidered Mission Patch was on board the Apollo 13 spacecraft. Apollo 13['s] perilous flight took off on April 11 and returned safely on April 17, 1970. This patch is from my personal collection of space artifacts and has been in my possession since the mission."

\$ 3,000-6,000

163

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

"S-BAND ANTENNA ANGLES" CUE CARD

FLOWN instrument panel cue card made of heavy stock paper, for use inside the Lunar Module, 3½ by 4 inches, with four small Velcro squares to verso. Printed with pitch and yaw angles for the spacecraft, necessary to maintain communications during descent of the Lunar Model. "April Launch | Apollo 13 | 3/2/70" printed at bottom of card.

SIGNED and INSCRIBED: "JAMES LOVELL | Flown"

\$ 2,000-3,000

164

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

"CDR BUS/LMP BUS" CUE CARD

FLOWN instrument panel cue card made of heavy stock paper, for use inside the Lunar Module, "APOLLO 13 | 3/16/70" printed at left margin, 1% by 5 inches, with Velcro strip to verso.

SIGNED by JAMES LOVELL on the recto, and INSCRIBED on the verso: "Flown."

\$ 2.000-4.000

165

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

"DEDA ADDRESSES" CUE CARD

FLOWN instrument panel cue card made of heavy stock paper, for use inside the Lunar Module, 3 by 4 ¾ inches, with Velcro square to verso; previously folded.

SIGNED and INSCRIBED by JAMES LOVELL on the verso: "FLOWN | "Manual flight guidelines for Saturn V if auto fails."

DEDA stands for Data Entry and Display Assembly, an integral part of the Abort Guidance System.

REFERENCES

NASA. *Apollo 13 Stowage List. Mission AS 508 CM 109/LM-7.* Houston: Manned Spacecraft Center, April 21, 1970, page 5

\$ 2,000-4,000

166

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

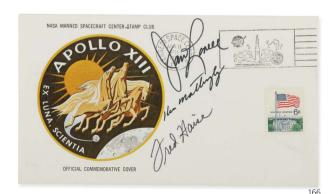
APOLLO 13

INSURANCE COVER SIGNED BY THE ORIGINAL CREW

Apollo 13 Life Insurance Cover measuring approximately $3^3/4$ by $6^1/2$ inches with a NASA Manned Spacecraft Center Stamp Club cachet featuring the Apollo 13 mission emblem, depicting three horses traveling from the Earth to the Moon with the Sun in the background and the motto "Ex Luna, Scientia," Latin for "From the Moon, Knowledge." Bearing the 6 cent Flag stamp with a pictorial cancellation from Kennedy Space Center on the Apollo 13 launch date, April 11, 1970.

SIGNED on the front of the cover by JAMES LOVELL, FRED HAISE, and KEN MATTINGLY, the original Command Module Pilot of Apollo 13, who was grounded before the launch due to his exposure to rubella. Additionally SIGNED and INSCRIBED by JAMES LOVELL on the back "Apollo 13 Insurance Cover."

\$ 2,000-4,000







164

D	EDA ADDRESSES	
R DOT - 440 R - 317 Ha - 315 Ha - 403 V - 433 HIDOT - 367 H - 337 Θ - 277 Δ V 404, 5,6=0 470,7	STORE STORE STORE OT 10 PM STORE V16078 V16078 V21069 V21069	- (Present)(-)270 - (Next Man)(-)263 } -415 & 1E R DOT -503E R 316E 3 RR RNG/RNG RT 2 %THROT/H/H 9 ARLS
	IANUAL ASCENT	
5:15	OHW 4- 00° :1 85 1:1 70 3:2 55 5:2	5 PITCH DN TO 37 4 32 6 25

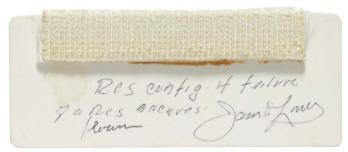
165



165



	VEHICLE CONFIG	QUAD A/C FOR X	QUAD B/D FOR X	ERR DEADBAND	RATE SELECT
RI	0 = No DAP 1 = CSM 2 = CSM & LM 3 = CSM & SIVB 6 = CSM & LM (Ascent Stg only)	0 = Fail A/C 1 = Use A/C	0 = Fail B/D 1 = Use B/D APOLLO 13 MARCH 16, 1970	0 = ±0.5° 1 = ±5.0°	0 = 0.05°/sec 1 = 0.2°/sec 2 = 0.5°/sec 3 = 2.0°/sec
	Roll Quad Select	Quad A	Quad B	Quad C	Quad D
R2	0 = Use B/D 1 = Use A/C	0 = Fail 1 = Use	0 = Fail 1 = Use	0 = Fail 1 = Use	0 = Fail 1 = Use







LOS RATE (MRAD/SEC) -0. +5 +10 +15 +20 +25 +30 +35 +40 +4: 61 49 36 24 18 12 6 0 28 24 20 16 12 10 8 6 4 3

169

167

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

"VEHICLE CONFIGURATION" CUE CARD

FLOWN instrument panel cue card made of heavy stock paper for use inside the Command Module, for necessary configurations to Quad engines, 13/8 by 3 1/2 inches, with Velcro strip to verso. Small waterstain visible on verso.

SIGNED and INSCRIBED by JAMES LOVELL on the verso: "RCS config if failure of a RCS occurs. FLOWN."

\$1.000-3.000

168

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

APOLLO 13

COMMANDER JAMES LOVELL'S APOLLO 13 FRANKLIN MINT MEDALLION

Apollo 13 Franklin Mint Medallion #0114, NGC PF 64 Ultra Cameo (certificate number: 3185319-076), sterling silver, 38 mm in diameter. Obverse features the mission insignia with three flying horses and the motto "Ex Luna, scientia," the reverse depicts the Command Service Module and Lunar Module, and the original crew names: "James A. Lovell, Jr., Fred W. Haise Jr., and Thomas K. Mattingly." With a Typed Letter Signed by JAMES LOVELL, on Lovell Communications letterhead.

A RELIC OF THE ORIGINAL APOLLO 13 CREW — AN UNFLOWN FRANKLIN MINT MEDALLION BEARING THOMAS K. MATTINGLY'S NAME — ONE OF ONLY 200 MINTED

While Robbins medallions were struck for all of the manned Apollo missions, Franklin Mint was only engaged to produce commemorative medallions for Apollo 13 and 14. Only 200 medallions were struck, and they are noteworthy for being one of only a few items discovered to bear the names of the original crew. All 404 Robbins Medals minted to commemorate the Apollo 13 mission were restruck to bear the corrected crew names, and to remove the unrealized lunar landing date.

Jim Lovell's provenance letter reads: "I hereby certify that this Apollo 13 sterling silver Franklin Mint medal #0114, which also lists the original scheduled crew on its reverse, is one of the 200 original specimens that were made for me to take aboard the mission April 11-17, 1970. This medal is from my personal collection and has been in my possession since the mission until being offered now."

\$ 3,000-5,000



169 (REVERSE)

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

FLOWN ON APOLLO 13

"LOS RATE, RANGE, RANGE RATE Vs TIME FROM TPI" CUE CARD

FLOWN instrument panel cue card made of heavy stock paper, for use inside the Lunar Module, 31/4 by 4 inches, with four small Velcro squares to verso; small loss to front of card. An LOS (Loss of Signal – for communications) rate curve and rate tables are plotted on a graph vs times for TPI (Terminal Phase Initiation), being a LM ascent engine burn to intercept the Command/Service Module to allow rendezvous after return from the lunar surface.

SIGNED and INSCRIBED: "JAMES LOVELL I Flown"

The three rate tables along the lower edge plot time from TPI in minutes, beginning at 0 to +45. The second table shows decreasing range in nautical miles from 32 to 0, and the third gives the range rates in feet per second from -135 to -33.

\$1,000-3,000

170

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

STRUCK FROM SILVER FLOWN ON APOLLO 13

COMMAND MODULE PILOT JACK SWIGERT'S APOLLO 13 SILVER ROBBINS MEDALLION

Re-minted from FLOWN silver, Apollo 13 Robbins Medallion #25, NGC MS 66 (certificate number: 2626452-001), sterling silver, 32 mm in diameter. Obverse features the mission insignia with three flying horses and the motto "Ex Luna, scientia," the reverse bears the corrected crewmember names ("James A. Lovell, Jr. • Fred W. Haise, Jr. • John L. Swigert, Jr."), mission launch and return dates ("April 11, 1970 | April 17, 1970") and the serial number. Previously set as a necklace, with the old setting and chain included, and with an Autograph Letter Signed by JACK SWIGERT dated January 4, 1977; letter previously folded.

ONE OF ONLY 404 MEDALLIONS, STRUCK FROM THE SILVER OF 400 FLOWN MEDALLIONS, ORIGINALLY FROM THE COLLECTION OF CMP JACK SWIGERT

400 Robbins medallions were produced for Apollo 13. Two unpredictable events rendered the reverse design obsolete: Ken Mattingly was grounded and replaced by Jack Swigert as Command Module Pilot at the last minute, and the new crew was forced to abort plans for a lunar landing midmission following an oxygen tank explosion. After the safe return of Apollo 13, the 400 flown Robbins medallions were melted down and reminted with the corrected crew names, and the omission of a "landed" date. It appears that a few additional unflown medals were melted down with the flown examples, resulting in 404 re-struck medallions.

Jack Swigert's provenance letter reads: "Apollo 13 was a memorable experience for me. And I hope this Medallion which we carried aboard our spacecraft will bring you the same good fortune Apollo 13 did for me. This was intended to be a Christmas gift but the delay was at the iewelers. Please forgive me — and just consider this an early Valentine."

\$10,000-12,000

171

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

STRUCK FROM SILVER FLOWN ON APOLLO 13

COMMANDER JAMES LOVELL'S APOLLO 13 SILVER **ROBBINS MEDALLION**

Re-minted from FLOWN silver, Apollo 13 Robbins Medallion #284, NGC MS 69 (certificate number: 2356822-002), sterling silver, 32 mm in diameter. Obverse features the mission insignia with three flying horses and the motto "Ex Luna, scientia," the reverse bears the corrected crewmember names ("James A. Lovell, Jr. • Fred W. Haise, Jr. • John L. Swigert, Jr."), mission launch and return dates ("April 11, 1970 | April 17, 1970") and the serial number. With an Autograph Letter Signed by JAMES LOVELL on Lovell Communications letterhead.

ONE OF ONLY 404 MEDALLIONS, STRUCK FROM THE SILVER OF 400 FLOWN MEDALLIONS, ORIGINALLY FROM THE COLLECTION OF CDR JAMES LOVELL

See preceding lot.

Jim Lovell's provenance letter reads: "I hereby confirm and certify that Apollo 13 silver Robbins Medal serial number 284 is one that was struck with silver that was flown to the moon with me aboard the mission April 11-17 1970. Although we were not able to land on the lunar surface, the Apollo 13 mission will always be remembered as one of our country's greatest successes. This medal has been in my collection of personal mementos since the mission."

\$10.000-12.000



APOLLO 13 ROBBINS MEDA FLOWN 1970 #284 MEDAL MS 69

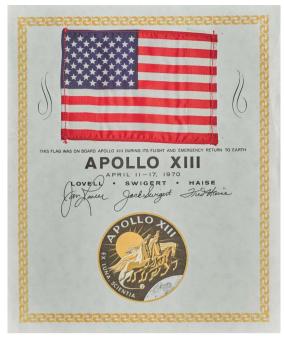
2356822-002











172





UNITED STATES FLAG CARRIED ON APOLLO 13

FLOWN stars and striped flag, 55% by 4 inches, mounted with tape to a 10 by 12 inch certificate reading "THIS FLAG WAS ON BOARD APOLLO XIII DURING ITS FLIGHT AND EMERGENCY RETURN TO EARTH | APOLLO 13 | APRIL 11-17 1970 | LOVELL · SWIGERT · HAISE," with the Apollo 13 emblem, SIGNED by JAMES LOVELL, JACK SWIGERT, and FRED HAISE below their printed names.

FLOWN ABOARD APOLLO 13 AND SIGNED BY THE CREW

"Houston, we've had a problem"

Apollo 13 was scheduled to be NASA's third moon-landing mission. Instead, however, following an oxygen tank explosion, the spacecraft shifted from a moon-bound landing unit, to a crippled vessel. To this day, the mission is regarded as evidence of NASA's innovation saving lives on the fly.

\$ 8.000-12.000

173

FLOWN TO THE LUNAR SURFACE ON APOLLO $14-{ m THE}$ KING JAMES BIBLE TEXT FRAGMENT

50-PAGE MICROFORM FRAGMENT FROM THE KING JAMES VERSION OF THE BIBLE. Cleveland and New York: World Publishing Co., ca 1964

FLOWN 50-page microform fragment (1/4 by½ inches), housed in a silvered and gilt metal modern Fabergé egg, applied with gilt bows and swags, the reeded stem applied with gilt floral swags and 3 small agate cabochons. Lacking amethyst finial. Blue velvet box, with a brass plaque affixed to the front that reads "Apollo 14 | Lunar Surface Bible Text Fragment | 50 Pages." Accompanied by: A letter of certification SIGNED by JAMES W. STOUT of the "Apollo Prayer League Committee" and EDGAR D. MITCHELL, and dated 2 June 2001.

ONE OF ONLY 32 ASTRONAUT FLIGHT-CERTIFIED TEXT FRAGMENTS FROM THE FIRST BIBLE CARRIED TO THE SURFACE OF THE MOON

With the efforts to take the Bible to the Moon on Apollo 12 and 13 having failed, a third, successful attempt was made with the assistance of Apollo 14 Lunar Module Pilot Edgar D. Mitchell. Given NASA's weight restrictions, rather than a large heavy codex, a new microform technology known as "PCMI" introduced by the National Cash Register Company in 1964 was adopted. Mitchell carried 100 of the microform bibles aboard the Lunar Module Antares, as confirmed by NASA's official manifest, and they reached the "Fra Mauro Highlands" of the Moon on 5 February aboard the Antares. Once returned to Earth and released from lunar quarantine, Mitchell presented Rev. John Stout with the packet of 100 bibles.

PROVENANCE

Reverend John M. Stout (transported to the lunar surface and returned to Rev. Stout by astronaut Edgar D. Mitchell)

\$ 5,000-8,000

FLOWN APOLLO 13 EMBLEM

SURVIVED WITH THE CREW AFTER THE SPACECRAFT EXPLOSION IN DEEP SPACE

FLOWN Apollo 13 cloth emblem, 31/2 inches in diameter. Featuring the mission with three horses traveling from the Earth to the Moon with the Sun in the background. "Ex Luna, Scientia" is Latin for "From the Moon, Knowledge," The emblem is matted and framed to 12½ by 12¾ inches, SIGNED and INSCRIBED on the mat "THIS PATCH WAS FLOWN ON BOARD THE APOLLO 13 SPACECRAFT | ON ITS FLIGHT AROUND THE MOON 11-17 APRIL 1970 | JAMES LOVELL | COMMANDER."

With JAMES LOVELL's signed provenance letter which reads: "This Apollo 13 crew patch was flown aboard the command module Odvssev during its perilous journey around the moon on April 11-17, 1970. The patch it silk screened on fireproof Beta cloth, the same material used for the outer layer of the Apollo spacesuit. It is identical to the patches seen on our crew's spacesuits. This patch was vacuum packed and stowed aboard Odyssey as part of my Personal Preference Kit."

The damage caused to the Service Module when an oxygen tank exploded led to a loss of power and breathing oxygen to Command Module Odyssey. The Apollo 13 lunar landing mission was cancelled, and Lunar Module Aquarius was used as a 'lifeboat.' During the four days required to fly around the moon and travel back to Earth, the crew had to conserve electrical power and oxygen all the while performing critical LM engine burns to insure their flight path would indeed return them to Earth.

\$ 4.000-6.000

175

APOLLO 13 LUNAR ORBITAL SCIENCE CHARTS

Lunar Orbital Science Flight Chart E. Apollo Mission 13, Rev 19 through 39. 11 April 1970 Launch Date. SKB 32100082-375. Complete with all three charts -1, -2, and 3

Together three Lunar Orbital Science Flight Charts (58 by 27 inches). Issued for the April 11, 1970 launch date. Scale 1:2,500,000 with nautical mile distance markers found in two locations. SIGNED AND INSCRIBED BY BUZZ ALDRIN:"'CONTACT LIGHT, OK, ENGINE STOP'. TRANQUILITY BASE. BUZZ ALDRIN. APOLLO XI LMP. JULY 20, 1969"; FRED HAISE: "'PLANNED THIRD LUNAR LANDING—BUT BOOM!' HOUSTON WE HAVE A PROBLEM!!! FRED HAISE, APOLLO 13 LMP. APRIL 13, 1970"; and GENE CERNAN: "'THE CHALLENGER HAS LANDED ...!' TAURUS LITTROW...' GENE CERNAN. CDR APOLLO XVII. 11 DECEMBER 1972."

FIRST EDITION, SIGNED AND INSCRIBED BY BUZZ ALDRIN, FRED HAISE, AND GENE CERNAN. A highly detailed near side chart with the Apollo 13 landing site ellipse marked in red and covers the landing areas of Apollo 11 and 12 plus the future landing sites of Apollo 14, 16, and 17. Many prominent lunar craters visible from Earth, including Aristarchus and Copernicus, are identified. Photographic targets for Descartes (the future Apollo 16 landing site), Davy Rille, and the series of Gassendi craters are marked in purple, orange, and green. Around a dozen other targets are marked in blue or red with either long directional circled cross-marks or arrows. Revs (lunar orbits) 40 to 46 are plotted in green.

176

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

THE NEAR FULL MOON AS SEEN FROM APOLLO 13

THE LUNAR FARSIDE SHOWING THE CRATER **TSIOLKOVSKY**

Vintage color photograph, 111/4 by 14 inches, mounted onto board, SIGNED on the mat by JAMES LOVELL, JACK SWIGERT and FRED HAISE, and INSCRIBED by the crew "TO BILL TAUB- I THANKS FOR RISKING CAMERA DAMAGE SHOOTING THE AQUARIUS GANG. YOUR PICTURE | TAKING EFFORTS, PRINTING, AND MOUNTING PICTURES UPSIDE DOWN WAS APPRECIATED. BEST | WISHES FROM THE APOLLO 13 CREW." Minor nick to edge of image, minor toning to board.

SIGNED and INSCRIBED by the Apollo 13 Crew. This view of the moon was photographed from the spacecraft during its trans-Earth journey homeward. Although the explosion of the oxygen tank in the Service Module forced the cancellation of the scheduled lunar landing, the spacecraft made a pass around the Moon prior to returning to Earth.

Incidentally, the orientation of the photograph is, in fact, "upside down."

\$ 3,000-5,000











178



179

APOLLO 13 - "HOUSTON, WE'VE HAD A PROBLEM!"

Black and white photograph, 20 by 16 inches, matted with Apollo 13 mission patch

SIGNED and INSCRIBED: "Chuck Dietrich Apollo 13 RETRO; "Houston, we've had a problem!" JAMES LOVELL Apollo 13 CDR; "We had a pretty large bang associated with the caution and warning there....." FRED HAISE Apollo 13 LMP; "Jim, you are go for the burn, go for the burn!" Vance Brand CAPCOM. Apollo 13: "That's affirmative. We're reading you. We're trying to come up with some ideas here for you..." Jack Lousma; "It turned from saving the landing to a survival mission for the crew" Glynn S. Lunney FLIGHT; Sy Liebergot Apollo EECOM "We may have had a instrumentation problem, Flight."; "Failure is not an option!" Eugene Kranz "white" flight; Gerry Griffin Flight, Gold Team; CHARLIE DUKE Apollo 13 backup LMP "Typhoid Mary""

\$ 2,500-3,500

178

APOLLO 13 - LUNAR FLYBY

Large color photograph, 16 by 20 inches

SIGNED by FRED HAISE at upper right: "FRED HAISE Apollo 13 LMP"

A view of the moon from the crew's Lunar Module "lifeboat" during their lunar flyby. They had precious few moments to observe the lunar surface up close before heading back to earth. The shut-down Command Module is visible out the overhead rendezvous window.

\$ 2,000-3,000

179

APOLLO 13 - "HOUSTON, WE'VE HAD A PROBLEM"

Large black and white photograph, 16 by 20 inches.

SIGNED and INSCRIBED by JIM LOVELL: "'Houston, we've had a problem!' JAMES LOVELL Apollo 13 CDR."

A view of the severely damaged Apollo 13 Service Module (SM) as photographed from the Lunar Module/Command Module (CM). An entire panel on the SM was blown away by the explosion of an oxygen tank.

\$ 2,000-3,000

APOLLO 14

LOTS 180-185









180

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 14

COMMANDER ALAN SHEPARD'S FLOWN APOLLO 14 SILVER ROBBINS MEDALLION

FLOWN Apollo 14 Robbins Medallion #220, NGC MS 65 (certificate number: 2582083-001), sterling silver, 35 by 30 mm overall. Obverse features the mission insignia with a NASA astronaut pin traveling from the Earth to the Moon, reverse engraved with launch, landing, and return dates ("Jan. 31, 1971 | Feb. 5, 1971 | Feb. 9, 1971.") With a Typed Letter Signed by ALAN SHEPARD, notarized on 25 October 1996 in Brevard County, Florida.

ONE OF ONLY 303 MINTED AND FLOWN

Apollo 14 was the eighth manned mission of the Apollo program, and the third to land on the Moon. The spacecraft was crewed by Commander Alan Shepard (the first American to travel into space), Command Module Pilot Stuart Roosa, and Lunar Module Pilot Ed Mitchell.

Al Shepard's provenance letter reads: "This is to verify that the accompanying silver medal, the insignia of the flight of Apollo 14, was flown to the moon on board the spacecraft during the time period of January 31 until February 9, 1971. It bears the serial number of 220."

\$ 12,000-18,000

181

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 14

LUNAR MODULE PILOT EDGAR MITCHELL'S FLOWN APOLLO 14 FRANKLIN MINT MEDALLION

FLOWN Apollo 14 Franklin Mint Medallion #0114, NGC PF 63 Ultra Cameo (certificate number: 3044085-002), sterling silver, 39 mm in diameter. Obverse features the mission insignia with a NASA astronaut pin traveling from the Earth to the Moon, reverse depicts the surface of the Moon with the words "Spacecraft | Kitty Hawk & Antares | Destination | Fra Mauro — 1971." With the original 2 by 2 inch cardboard holder SIGNED and INSCRIBED by MITCHELL ("Flown on Kittyhawk | No. 0114"), and an Autograph Letter Signed by EDGAR G. MITCHELL on his personal letterhead.

ONE OF ONLY 195 FLOWN OF 200 MINTED

Edgar Mitchell's provenance letter reads: "This letter will certify that Apollo 14 silver Franklin Mint Medal, serial number 0114, was flown to the moon on the mission January 31–February 9, 1971 aboard the spacecraft Kittyhawk. This medal can be further identified by the edge stamps 'Sterling,' the 'F' Franklin Mint logo, the '71,' the year of issuance, the 'P' for proof striking, and the serial number. This is one of the original 195 flown medals accounted for in the crew PPK inventory. This one is from my personal collection and has been in my possession since the mission."

\$ 5,000-7,000

182

FLOWN TO THE MOON ON APOLLO 14

FLOWN APOLLO 14 BETA CLOTH EMBLEM, SIGNED

FLOWN Apollo 14 Beta emblem, 4 inches in diameter. Printed on Beta cloth, 9 by 8¹/₄ inches.

SIGNED and INSCRIBED by EDGAR MITCHELL above and below the emblem: "FLOWN TO THE MOON | ON APOLLO 14 | EDGAR MITCHELL."

The Mercury 7 began the tradition of astronauts wearing a lapel pin with the design of a three-tailed shooting star encircled by an ellipse. Astronaut candidates and trained astronauts wore silver pins in that design until their first spaceflight, and astronauts who had flown in space wore a gold version. Notably, the Apollo 14 crew included Alan Shepard, one of the original Mercury astronauts. As a result, the mission emblem for Apollo 14 was the first to include the three-tailed shooting star, although this later became a commonly-used element in mission emblem designs.

\$ 2.500-3.500





183



184



APOLLO 14 - THE LUNAR MODULE AT FRA MAURO

Large color photograph, 16 by 20 inches.

SIGNED by EDGAR MITCHELL: "EDGAR MITCHELL Apollo 14."

An image of Apollo 14's Lunar Module *Antares*—named after one of the brightest stars in the night sky — in the Fra Mauro Highlands.

\$ 2,000-3,000

184

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

APOLLO 14 CREW SIGNED PHOTOGRAPH

PLANTING THE STARS AND STRIPES ON THE LUNAR SURFACE

Vintage color photograph, 73/8 by 93/8 inches; matted and framed to 125/8 by 155/8 inches. Fading to image; not examined out of frame.

SIGNED on the mat board by the Apollo 11 crew, ALAN SHEPARD, STUART A. ROOSA and EDGAR MITCHELL, and INSCRIBED: "TO BILL TAUB | WITH THANKS FOR A JOB — KEEP TRYING, THEY'LL TURN OUT LIKE THIS SOMEDAY! APOLLO 14"

\$ 2,000-3,000

185

DIRECTLY FROM THE PERSONAL COLLECTION OF APOLLO 13 MISSION COMMANDER JAMES LOVELL

APOLLO 14

CREW-SIGNED ONE DOLLAR BILL

One dollar bill, serial number K07994185A, 2 ½ x 6 inches, encased in acrylic. SIGNED by ALAN SHEPARD (left), STUART ROOSA (over Washington's portrait), and EDGAR MITCHELL (right). With a Typed Letter Signed by JAMES LOVELL on Lovell Communications letterhead.

Jim Lovell's letter of provenance reads: "I certify that the Apollo 14 crew presented me with this signed dollar bill after their flight. This dollar bill is from my personal collection of space artifacts and has been in my possession since the mission."

\$ 1,000-2,000

APOLLO 15

LOTS 186-191





186

186

186

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 15

COMMANDER DAVE SCOTT'S FLOWN APOLLO 15 SILVER ROBBINS MEDALLION

FLOWN Apollo 15 Robbins Medallion #025, NGC MS 67 (certificate number: 2031957-001), sterling silver, 35 mm in diameter. Obverse features the mission insignia with stylized birds flying over the primary exploration site for the mission, Hadley Rille, reverse engraved with the launch, landing, and return dates ("Jul. 26, 1971 | Jul. 30, 1971 | Aug. 7, 1971"), bearing the motto "Man's flight through life is sustained by the power of his knowledge" and the misspelled landing site "Appennines." With a Typed Letter Signed by DAVID SCOTT on his personal letterhead.

ONE OF ONLY 127 FLOWN OF 304 MINTED

Prior to Apollo 15, the entire run of minted Robbins medallions had been carried on each mission. This mission broke with precedent, carrying only serial numbers 1-127. After the mission, the remaining 177 unflown medallions were restruck with silver from a Spanish shipwreck ingot, which had been carried on the spacecraft by Command Module Pilot Al Worden. Flown serial numbers 1-127 can be identified by a misspelling of the landing site, "Appeninnes" on the reverse.

Dave Scott's provenance letter reads, in part: "I hereby certify that the Apollo 15 silver medallion number '25' included with this letter is from my personal collection and was flown aboard Apollo 15, July 26–August 7, 1971. Apollo 15 was the fourth manned lunar landing and the first 'J' mission extended scientific exploration of the Moon

Prior to the mission, 304 medallions were struck by the Robbins Company ... these medallions contained a spelling error of the landing site (i.e., 'Appenines' instead of correctly 'Apenines'). Apollo 15 was the first extended scientific exploration of the Moon, and due to spacecraft weight limitations, only 127 medallions were actually carried on the flight. However in my Personal Preference Kit (PPK) I carried a Spanish silver bar salvaged from the treasure of the Spanish 'Plate Fleet' that was destroyed by a hurricane in 1715. After the mission the Robbins Company re-struck the 177 medallions that has not flown and included the flown Spanish silver in the mix, and corrected the spelling of 'Apennine.' Thus the unflown medallions (as noted by the correct spelling of 'Apennine') actually contain this flown Spanish Plate Fleet treasure silver that was carried to the Moon during the mission.

This Apollo 15 serial number '25' has been in my personal collection since the mission."

\$ 12,000-14,000



187

FLOWN ON APOLLO 15

LUNAR MODULE FLOWN CREW-SIGNED "SIEGER" COVER

LUNAR SURFACE FLOWN postal cover #177, NASA impound serial #222, with color cachet featuring Apollo 15 mission insignia, 3 1/2 by 6 1/2 inches, with 6 cent Apollo 8 "In the beginning God..." stamp, se-tenant pair of 8 cent "A Decade of Achievement | United States in Space..." stamps, and two 1 cent "Thomas Jefferson" stamps, with a pictorial cancellation from Kennedy Space Center on the launch date of July 26, 1971, and aboard recovery ship USS Okinawa on splashdown date August 7, 1971.

[With] additional unflown supporting documentation, including two printed cards stating: "This cover is #177 of 300 postmarked just prior to the launch of Apollo 15 on July 26, 1971 at Kennedy Space Center; stowed aboard the spacecraft in a sealed fireproof packet: carried to the lunar surface in LM "FALCON": returned to earth in CM "ENDEAVOUR"; and postmarked immediately after splashdowh on

August 7, 1971 by the U.S. Navy Postal Station aboard the recovery ship USS OKINAWA." And a notarized typed Certification letter dated 19 July 1983, detailing the chain of provenance of cover #177, SIGNED by ALFRED M. WORDEN, DAVID R. SCOTT and JAMES B. IRWIN.

FLOWN TO THE LUNAR SURFACE ON APOLLO 15, SIGNED by DAVE SCOTT, AL WORDEN, and JIM IRWIN.

Shortly after the successful completion of Apollo 15, it came to light that the crew had struck a deal with the German philatelist Hermann Sieger, agreeing to carry an additional 400 covers aboard the Lunar Module Falcon (100 for Sieger to sell, and 100 for each crewmember). Taking into account the 232 authorized covers on board, a total of 632 covers flew. However, it was only the 400 unauthorized covers which spent from 30 July to 2 August 1971 on the lunar surface inside Falcon. Following the discovery of the subsequent sales of these "Sieger" covers, the examples remaining in the possession of the astronauts were recovered and impounded by NASA.

By June of 1972, the public had become aware of the matter through widespread news coverage. The philatelic cabal had negative consequences for the crew, who were called upon to appear before a closed meeting of the Senate Committee on Aeronautical and Space Sciences, and were leveled with an official reprimand from NASA. None of the three Apollo 15 astronauts ever flew in space again. In 1983 the astronauts successfully filed a suit against the government for the return of all of the impounded covers, of which the present example was one.

\$ 5,000-8,000



188

FROM THE ESTATE OF NASA SENIOR PHOTOGRAPHER BILL TAUB

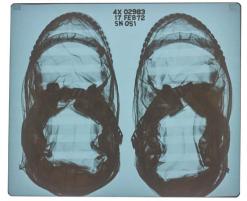
AN APOLLO 15 PHOTO PRESENTATION

3 vintage color photographs, images taken by Bill Taub, from 63/4 by 55/s to 133/s by 61/2 inches, with mission emblem, 31/4 inches in diameter, matted and framed together to 211/2 by 171/2 inches, SIGNED by DAVID SCOTT, ALFRED WORDEN and JAMES IRWIN, and INSCRIBED by the crew: "TO BILL TAUB WITH WARM PERSONAL REGARDS FROM THE CREW OF APOLLO 15 AND MANY THANKS | FOR RECORDING SO WELL THE HISTORY OF LUNAR VOYAGED ON THE EARTH. FEB. 9, 1972." Some fading to images and Irwin's signature.

Apollo 15 was the first J mission (longer three-day stays with an extended LM, three LEVAs, and a LRV), with a longer stay on the lunar surface, and an increased focus on science. The mission is remembered for the finding of the Genesis Rock, and for Scott using a hammer and a feather to test Galileo's theory that absent air resistance, objects drop at the same rate.

\$ 3,000-5,000











191

189

APOLLO 15 - CRESCENT EARTHRISE VIEWED FROM LUNAR ORBIT

Large color photograph, 16 by 20 inches.

SIGNED by AL WORDEN: "AL WORDEN Apollo 15 CMP."

The newly crescent Earth is seen rising above the lunar horizon during the 1971 Apollo 15 mission.

\$ 2,000-3,000

190

APOLLO 16 - QUALITY CONTROL

PRE-FLIGHT X-RAY OF SPACESUIT COVER LAYER BOOTS, 17 FEBRUARY 1972

X-Ray, 14 by 17 inches, numbered 051 and bearing the date "17 FEB 72"; some scattered minor scratches consistent with use, one small piece of adhesive to each corner.

Taken just two months before the Apollo 16 launch. The Nondestructive Evaluation Group (NDE) at NASA x-rayed all of the suits to verify that there were no sharp objects left behind from the manufacturing process. This x-ray shows a pair of cover layer boots, an extravehicular overshoe that was designed to be worn over spacesuit boots while the walking on the Moon.

\$ 2,000-3,000

191

A GROUP OF THREE PANORAMAS FROM APOLLO 15, 16 AND 17

2 color and 1 black and white panoramic photographs, each 403/8 by 83/8 inches.

SIGNED and INSCRIBED by DAVE SCOTT: "DAVE SCOTT | APOLLO 15 CDR."; CHARLIE DUKE: "CHARLIE DUKE | APOLLO 16 LMP," along with annotations related to Duke's time on the lunar surface; and GENE CERNAN: "GENE CERNAN."

A remarkable collection of panoramas, offering striking images of the lunar surface, and representing the Apollo missions 15-17.

\$ 3.000-5.000

APOLLO 16

LOTS 192-206

192

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

FLOWN ON APOLLO 16

LUNAR MODULE FLOWN UNITED STATES OF AMERICA FLAG

LUNAR SURFACE FLOWN cloth flag of the United States of America, 4 by 6 inches. Displayed on a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads: "I hereby certify that the flag of the UNITED STATES that accompanies this letter was flown to the lunar surface in John Young's LM PPK aboard the Apollo 16 mission to the Moon April 16-27, 1972. It has been a part of John W. Young's personal collection since returning from the mission. The flag has a holographic tamper-proof label attached, #1733290, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 12.500-15.000

193

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

FLOWN ON APOLLO 16

LARGE UNITED STATES OF AMERICA FLAG

FLOWN cloth flag of the United States of America, 73/4 by 113/4 inches, affixed with a tamper-proof label numbered 1733280; previously folded as expected. With a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads, in full: "I hereby certify that the flag of the UNITED STATES that accompanies this letter was flown to the Moon aboard the Apollo 16 mission April 16-27, 1972. It has been part of John W. Young's personal collection since returning from the mission. The flag has a holographic tamper-proof label attached, #1733280, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 6,000-8,000







193



194

194

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

FLOWN ON APOLLO 16

LARGE UNITED NATIONS FLAG

FLOWN cloth United Nations flag, 7½ by 11¾ inches, depicting the U.N. emblem, a polar projection world map surrounded by olive branches, affixed with a tamper-proof label numbered 1733292; previously folded as expected. With a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

This flag flew aboard Apollo 16 from 16-27 April 1972, and stayed on the Command Module with Ken Mattingly in lunar orbit while John Young and Charlie Duke flew to the surface of the moon on the Lunar Module *Orion*.

Susy Young's provenance letter reads, in full: "I hereby certify that the flag of the UNITED NATIONS that accompanies this letter was flown to the Moon aboard the Apollo 16 mission April 16-27, 1972. It has been part of John W. Young's personal collection since returning from the mission. The flag has a holographic tamper-proof label attached, #1733292, to ensure authenticity, that will display a residual honeycomb design without number if removed."



195



196



197

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

FLOWN ON APOLLO 16

"AB EMBLEM" EMBROIDERED MISSION INSIGNIA PATCH

FLOWN embroidered patch, 41/4 inches in diameter, depicting an eagle with outstretched wings atop a red white and blue shield emblazoned with the mission name, with stars and the crewmember surnames ("Young • Mattingly • Duke") around the perimeter. Affixed to a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads, in full: "I hereby certify that the Apollo 16 "AB EMBLEM" Embroidered Mission patch that accompanies this letter was flown aboard the Apollo 16 mission April 16-27, 1972. This patch was part of John W. Young's personal collection since the mission. The protective package holding the patch is sealed with a holographic tamper-proof label, #1745090, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 3.000-5.000

196

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

FLOWN ON APOLLO 16

"LION BROTHERS" EMBROIDERED MISSION INSIGNIA PATCH

FLOWN embroidered patch, 4½ inches in diameter, depicting an eagle with outstretched wings atop a red white and blue shield emblazoned with the mission name, with stars and the crewmember surnames ("Young • Mattingly • Duke") around the perimeter. Affixed to a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads, in full: "I hereby certify that the Apollo 16 "Lion Brothers" Embroidered Mission patch that accompanies this letter was flown aboard the Apollo 16 mission April 16-27, 1972. This patch was part of John W. Young's personal collection since the mission. The protective package holding the patch is sealed with a holographic tamper-proof label, #1745114, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 3.000-5.000

197

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

FLOWN ON APOLLO 16

LARGE FLORIDA STATE FLAG

FLOWN cloth Florida state flag, 7½ by 11¾ inches, depicting a red saltire on a white background with the state seal superimposed on the center, affixed with a tamper-proof label numbered 1733289; previously folded as expected. With a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

SPACE-FLOWN FLORIDA STATE FLAGS ARE QUITE SCARCE. All of the astronauts in the Apollo program would have had strong connections to the state of Florida, given the prominence of the Kennedy Space Center and Cape Canaveral in the space program. John Young also spent some of his formative early years in Orlando, Florida, where he attended grade school through high school.

Susy Young's provenance letter reads, in full: "I hereby certify that the flag of the STATE OF FLORIDA that accompanies this letter was flown to the Moon aboard the Apollo 16 mission April 16-27, 1972. It has been part of John W. Young's personal collection since returning from the mission. The flag has a holographic tamper-proof label attached, #1733289, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 3,000-5,000

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

APOLLO 16

CREW SIGNED INSURANCE COVER

Apollo 16 Life Insurance Cover measuring approximately 35/8 by 61/2 inches with a cachet featuring the Apollo 16 mission emblem, depicting an eagle with outstretched wings atop a red white and blue shield, with astronaut pins flanking the emblem on either side. Bearing the 8 cent "United States in Space" stamp with a pictorial cancellation from Kennedy Space Center on the Apollo 16 launch date, April 16, 1972. Displayed on a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

SIGNED by JOHN YOUNG, KEN MATTINGLY, and CHARLIE DUKE.

Susy Young's provenance letter reads: "I hereby certify that the Apollo 16 Crew Signed Insurance Cover that accompanies this letter is an original Insurance Cover that the crew signed while in crew quarters prior to the launch of Apollo 16. This Insurance Cover was a part of John W. Young's personal collection since the mission. This protective package holding this patch is sealed with a holographic tamper-proof label, #1733270, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 2,000-4,000

199

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

FLOWN ON APOLLO 16

TEXAS STATE FLAG

FLOWN cloth flag of the state of Texas, 4 by 6 inches. Displayed on a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead.

Susy Young's provenance letter reads: "I hereby certify that the flag of the STATE OF TEXAS flag that accompanies this letter was flown to the Moon aboard the Apollo 16 mission April 16-27, 1972. It has been a part of John W. Young's personal collection since returning from the mission. The flag has a holographic tamper-proof label attached, #1733272, to ensure authenticity, that will display a residual honeycomb design without number if removed."

\$ 2.000-4.000

200

DIRECTLY FROM THE PERSONAL COLLECTION OF JOHN YOUNG, MISSION COMMANDER OF APOLLO 16, VIA HIS ESTATE

FLOWN ON APOLLO 16

"GEORGIA INSTITUTE OF TECHNOLOGY" EMBROIDERED PATCH

FLOWN embroidered patch, 31/2 inches in diameter, depicting the Georgia Institute of Technology seal: a shield bearing the old university gate in Athens surrounded by the gearwheel of technology, with an eternal flame symbolizing knowledge placed atop the shield. Affixed to a Typed Letter Signed by John Young's widow, Susy Young, on their personal letterhead

Georgia Tech was John Young's alma mater, where he earned a Bachelor of Science degree with highest honors in Aeronautical Engineering in 1952.

Susy Young's provenance letter reads, in full: "I hereby certify that the "Georgia Institute of Technology" Embroidered patch that accompanies this letter was flown to the Moon aboard the Apollo 16 mission April 16-27, 1972. This patch was part of John W. Young's personal collection since the mission. The protective package holding the patch is sealed with a holographic tamper-proof label, #1733271, to ensure authenticity, that will display a residual honevcomb design without number if removed."

\$ 2,000-3,000



198









201

ORIGINALLY FROM THE COLLECTION OF APOLLO 16 LUNAR MODULE PILOT CHARLIE

APOLLO 16 LUNAR SURFACE MAP, USED ON THE LUNAR SURFACE

TAKEN IN THE LUNAR ROVER ON ALL THREE LUNAR EXPLORATIONS OF THE **DESCARTES HIGHLANDS**

LUNAR SURFACE FLOWN Apollo 16 lunar surface and topographical maps of Descartes Walking Traverses EVA-I, II, III, from the LM Lunar Surface Maps, Part No. SKB321000126-371, S/N 1001, April 1972. Two sided, heavy 8 by 101/2 inch lunar surface map, recto with photographic lunar surface map with grid, showing features including the LM landing site. flag plant site, "Turtle Mountain", "Palmetto", "Lone Star", "Eden Valley", "Merriam", and "Survey Ridge" among others; verso with topographic map of same site. SIGNED and INSCRIBED by CHARLES DUKE: "THIS MAP WAS FLOWN TO THE LUNAR SURFACE BY THE CREW OF APOLLO 16. IT WAS USED TO NAVIGATE DURING THE EVAS AT DESCARTES ON THE CAYLEY PLAIN. CHARLIE DUKE. APOLLO XVI."

During their 71 hours on the Moon, Lunar Module Pilot Charlie Duke, and Mission Commander John Young conducted three EVAs (Extra-Vehicular Activity, or Moonwalks), spending just over 20 hours on the lunar surface. The EVAs included three traverses in the lunar rover, during which they deployed 9 different experiments, photographed the lunar surface, and collected lunar samples from 11 different sites. This map accompanied them on the Lunar Rover, and was to be used as their primary navigation instrument should the Lunar Rover become inoperative.

Charles Duke's provenance letter reads: "This map of the lunar surface marked **Descartes** Walking traverses-I. II. III that I have presented to you was carried to the moon as part of the Apollo 16 checklist and data package. The entire package was stowed, initially, in the Command Module "Casper". Then once in lunar orbit, I transferred the package to its stowage compartment in the Lunar Module "Orion." As I descended the ladder to the lunar surface for our first EVA, this map and others plus cameras and film were carried by me for stowage on the Lunar Rover. These maps were to be used by me and John Young to navigate to our objectives during our lunar stay. This map was to be our primary navigation instrument in the event the lunar rover was inoperative. It was stowed with the other traverse maps on a special clip on the side of the rover instrument panel. Since returning the map from the Moon, it has been in my possession. Be a good caretaker. Keep the map as a remembrance of the Apollo Era. May it serve as a symbol to remind future generations that, God willing, there is no goal or dream that is impossible to achieve or as Rene Descartes says "There is nothing to far removed from us that we cannot reach it, or so hidden that we

cannot discover it."

REFERENCES

NASA, Apollo 16 Stowage List, Mission J-2 CM-113/LM-11. Houston: Manned Spacecraft Center, April 18, 1972, page 49

\$ 30,000-50,000

202

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 16

LUNAR MODULE PILOT CHARLES DUKE'S FLOWN APOLLO 16 SILVER ROBBINS **MEDALLION**

FLOWN Apollo 16 Robbins Medallion #15, NGC MS 65 (certificate number: 3044078-003), sterling silver, 35 mm in diameter. Obverse features the mission insignia with an eagle with outstretched wings, reverse engraved with launch, landing, and return dates ("Apr. 16, 1972 | Apr. 20, 1972 | Apr. 27, 1972.") With an Autograph Letter Signed by CHARLES DUKE on his letterhead

ONE OF ONLY 98 FLOWN OF 300 MINTED -ORIGINALLY FROM THE COLLECTION OF LMP CHARLIE DLIKE

Apollo 16 continued with the precedent set by Apollo 15, only flying a portion of the run of medallions struck for the mission. These flown medallions can be identified by the serial number stamped on the rim. The 202 remaining unflown medallions bear no such identifying marks.

Charlie Duke's provenance letter reads: "I hereby certify that Apollo 16 Silver Robbins Medal, serial number 15, is one that was flown with me aboard the Apollo 16 mission to the moon April 16-27, 1972. This medal has been in my collection of Apollo artifacts since the mission. Every time I view one of these medals, I recall my lunar adventure. It was a fantastic experience. I hope that this special medal will always be a source of motivation and inspiration to you. Continue to excell [sic] in your school work and always aim high throughout your life."

\$ 15,000-20,000









203

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 16

COMMANDER JOHN YOUNG'S FLOWN APOLLO 16 SILVER ROBBINS MEDALLION

FLOWN Apollo 16 Robbins Medallion #95, NGC MS 65 (certificate number: 2356823-001), sterling silver, 35 mm in diameter. Obverse features the mission insignia with an eagle with outstretched wings, reverse engraved with launch, landing, and return dates ("Apr. 16,

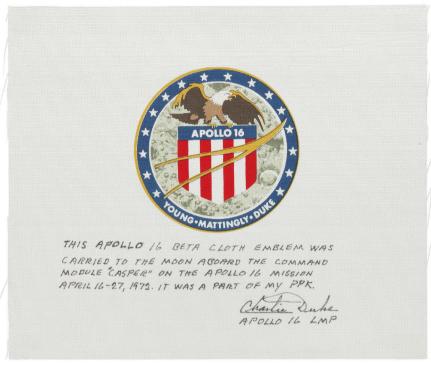
1972 | Apr. 20, 1972 | Apr. 27, 1972.") With an Autograph Letter Signed by JOHN YOUNG on his letterhead.

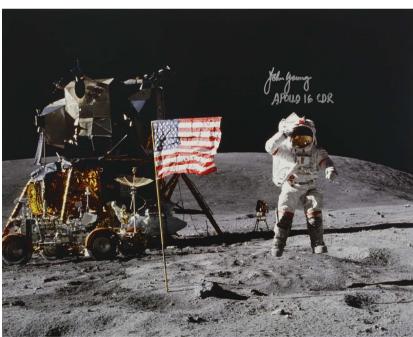
ONE OF ONLY 98 FLOWN OF 300 MINTED - ORIGINALLY FROM THE COLLECTION OF COMMANDER JOHN YOUNG

See preceding lot.

John Young's provenance letter reads: "I hereby certify and confirm that Silver Robbins medal, serial number 95, is one that was flown to the Moon aboard the Apollo 16 Command Module, April 16-27 1972. This medal has been part of my personal collection since the mission."

\$ 15,000-20,000





205

204

FLOWN APOLLO 16 EMBLEM

BETA CLOTH EMBLEM SIGNED BY CHARLIE DUKE, WITH SUPPORTING DOCUMENTS

FLOWN Apollo 16 cloth emblem, 3½ inches in diameter, 9 by 7½ inches overall, SIGNED and INSCRIBED by CHARLIE DUKE "THIS APOLLO 16 BETA CLOTH EMBLEM WAS | CARRIED TO THE MOON ABOARD THE COMMAND | MODULE "CASPER" ON THE APOLLO 16 MISSION | APRIL 16-27, 1972. IT WAS A PART OF MY PPL." The emblem is mounted on a velvet-covered board with enameled Apollo emblem, 3½ inches in diameter, and brass plaque, 6½ by 7¼ inches.

With two documents SIGNED by CHARLIE DUKE, which read: "This Apollo 16 Mission Emblem made of fireproof Beta Cloth was carried in the Personal Preference Kit aboard the Apollo Spacecraft "Orion" to the Moon and returned to Earth April 16-27, 1972[.] Beta Cloth Mission Emblems were worn on all Astronaut Spacesuits during Apollo Missions."

\$ 4,000-6,000

205

APOLLO 16 - JOHN YOUNG JUMPING SALUTE

Large color photograph, 16 by 20 inches.

SIGNED: "JOHN YOUNG Apollo 16 CDR"

The famous image of Commander John Young doing his jumping American flag salute with the lunar lander and rover in the background. Young completed three EVAs in the Descartes Highlands with Lunar Module Pilot Charles Duke, making him the ninth person to walk on the moon.

\$ 4,000-6,000



206

APOLLO 16 - CHARLIE DUKE ON THE LUNAR SURFACE

Large color photograph $16\frac{1}{2}$ by $20\frac{1}{2}$ inches.

SIGNED and INSCRIBED by CHARLIE DUKE: "EVA-1 at Plum Crater CHARLIE DUKE Apollo 16 LMP."

An image of Duke on the lunar surface during the penultimate Apollo mission. When the 36 year old astronaut descended from the Lunar Module into the Descartes Highlands, he became the tenth and youngest person to walk on the Moon, prompting the LMP to exclaim: "Fantastic! Oh, that first foot on the lunar surface is super, Tony!"

\$ 4,000-6,000

APOLLO 17

LOTS 207-212





207

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO 17

COMMANDER EUGENE CERNAN'S FLOWN APOLLO 17 SILVER ROBBINS MEDALLION WITH DIAMOND

FLOWN Apollo 17 Robbins Medallion #F4, NGC MS 63 (certificate number: 2602255-001), sterling silver, 35 mm in diameter. Obverse features the mission insignia with the Greek sun god Apollo foregrounding an American eagle and three stars, one of which is a set diamond. the reverse is engraved with launch, landing, and return dates ("Dec. 6, 1972 | Dec. 11, 1972 | Dec. 19, 1972.") With an Autograph Letter Signed by EUGENE CERNAN on his letterhead.

ONE OF ONLY 80 FLOWN OF 300 MINTED - SET WITH A DIAMOND AS ONE OF THE STARS IN THE MISSION INSIGNIA

WE CAN LOCATE NO OTHER EXAMPLES OF AN APOLLO 17 ROBBINS MEDALLION SET WITH A DIAMOND COMING TO AUCTION.

Gene Cernan's provenance letter reads: "I hereby confirm and certify that Apollo XVII Silver Robbins Medallion serial number F4. is one that was flown to the moon with me aboard the mission December 7-19, 1972, Furthermore, it has been in our family's possession since the mission '

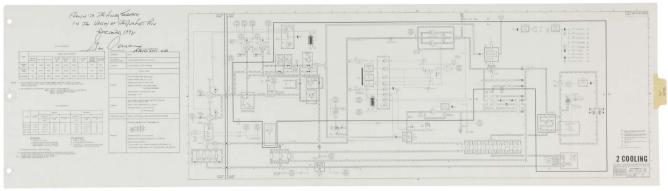
One of only 80 flown of 300 minted — set with a diamond in place of one of the stars originally from the collection of Gene Cernan, the last man to walk on the moon

Nestled within the most prominent features of the Apollo 17 mission insignia, (the Greek god Apollo on the left, and the American eagle at center right) an abstracted stars and stripes motif is featured on the eagle's wing with three stars. These stars represent the three crewmen for the mission — Commander Gene Cernan, Command Module Pilot Ron Evans, and Lunar Module Pilot Harrison Schmitt. Designed by Robert McCall with input from the crew, the Apollo 17 insignia was meant to be reflective of an anticipated "golden age" of spaceflight. This optimism proved short lived, as Apollo 17 marked the end of NASA's efforts to undertake manned lunar landings - making Cernan the last human to step foot on the Moon's surface.

Robbins medallions with inset diamonds are most commonly seen in Apollo 12 medallions, where 22 of the "Spanish Plate Fleet" medallions were converted into "Wives' Pins" by the Robbins Company after the mission. This entailed setting a small diamond into the face of the medallion at the approximate landing site, and adding a pinback mechanism to the reverse. These diamond medallions are quite scarce and desirable within the market for flown commemoratives. We can locate only 9 other examples with diamond inserts at auction since 1991, but no other examples of Apollo 17 Robbins medallions set with a diamond insert.

Gene Cernan's provenance letter reads: "I hereby confirm and certify that Apollo XVII Silver Robbins Medallion serial number F4, is one that was flown to the moon with me aboard the mission December 7-19, 1972. Furthermore, it has been in our family's possession since the mission."

\$ 50.000-70.000





209

208

ORIGINALLY FROM THE PERSONAL COLLECTION OF APOLLO 17 MISSION COMMANDER EUGENE CERNAN

APOLLO 17 SCHEMATIC FLOWN TO THE LUNAR SURFACE

LUNAR SURFACE FLOWN "H₂O Glycol 2 Cooling" System Schematic from the *Apollo 17 LM Systems Data* manual. NASA/MSC, March 20, 1972

A single folding sheet, 38 by 10½ inches, showing details of the water supply and glycol flow throughout the LM and the spaesuits. SIGNED AND INSCRIBED BY EUGENE CERNAN: "FLOWN TO THE LUNAR SURFACE IN THE VALLEY OF TAURUS LITTROW. DECEMBER 1972. GENE CERNAN. APOLLO XVII CDR." With a Typed Letter Signed by EUGENE CERNAN.

Cernan's provenance letter reads, in part: "I certify that this schematic drawing from Apollo 17 was flown to the surface of the moon aboard the Lunar Module Challenger, when we landed in the valley of Taurus-Littrow on December 11, 1972, the last lunar landing of Apollo. It was part of the LM Systems Data manual we carried along for troubleshooting and reference for the many electrical and and mechanical systems that made up our lunar landing spacecraft... This drawing shows details of the water supply and glycol (coolant) flow throughout the LM and our spacesuits..."

REFERENCES

NASA. Apollo 17 Stowage List. Mission J-3 CM-114/LM-12. Houston: Manned Spacecraft Center, December 12, 1972, page 131

\$ 3,000-5,000

209

APOLLO 17 - HARRISON SCHMITT IN THE FOREGROUND OF THE SOUTH MASSIF

Large color photograph, 16 by 20 inches.

SIGNED and INSCRIBED by HARRISON SCHMITT: "Station SEP with pan in the foreground of the South Massif. HARRISON SCHMITT Apollo 17 LMP 12/12/72"

Lunar Module Pilot Harrison Schmitt is shown here during an Apollo 17 EVA. Apollo 17 was the final manned Moon landing of the Apollo program, making CDR Eugene Cernan and Schmitt the eleventh and twelfth men (respectively) to have walked on the Moon's surface.

\$ 5,000-8,000





211



212

210

APOLLO 17

Panoramic photograph of the Lunar Landscape taken during the Apollo 17 mission, image AS17-P-2871, taken December 7-19, 1972

Vintage panoramic silver gelatin print on fiber-based paper with "A Kodak Paper" watermark on verso (7 foot 7 inches long by 9½ inches tall). Recto signed: "TO KEITH. FROM NEIL ARMSTRONG." Some silvering, mostly to edges, 3-inch tear repaired on verso with tape, some scattered creasing, scattered chips to edges, two small puncture holes. remnants of scotch tape to verso.

A BREATHTAKING VIEW OF THE EASTERN LIMB OF THE MOON TAKEN DURING THE LAST LUNAR LANDING MISSION, SIGNED ON THE BACK BY NEIL ARMSTRONG. Taken by a camera in the SIM bay of the service module during revolution 62, the with the entire area of Mare Smythii, and Crater Hirayama visible.

REFERENCES

See https://www.lpi.u sra.edu/resources/apollo/frame/?AS17-P-2871

\$ 3,000-5,000

211

APOLLO 17 - EXPLORING TAURUS LITTROW

Large color photograph, 16 by 20 inches

SIGNED and INSCRIBED by GENE CERNAN: "GENE CERNAN, Apollo XVII"

The Apollo 17 mission—of which Cernan was commander—garnered a number of record-setting achievements. These included three EVAs—Extravehicular activity—totaling about 22 hours of exploration of the Taurus-Littrow valley. Cernan and Schmitt covered from that 22 miles using the Lunar Rover, and collected a record 75 pounds of geologic samples. Cernan piloted the rover on its final run, during which he clocked a maximum speed of 11.2 mph, giving him the (unofficial) lunar land speed record.

\$ 2,000-3,000



ASTP, SKYLAB, & STS

LOTS 213-219

212

APOLLO 17 - GENE CERNAN SETTING UP THE FINAL LUNAR FLAG WITH EARTH IN THE BACKGROUND

Large color photograph, 16 by 20 inches

SIGNED and INSCRIBED by GENE CERNAN: "GENE CERNAN, Apollo XVII, 'Last man on the Moon.'"

A photograph depicting CDR Cernan holding the fluttering American flag with his left hand and planet Earth in the background. The mission transcripts reveal this to be a choreographed routine between Cernan and LMP (and photographer) Harrison Schmitt. After they finished, Cernan reflected aloud on the importance of the moment, noting: "It's got to be one of the most proud moments of my life. I guarantee you ... Houston, I don't know how many of you are aware of this, but this - this flag has flown in the MOCR since Apollo 11. And we very proudly deploy it on the Moon, to stay for as long as it can, in honor of all those people who have worked so hard to put us here and to put every other crew here and to make the country, United States and mankind, something different than it was."

\$ 3,000-5,000





213

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON APOLLO-SOYUZ TEST PROJECT (ASTP)

ASTRONAUT JOHN YOUNG'S FLOWN APOLLO-SOYUZ SILVER ROBBINS MEDALLION

FLOWN Apollo-Soyuz Test Project Robbins Medallion #48F, NGC MS 65 (certificate number: 2356824-001), sterling silver, 35 mm in diameter. Obverse features the mission insignia showing the docking maneuver above the Earth, reverse engraved with launch and entry dates ("July 15, 1975 | July 24, 1972") and bearing the phrase "First Joint U.S.–U.S.S.R. Space Flight." With a Typed Letter Signed by JOHN YOUNG on his letterhead.

ONE OF ONLY 93 FLOWN OF 283 MINTED — THE FIRST INTERNATIONAL MANNED SPACE EFFORT

John Young's provenance letter reads: "I hereby certify that Apollo-Soyuz (ASTP) silver Robbins Medal, serial 048 F, was flown aboard ASTP July 15-24, 1975. I obtained it through the Astronaut Office and it has been a part of my personal collection since the mission."

\$ 5,000-7,000









FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON SKYLAB I (SL-2)

APOLLO ASTRONAUT CHARLES DUKE'S FLOWN SKYLAB I SILVER ROBBINS MFDALLION.

FLOWN Skylab I Robbins Medallion #42F, NGC MS 63 (certificate number: 3044079-001), sterling silver, 35 mm in diameter. Obverse featuring the mission insignia designed by science fiction artist Frank Kelly Freas, reverse engraved with launch of Skylab, launch of crew, and return of crew dates ("May 14, 1973 | May 25, 1973 | June 22, 1972.") With an Autograph Letter Signed by CHARLES DUKE on his letterhead.

ONE OF ONLY 50 FLOWN OF 300 MINTED

Charlie Duke's provenance letter reads: "I hereby certify that Skylab I (SL-2) Silver Robbins Medal, serial number 42F, was one that was flown aboard the first Skylab mission, May 25-June 22, 1973. As a member of the Astronaut office, I was permitted to purchase this flown medal. It has been in my possession and a part of my personal collection of space artifacts since receiving it shortly after the mission."

\$ 4.000-6.000

215

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON SKYLAB II (SL-3)

APOLLO ASTRONAUT CHARLES DUKE'S FLOWN SKYLAB II SILVER ROBBINS **MEDALLION**

FLOWN Skylab II Robbins Medallion #041F, NGC MS 64 (certificate number: 3044079-002), sterling silver, 35 mm in diameter. Obverse features the mission insignia with Leonardo da Vinci's "Vitruvian Man," reverse bears launch and return dates (7/28/73 | 9/25/73) and a depiction of the Skylab station. With an Autograph Letter Signed by CHARLES DUKE on his letterhead

ONE OF ONLY 55 FLOWN OF 159 MINTED - A WELL-TRAVELED MEDALLION: THIS PIECE TRAVELED NEARLY TWENTY-FIVE MILLION MILES DURING ITS FIFTY-NINE DAYS IN SPACE

Charlie Duke's provenance letter reads: "I hereby certify that Skylab II Silver Robbins Medal, serial number 041F, was one that was flown aboard the second manned Skylab mission, July 28-September 25, 1973. As a member of the Astronaut office, I was permitted to purchase this flown medal. It has been in my possession and a part of my personal collection of space artifacts since receiving it shortly after the mission."

\$5,000-7,000

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON SKYLAB III (SL-4)

APOLLO ASTRONAUT CHARLES DUKE'S FLOWN SKYLAB III ROBBINS MEDALLION

FLOWN Skylab III Robbins Medallion #38F, NGC MS 63 (certificate number: 3044079-003), sterling silver, 37 by 35 mm. Obverse features the mission insignia depicting a large number 3 and a rainbow circling the three major areas of investigation in the mission, as depicted symbolically through a tree, a hydrogen atom, and a human silhouette, reverse engraved with launch and return dates ("Nov. 16, 1973 to Feb 8, 1974"). With an Autograph Letter Signed by CHARLES DUKE on his letterhead.



Charlie Duke's provenance letter reads: "I hereby certify that Skylab III (SL-4) Silver Robbins Medal, serial number 38F, was one that was flown aboard the third and final manned Skylab mission, November 16, 1973-February 8, 1974. As a member of the Astronaut office, I was permitted to purchase this flown medal. It has been in my possession and a part of my personal collection of space artifacts since receiving it shortly after the mission."

\$ 4.000-6.000

217

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON THE SPACE SHUTTLE COLUMBIA (STS-1)

COMMANDER JOHN YOUNG'S STS-1 FLOWN SILVER ROBBINS MEDALLION

FLOWN STS-1 Robbins Medallion #3F, NGC MS 67 (certificate number: 3044096-001), sterling silver, 37 mm in diameter. Obverse features the mission insignia depicting the shuttle and its orbit around the earth, reverse engraved with launch and return dates ("April 12, 1981 | April 14, 1981 | RW23 EDWARDS AFB"). With an Autograph Letter Signed by JOHN YOUNG on his letterhead.

ONE OF ONLY 111 FLOWN OF 359 MINTED — THE FIRST ORBITAL SPACEFLIGHT OF NASA'S SPACE SHUTTLE PROGRAM, ORIGINALLY FROM THE COLLECTION OF COMMANDER JOHN YOUNG

John Young's provenance letter reads: "I certify that STS-1 Silver Robbins medal #3F was flown aboard the mission."

\$ 7,000-9,000









217





218

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON THE SPACE SHUTTLE COLUMBIA (STS-1)

APOLLO ASTRONAUT CHARLES DUKE'S STS-1 FLOWN SILVER ROBBINS MEDALLION

FLOWN STS-1 Robbins Medallion #95F, NGC MS 65 (certificate number: 3044082-005), sterling silver, 37 mm in diameter. Obverse features the mission insignia depicting the shuttle and its orbit around the Earth, reverse engraved with launch and return dates (*April 12, 1981* | *April 14, 1981* | *RW23 EDWARDS AFB*). With an Autograph Letter Signed by CHARLES DUKE on his letterhead.

ONE OF ONLY 111 FLOWN OF 359 MINTED — THE FIRST ORBITAL SPACEFLIGHT OF NASA'S SPACE SHUTTLE PROGRAM, ORIGINALLY FROM THE COLLECTION OF APOLLO ASTRONAUT CHARLIE DUKF

Charlie Duke's provenance letter reads: "I hereby certify that STS 1 Silver Robbins Medal, serial number 95F, was one that was flown aboard the a space shuttle Columbia, April 12-14, 1981. STS 1 was the maiden voyage of the space shuttle and was commanded by my fellow Apollo 16 crewmember, John Young. This successful flight would begin a new era for space exploration. I wanted to be along. As a member of the Astronaut office, I was permitted to purchase this flown medal. It has been in my possession and a part of my personal collection of space artifacts since receiving it shortly after the mission."

\$ 6,000-8,000





219

219

FROM THE COLLECTION OF A PROMINENT WEST COAST COLLECTOR

FLOWN ON THE SPACE SHUTTLE COLUMBIA-SPACELAB 1 (STS-9)

COMMANDER JOHN YOUNG'S STS-9 FLOWN SILVER ROBBINS MEDALLION

FLOWN STS-9 Robbins Medallion #9F, NGC MS 65 (certificate number: 3044096-002), sterling silver, 40 by 35 mm. Obverse features the mission insignia depicting the shuttle in its orbit around the Earth, reverse engraved with launch and return dates ("Nov. 28, 1983 | Dec. 8, 1983 | RW 17 EDWARDS AFB, CA"). With an Autograph Note Signed by JOHN YOUNG on his letterhead.

ONE OF ONLY 76 FLOWN OF 212 MINTED — COMMANDER JOHN YOUNG'S MEDALLION FROM HIS SIXTH AND LAST SPACEFLIGHT

John Young's provenance letter reads: "I certify that STS-9 Silver Robbins medal #3F was flown aboard the mission."

\$ 3,000-5,000



Sotheby's 5.5.



OMEGA SPEEDMASTER A stainless steel chronograph wristwatch with registers Ref 2915-1 circa 1959 Estimate \$150,000-250,000

Omega Speedmaster: To the Moon and Back

CELEBRATING 50 YEARS SINCE APOLLO 11



1334 YORK AVENUE, NEW YORK, NY 10021 ENQUIRIES + 1 212 606 7184 WATCHES@SOTHEBYS.COM SOTHEBYS.COM/WATCHES #SOTHEBYSWATCHES







1. BROWSE

Go to sothebys.com or the Sotheby's app to find works you are interested in.



1 2. REGISTER

Sign up to place bids.



Bid before and during the auction, from anywhere in the world.

FOR ASSISTANCE WITH REGISTRATION AND BIDDING

Enquiries@sothebys.com **US** +1 212 606 7000 **UK** +44 (0) 20 7293 5000 **HK** +852 2822 8142 sothebys.com/bidonline FOLLOW US @SOTHEBYS

CONDITIONS OF SALE

The following Conditions of Sale and Terms of Guarantee are Sotheby's, Inc. and the Consignor's entire agreement with the purchaser and any bidders relative to the property listed in this catalogue.

The Conditions of Sale, Terms of Guarantee, the glossary, if any, and all other contents of this catalogue are subject to amendment by us by the posting of notices or by oral announcements made during the sale. The property will be offered by us as agent for the Consignor, unless the catalogue indicates otherwise.

By participating in any sale, you acknowledge that you are bound by these terms and conditions.

- 1. Descriptions and Grading Bidders acknowledge that any grading of coins and currency in this auction have been determined by independent grading services PCGS, NGC, ANASC and/or CAC. Grading of coins and currency is subjective and, even though grading has a material effect on the value of the coins and currency, grading may differ among independent grading services and among numismatists. We are not responsible for the grades assigned by independent grading services, and make no warranty or representation regarding such grades.
- 2. As Is Goods auctioned are often of some age. The authenticity of the Authorship (as defined below) of property listed in the catalogue is guaranteed as stated in the Terms of Guarantee and except for the Limited Warranty contained therein, all property is sold "AS IS" without any representations or warranties by us or the Consignor as to merchantability, fitness for a particular purpose, the correctness of the catalogue or other description of the physical condition, size, quality, rarity, importance, medium, frame, provenance, exhibitions, literature or historical relevance of any property and no statement anywhere, whether oral or written, whether made in the catalogue, an advertisement, a bill of sale, a salesroom posting or announcement, or elsewhere, shall be deemed such a warranty, representation or assumption of liability. We and the Consignor make no representations and warranties, express or implied, as to whether the purchaser acquires any copyrights, including but not limited to, any reproduction rights in any property. We and the Consignor are not responsible for errors and omissions in the catalogue, glossary, or any supplemental material. Sotheby's will not be responsible or liable for damage to frames and glass coverings, regardless of the cause.
- 3. **Inspection** Prospective bidders should inspect the property before bidding to determine its condition, size, and whether or not it has been repaired or restored.

- 4. Buyer's Premium A buyer's premium will be added to the hammer price and is payable by the purchaser as part of the total purchase price. The buyer's premium is 25% of the hammer price up to and including \$400,000, 20% of any amount in excess of \$400,000 up to and including \$4,000,000, and 13.9% of any amount in excess of \$4,000,000.
- 5. Withdrawal We reserve the right to withdraw any property before the sale and shall have no liability whatsoever for such withdrawal
- 6. **Per Lot** Unless otherwise announced by the auctioneer, all bids are per lot as numbered in the catalogue.
- 7. Bidding We reserve the right to reject any bid. The highest bidder acknowledged by the auctioneer will be the purchaser. The auctioneer has absolute and sole discretion in the case of error or dispute with respect to bidding, and whether during or after the sale, to determine the successful bidder, to re-open the bidding, to cancel the sale or to re-offer and re-sell the item in dispute. If any dispute arises after the sale, our sale record is conclusive. In our discretion we will execute order or absentee bids and accept telephone bids and online bids via the Online Platforms as a convenience to clients who are not present at auctions; Sotheby's is not responsible for any errors or omissions in connection therewith. Prospective bidders should also consult sothebys.com for the most up to date cataloguing of the property in this

By participating in the sale, you represent and warrant that any bids placed by you, or on your behalf, are not the product of any collusive or other anti-competitive agreement and are otherwise consistent with federal and state antitrust law.

By participating in the sale, you represent and warrant that:

- (a) The bidder and/or purchaser is not subject to trade sanctions, embargoes or any other restriction on trade in the jurisdiction in which it does business as well as under the laws of the European Union, the laws of England and Wales, or the laws and regulations of the United States, and is not owned (nor partly owned) or controlled by such sanctioned person(s) (collectively, "Sanctioned Person(s)");
- (b) Where acting as agent (with Sotheby's prior written consent), the principal is not a Sanctioned Person(s) nor owned (or partly owned) or controlled by Sanctioned Person(s); and
- (c) The bidder and/or purchaser undertakes that none of the purchase price will be funded by any Sanctioned Person(s), nor will any party be involved in the transaction including financial institutions, freight forwarders or other forwarding agents or any other party be a Sanctioned Person(s) nor owned (or partly owned) or controlled by a Sanctioned Person(s), unless such activity is authorized in writing by the government authority having jurisdiction over the transaction or in applicable law or regulation.

In order to bid on "Premium Lots" you must complete the required Premium Lot pre-registration application. Sotheby's decision whether to accept any pre-registration application shall be final. You must arrange for Sotheby's to receive your pre-registration application at least three working days before the sale. Please bear in mind that we are unable to obtain financial references over weekends or public holidays.

Sotheby's may require such necessary financial references, guarantees, deposits and/or such other security, in its absolute discretion, as security for your bid(s).

- 8. Online Bids via an Online Platform Sotheby's may offer clients the opportunity to bid on sothebys.com or through the Sotheby's App, or on any other online platform through which bidding may be made available for selected sales. By participating in a sale via any of the Online Platforms, you acknowledge that you are bound by these Conditions of Sale as well as the Additional Terms and Conditions for Online Bidding ("Online Terms"). By participating in a sale via any Online Platform. Bidders accept the Online Terms, as well as the relevant Conditions of Sale. Online bidding may not be available for Premium Lots
- 9. Bids Below Reserve If the auctioneer deter-mines that any opening bid is below the reserve of the article offered, he may reject the same and withdraw the article from sale, and if, having acknowledged an opening bid, he deter-mines that any advance thereafter is insufficient, he may reject the advance.
- 10. Purchaser's Responsibility Subject to fulfillment of all of the conditions set forth herein, on the fall of the auctioneer's hammer the contract between the consignor and the purchaser is concluded, and the winning bidder thereupon will immediately pay the full purchase price or such part as we may require. Title in a purchased lot will not pass until Sotheby's has received the full purchase price in cleared funds. The purchaser's obligation to immediately pay the full purchase price or such part as we may require is absolute and unconditional and is not subject to any defenses, setoffs or counterclaims of any kind whatsoever. Sotheby's is not obligated to release a lot to the purchaser until title to the lot has passed and any earlier release does not affect the passing of title or the purchaser's unconditional obligation to pay the full purchase price. In addition to other remedies available to us by law, we reserve the right to impose from the date of sale a late charge of the annual percentage rate of Prime + 6% of the total purchase price if payment is not made in accordance with the conditions set forth herein. Please note Sotheby's reserves the right to refuse to accept payment from a source other than the buyer of record.

Unless otherwise agreed by Sotheby's, all property must be removed from our premises by the purchaser at his expense not later than 30 calendar days following its sale. Purchasers are reminded that

Sotheby's liability for loss of or damage to sold property shall cease upon the earlier of (a) 30 calendar days after the date of the auction and (b) our release of the property to the purchaser or the purchaser's designated agent. Upon the expiration of such 30 calendar day period or upon such earlier release, as applicable; (i) the purchaser bears full liability for any and all loss of or damage to the property; (ii) the purchaser releases Sotheby's, its affiliates. agents and warehouses from any and all liability and claims for loss of or damage to the property: and (iii) the purchaser agrees to indemnify and hold Sotheby's, its affiliates, agents and warehouses harmless from and against any and all liability for loss of or damage to property and any all claims related to loss of or damage to the property as of and from and after the time Sotheby's liability for loss or damage to the property ceases in accordance with this paragraph. If any applicable conditions herein are not complied with by the purchaser, the purchaser will be in default and in addition to any and all other remedies available to us and the Consignor by law, including, without limitation, the right to hold the purchaser liable for the total purchase price, including all fees, charges and expenses more fully set forth herein, we, at our option, may (x) cancel the sale of that, or any other lot or lots sold to the defaulting purchaser at the same or any other auction, retaining as liquidated damages all payments made by the purchaser, or (y) resell the purchased property, whether at public auction or by private sale, or (z) effect any combination thereof. In any case, the purchaser will be liable for any deficiency, any and all costs, handling charges, late charges, expenses of both sales, our com-missions on both sales at our regular rates, legal fees and expenses, collection fees and incidental damages. We may, in our sole discretion, apply any proceeds of sale then due or thereafter becoming due to the purchaser from us or any affiliated company, or any payment made by the purchaser to us or any affiliated company. whether or not intended to reduce the purchaser's obligations with respect to the unpaid lot or lots, to the deficiency and any other amounts due to us or any affiliated companies. In addition, a defaulting purchaser will be deemed to have granted and assigned to us and our affiliated companies, a continuing security interest of first priority in any property or money of or owing to such purchaser in our possession, custody or control or in the possession, custody or control of any of our affiliated companies, in each case whether at the time of the auction, the default or if acquired at any time thereafter, and we may retain and apply such property or money as collateral security for the obligations due to us or to any affiliated company of ours. We shall have all of the rights accorded a secured party under the New York Uniform Commercial Code. You hereby agree that Sotheby's may file financing statements under the New York Uniform Commercial Code without your signature. Payment will not be deemed to have been made in full until we have

collected good funds. Any claims relating to any purchase, including any claims. under the Conditions of Sale or Terms of Guarantee, must be presented directly to Sotheby's. In the event the purchaser fails to pay any or all of the total purchase price for any lot and Sotheby's nonetheless elects to pay the Consignor any portion of the sale proceeds, the purchaser acknowledges that Sotheby's shall have all of the rights of the Consignor to pursue the purchaser for any amounts paid to the Consignor, whether at law, in equity, or under these Conditions of Sale.

- 11. Reserve All lots in this catalogue are offered subject to a reserve, which is the confidential minimum hammer price at which a lot will be sold. No reserve will exceed the low presale estimate stated in the catalogue, or as amended by oral or posted notices. We may implement such reserve by opening the bidding on behalf of the Consignor and may bid up to the amount of the reserve, by placing successive or consecutive bids for a lot. or bids in response to other bidders. In instances where we have an interest in the lot other than our commission, we may bid up to the reserve to protect such interest. In certain instances, the Consignor may pay us less than the standard commission rate where a lot is "bought-in" to protect its reserve.
- 12. Tax Unless exempted by law, the purchaser will be required to pay the combined New York State and local sales tax, any applicable compensating use tax of another state, and if applicable, any federal luxury or other tax, on the total purchase price. The rate of such combined tax is 8.875% in New York City and ranges from 7% to 8.625% elsewhere in New York.
- 13. Export and Permits It is the purchaser's sole responsibility to identify and obtain any necessary export, import, firearm, endangered species or other permit for the lot. Any symbols or notices in the sale catalogue reflect Sotheby's reasonable opinion at the time of cataloguing and are for bidders' general guidance only; Sotheby's and the Consignor make no representations or warranties as to whether any lot is or is not subject to export or import restrictions or any embargoes
- 14. Governing Law and Jurisdiction These Conditions of Sale and Terms of Guarantee, as well as bidders', the purchaser's and our respective rights and obligations hereunder, shall be governed by and construed and enforced in accordance with the laws of the State of New York. By bidding at an auction, whether present in person or by agent, order or absentee bid, telephone, online or other means, all bidders including the purchaser, shall be deemed to have consented to the exclusive jurisdiction of the state courts of, and the federal courts sitting in, the State of New York. All parties agree, however, that Sotheby's shall retain the right to bring proceedings in a court other than the state and federal courts sitting in the State of New York

- 15. Packing and Shipping We are not responsible for the acts or omissions in our packing or shipping of purchased lots or of other carriers or packers of purchased lots, whether or not recommended by us. Packing and handling of purchased lots is at the entire risk of the purchaser
- 16. Limitation of Liability In no event will the aggregate liability of Sotheby's and the consignor to a purchaser exceed the purchase price actually paid.
- 17. Data Protection Sotheby's will hold and process your personal information and may share it with its subsidiaries and affiliates for use as described in, and in line with, Sotheby's Privacy Policy published on Sotheby's website at www.sothebys.com or available on request by email to enquiries@sothebys.com.

Under European data protection laws, a client may object, by request and free of charge, to the processing of their information for certain purposes, including direct marketing, and may access and rectify personal data relating to them and may obtain more information about Sotheby's data protection policies by writing to Sotheby's, 34-35 New Bond Street, London W1A 2AA, or 1334 York Avenue, New York, NY 10021, Attn: Compliance, or emailing enquiries@ sothebys.com.

Please be aware that Sotheby's may film auctions or other activities on Sotheby's premises and that such recordings may be transmitted over the Internet via Sotheby's website and other online platforms. Online and telephone bids may be recorded.

TERMS OF GUARANTEE

As set forth below and in the Conditions of Sale, for all lots Sotheby's guarantees that the authorship, period, culture or origin (collectively, "Authorship") of each lot in this catalogue is as set out in the BOLD or CAPITALIZED type heading in the catalogue description of the lot, as amended by oral or written salesroom notes or announcements. Purchasers should refer to the Glossary of Terms, if any, for an explanation of the terminology used in the Bold or Capitalized type heading and the extent of the Guarantee. Sotheby's makes no warranties whatsoever, whether express or implied, with respect to any material in the catalogue other than that appearing in the Bold or Capitalized heading and subject to the exclusions

In the event Sotheby's in its reasonable opinion deems that the conditions of the Guarantee have been satisfied, it shall refund to the original purchaser of record the hammer price and applicable Buyer's Premium paid for the lot by the original purchaser of record.

This Guarantee is provided for a period of five (5) years from the date of the relevant auction, is solely for the benefit of the original purchaser of record at the auction and may not be transferred

to any third party. To be able to claim under this Guarantee of Authorship, the original purchaser of record must: (i) notify Sotheby's in writing within three (3) months of receiving any information that causes the original purchaser of record to question the accuracy of the Bold or Capitalized type heading, specifying the lot number, date of the auction at which it was purchased and the reasons for such question; and (ii) return the Lot to Sotheby's at the original selling location in the same condition as at the date of sale to the original purchaser of record and be able to transfer good title to the Lot, free from any third party claims arising after the date of such sale.

Sotheby's has discretion to waive any of the above requirements. Sotheby's may require the original purchaser of record to obtain at the original purchaser of record's cost the reports of two independent and recognized experts in the field, mutually acceptable to Sotheby's and the original purchaser of record. Sotheby's shall not be bound by any reports produced by the original purchaser of record, and reserves the right to seek additional expert advice at its own expense. It is specifically understood and agreed that the rescission of a sale and the refund of the original purchase price paid (the successful hammer price, plus the buyer's premium) is exclusive and in lieu of any other remedy which might otherwise be available as a matter of law, or in equity. Sotheby's and the Consignor shall not be liable for any incidental or consequential damages incurred or claimed, including without limitation, loss of profits or interest.

ADDITIONAL TERMS AND CONDITIONS FOR ONLINE BIDDING

The following terms and conditions (the "Online Terms") provide important information related to online bidding on sothebys.com or through the Sotheby's App, or on any other online platform through which bidding may be made available ("Online Platforms").

These Conditions are in addition to and subject to the same law and our standard. terms and conditions of sale, including the authenticity guarantee and any other terms and are not intended in any way to replace them. By participating in this sale via any Online Platform, you acknowledge that you are bound by the Conditions of Sale applicable in the relevant sale and by these additional Conditions.

1. For certain sales, bidders are welcome to submit bids in advance of the live auction. ("Advance Bids") through the Online Platforms. In order to do so, you must register an account with Sotheby's and provide requested information. You may bid at or above the starting bid displayed on the Online Platforms. Please note that we reserve the right to lower the starting bid prior to the start of the live auction.

For sales where you can place Advance Bids, you may also input a maximum bid which, upon confirmation, will be executed automatically up to this predefined maximum value in response to other bids including bids placed by Sotheby's on behalf of the seller, up to the amount of the reserve (if applicable). Please note that reserves may be set at any time before the start of the live auction and your maximum bid may be executed against the reserve once such reserve is set.

The current leading bid will be visible to all bidders; the value and status of your maximum bid will be visible only to you, unless it is the leading bid. If the status of your bid changes, you will receive notifications via email and push (if you have the Sotheby's App installed) leading up to the live auction. You may raise your maximum bid at any time in advance of the live auction. Once the live auction. begins, the auctioneer will open bidding at the current leading bid. The system will continue to bid on your behalf up to your predetermined maximum bid, or you may continue to bid via the Online Platforms during the live auction at the next increment. Upon the closing of each lot, you will receive another email and push notification indicating whether you have won or lost each lot on which you have placed a bid. Please note that traditional absentee bids submitted in writing through our Bids Department will not be accepted for sales where you can place Advance Bids.

By placing Advance Bids on the Online Platforms, you accept and agree that any such bids are final, that you will not be permitted to retract your bid, and that, should your bid be successful, you irrevocably agree to pay the full purchase price, including buyer's premium and all applicable taxes and other applicable charges. You may nevertheless lower your maximum bid leading up to the live auction by contacting the Bids Department at +1 212 606 7414, except that you may not lower it to a level lower than the current leading bid.

For sales where you cannot place Advance Bids, traditional absentee bids submitted in writing through our Bids Department will be accepted.

2. Once it commences, a live auction is by its nature fast-moving and bidding may progress very quickly. The procedure for placing bids during the live auction is therefore a one-step process; as soon as the "Place Bid" button is clicked, a bid is submitted. By bidding online, you accept and agree that bids submitted in this way are final and that you will not under any circumstances be permitted to amend or retract your bid. If a successful bid is sent to Sotheby's from your computer, electronic or mobile device, you irrevocably agree to pay the full purchase price, including buver's premium and all applicable taxes and other applicable charges.

- 3. The next bidding increment is shown for your convenience. The auctioneer has discretion to vary Increments for bidders in the auction room and on the telephone, but bidders using Online Platforms may not be able to place a bid in an amount other than a whole bidding increment. All bidding for this sale will be in U.S. Dollars, in respect of New York sales, in Pounds Sterling, in respect of London sales, or in Hong Kong Dollars, in respect of Hong Kong sales, and online bidders will not be able to see the currency conversion board that may be displayed in the auction room.
- 4. The record of sale kept by Sotheby's will be taken as absolute and final in all disputes. In the event of a discrepancy between any online records or messages provided to you and the record of sale kept by Sotheby's, the record of sale will govern.
- 5. Online bidders are responsible for making themselves aware of all salesroom notices and announcements, which will be accessible on the Online Platforms.
- 6. Sotheby's reserves the right to refuse or revoke permission to bid via Online Platforms and to remove bidding privileges during a sale.
- 7. The purchase information shown in the "My Bids" section of the Sotheby's App and in the "Account Activity" section of "My Account" on Sothebys.com is provided for your convenience only. Successful bidders will be notified and invoiced after the sale. In the event of any discrepancy between the online purchase information and the invoice sent to you by Sotheby's following the sale, the invoice prevails. Terms and conditions for payment and collection of property remain the same regardless of how the winning bid was submitted.
- 8. Sotheby's offers online bidding as a convenience to our clients. Sotheby's is not responsible for any errors or failures to execute bids placed online, including, without limitation, errors or failures caused by (i) a loss of connection to the internet or to the online bidding software by either Sotheby's or the client; (ii) a breakdown or problems with the online bidding software; or (iii) a breakdown or problems with a client's internet connection, computer or electronic device. Sotheby's is not responsible for any failure to execute an online bid or for any errors or omissions in connection therewith.
- 9. Online bidding will be recorded.
- 10. In the event of any conflict between these Online Terms and Sotheby's Conditions of Sale and Terms of Guarantee, Sotheby's Conditions of Sale and Terms of Guarantee will control.

BUYING AT AUCTION

The following will help in understanding the auction buying process as well as some of the terms and symbols commonly used in an auction catalogue. All bidders should read the Conditions of Sale and Terms of Guarantee in this catalogue, as well as the Glossary or any other notices. By bidding at auction, bidders are bound by the Conditions of Sale and Terms of Guarantee, as amended by any oral announcement or posted notices, which together form the sale contract among Sotheby's, the seller (consignor) of the lot and any bidders, including the successful bidder (purchaser).

1. SYMBOL KEY

☐ Reserves

Unless indicated by a box (a), all lots in this catalogue are offered subject to a reserve. A reserve is the confidential minimum hammer price at which a lot will be sold. The reserve is generally set at a percentage of the low estimate and will not exceed the low estimate and will not exceed the low estimate of the lot. If any lots in the catalogue are offered without reserve, such lots will be designated by a box (a). If every lot in a catalogue is offered without a reserve, the Conditions of Sale will so state and this symbol will not be used for each lot.

O Guaranteed Property

The seller of lots with this symbol has been guaranteed a minimum price from one auction or a series of auctions. This guarantee may be provided by Sotheby's or jointly by Sotheby's and a third party. Sotheby's and any third parties providing a guarantee jointly with Sotheby's benefit financially if a guaranteed lot is sold successfully and may incur a loss if the sale is not successful. If the Guaranteed Property symbol for a lot is not included in the printing of the auction catalogue, a pre-sale or pre-lot announcement will be made indicating that there is a guarantee on the lot.

\triangle Property in which Sotheby's has an Ownership Interest

Lots with this symbol indicate that Sotheby's owns the lot in whole or in part or has an economic interest in the lot equivalent to an ownership interest.

∋ Irrevocable Bids

Lots with this symbol indicate that a party

has provided Sotheby's with an irrevocable bid on the lot that will be executed during the sale at a value that ensures that the lot will sell. The irrevocable bidder, who may bid in excess of the irrevocable bid, may be compensated for providing the irrevocable bid by receiving a contingent fee, a fixed fee or both. If the irrevocable bidder is the successful bidder, any contingent fee, fixed fee or both (as applicable) for providing the irrevocable bid may be netted against the irrevocable bidder's obligation to pay the full purchase price for the lot and the purchase price reported for the lot shall be net of any such fees. From time to time, Sotheby's may enter into irrevocable bid agreements that cover multiple lots. In such instances, the compensation Sotheby's will pay the irrevocable bidder is allocated to the lots for which the irrevocable bidder is not the successful nurchaser Under such circumstances the total compensation to the irrevocable bidder will not exceed the total buyer's premium and other amounts paid to Sotheby's in respect of any lots for which the irrevocable bidder is not the successful bidder. If the irrevocable bid is not secured until after the printing of the auction catalogue, Sotheby's will notify bidders that there is an irrevocable bid on the lot by one or more of the following means: a pre-sale or pre-lot announcement, by written notice at the auction or by including an irrevocable bid symbol in the e-catalogue for the sale prior to the auction. From time to time, Sotheby's or any affiliated company may provide the irrevocable bidder with financing related to the irrevocable bid. If the irrevocable bidder is advising anyone with respect to the lot, Sotheby's requires the irrevocable bidder to disclose his or her financial interest in the lot. If an agent is advising you or bidding on your behalf with respect to a lot identified as being subject to an irrevocable bid, you should request that the agent disclose whether or not he or she has a financial interest in the lot

Lots with this symbol indicate that parties with a direct or indirect interest in the lot may be bidding on the lot, including (i) the beneficiary of an estate selling the lot, or (ii) the joint owner of a lot. If the interested party is the successful bidder, they will be required to pay the full Buyer's Premium. In certain instances, interested parties may have knowledge of the reserve. In the event the interested party's possible participation in the sale is not known until after the printing of the auction catalogue, a pre-sale or pre-lot announcement will be made indicating that interested parties may be bidding on the lot.

Restricted Materials

Lots with this symbol have been identified at the time of cataloguing as containing organic material which may be subject to restrictions regarding import or export. The information is made available for the convenience of bidders and the absence of the symbol is not a warranty that there are no restrictions regarding import or export of the Lot; bidders should refer to Condition

12 of the Conditions of Sale. Please also refer to the section on Endangered Species in the information on Buying at Auction.

☐ Monumental

Lots with this symbol may, in our opinion, require special handling or shipping services due to size or other physical considerations. Bidders are advised to inspect the lot and to contact Sotheby's prior to the sale to discuss any specific shipping requirements.

♀ Premium Lot

In order to bid on "Premium Lots" (in print catalogue or ♦ in eCatalogue) you must complete the required Premium Lot pre-registration application. You must arrange for Sotheby's to receive your pre-registration application at least three working days before the sale. Please bear in mind that we are unable to obtain financial references over weekends or public holidays. Sotheby's decision whether to accept any pre-registration application shall be final. If your application is accepted, you will be provided with a special paddle number. If all lots in the catalogue are "Premium Lots", a Special Notice will be included to this effect and this symbol will not be used.

2. BEFORE THE AUCTION

Bidding in advance of the live auction. For certain sales, if you are unable to attend the auction in person, and wish to bid in advance of the live auction, you may do so on Sothebys.com or the Sotheby's App. In order to do so, you must register an account with Sotheby's and provide requested information. Once you have done so, navigate to your desired lot, and click the "Place Bid" button. You may bid at or above the starting bid displayed on the Online Platforms. Please note that we reserve the right to lower the starting bid prior to the start of the live auction. You may also input your maximum bid which, upon confirmation, will be executed automatically up to this predefined maximum value, in response to other bids, including bids placed by Sotheby's on behalf of the seller, up to the amount of the reserve (if applicable). The current leading bid will be visible to all bidders; the value and status of your maximum bid will be visible only to you. If the status of your bid changes, you will receive notifications via email and push (if you have the Sotheby's App installed) leading up to the live auction. You may raise your maximum bid at any time in advance of the live auction. Once the live auction begins, the auctioneer will open bidding at the current leading bid. The system will continue to bid on your behalf up to your predetermined maximum bid, or you may continue to bid via the Online Platforms during the live auction at the next increment. Upon the closing of each lot in the live auction, you will receive another email and push notification indicating whether you have won or lost each lot on which you have placed a bid. Please note that traditional absentee bids submitted in writing through our Bids Department will not be accepted for sales where you can place Advance Bids.

For sales where you cannot place Advance Bids, traditional absentee bids submitted in writing through our Bids Department will be accepted.

The Catalogue A catalogue prepared by Sotheby's is published for every scheduled live auction and is available prior to the sale date. The catalogue will help familiarize you with property being offered at the designated auction. Catalogues may be purchased at Sotheby's or by subscription in any categories. For information, please call +1 212 606 7000 or visit sothebys. com. Prospective bidders should also consult sothebys.com for the most up to date cataloguing of the property in this catalogue.

Estimates Each lot in the catalogue is given a low and high estimate, indicating to a prospective buyer a range in which the lot might sell at auction. When possible, the estimate is based on previous auction records of comparable pieces. The estimates are determined several months before a sale and are therefore subject to change upon further research of the property, or to reflect market conditions or currency fluctuations. Estimates should not be relied upon as a representation or prediction of actual selling prices.

Provenance In certain circumstances, Sotheby's may print in the catalogue the history of ownership of a work of art if such information contributes to scholarship or is otherwise well known and assists in distinguishing the work of art. However, the identity of the seller or previous owners may not be disclosed for a variety of reasons. For example, such information may be excluded to accommodate a seller's request for confidentiality or because the identity of prior owners is unknown given the age of the work of art.

Specialist Advice Prospective bidders may be interested in specific information not included in the catalogue description of a lot. For additional information, please contact either a Sotheby's specialist in charge of the sale (all of whom are listed in the front of the catalogue), or Sotheby's Client Services Department. You may also request a condition report from the specialist in charge.

The Exhibition An exhibition of the auction property will be held the week prior to the auction on the days listed in the front of the catalogue. There you will have the opportunity to view, inspect and evaluate the property yourself, or with the help of a Sotheby's specialist.

Salesroom Notices Salesroom notices amend the catalogue description of a lot after our catalogue has gone to press. They are posted in the viewing galleries and salesroom or are announced by the auctioneer. Salesroom notices are also posted on the Online Platform for those bidding online. Please take note of them.

Registration Sotheby's may require such necessary financial references, guarantees, deposits and/or such other security, in its absolute discretion, as security for your bid. If you are not successful on any lot, Sotheby's will arrange for a refund (subject to any right of set off) of the deposit amount paid by you without interest within 14 working days of the date of the sale. Any exchange losses or fees associated with the refund shall be borne by you. Registration to bid on Premium Lots must be done at least 3 business days prior to the sale.

3. DURING THE AUCTION

The Auction Auctions are open to the public without any admission fee or obligation to bid. The auctioneer introduces the objects for sale - known as "lots" - in numerical order as listed in the catalogue. Unless otherwise noted in the catalogue or by an announcement at the auction, Sotheby's acts as agent on behalf of the seller and does not permit the seller to bid on his or her own property. It is important for all bidders to know that the auctioneer may open the bidding on any lot by placing a bid on behalf of the seller. The auctioneer may further bid on behalf of the seller, up to the amount of the reserve, by placing responsive or consecutive bids for a lot. The auctioneer will not place consecutive bids on behalf of the seller above the

Bidding in Person If you would like to bid in person, you may register for a paddle prior to the live auction through the Online Platform or by contacting the Bids Department. Alternatively, you may register for a paddle upon entering the salesroom. The paddle is numbered so as to identify you to the auctioneer. To register, you will need a form of identification such as a driver's license, a passport or some other type of government issued identification. If you are a first-time bidder, you will also be asked for your address, phone number and signature in order to create your account. If you are bidding for someone else, you will need to provide a letter from that person authorizing you to bid on that person's behalf. Issuance of a bid paddle is in Sotheby's sole discretion.

Once the first bid has been placed, the auctioneer asks for higher bids, in increments determined by the auctioneer. To place your bid, simply raise your paddle until the auctioneer acknowledges you. You will know when your bid has been acknowledged; the auctioneer will not mistake a random gesture for a bid.

If you wish to register to bid on a Premium Lot, please see the paragraph above.

All lots sold will be invoiced to the name and address in which the paddle has been registered and cannot be transferred to other names and addresses. Sotheby's reserves the right to refuse to accept payment from a source other than the buyer of record.

Advance Bidding For certain sales, bidders are welcome to submit bids in advance of the live auction ("Advance Bids") through the Online Platforms. For these sales, if you submit an "Advance Bid" (as described above in "BEFORE THE AUCTION"), and your bid is not executed up to its maximum value before the auction begins, your bid will continue to be executed automatically on your behalf during the live auction up to your predetermined maximum bid. You may also continue to bid via the Online Platforms at the next increment above your maximum bid. Please note that traditional absentee bids submitted in writing through our Bids Department will not be accepted for sales where Advance Bidding is available.

Telephone Bidding In some circumstances, we offer the ability to place bids by telephone live to a Sotheby's representative on the auction floor. Please contact the Bid Department prior to the sale to make arrangements or to answer any questions you may have. Telephone bids are accepted only at Sotheby's discretion and at the caller's risk. Calls may also be recorded at Sotheby's discretion. By bidding on the telephone, prospective buyers consent thereto.

Live Online Bidding If you cannot attend the live auction, it may be possible to bid live online via the Online Platforms for selected sales. For information about registering to bid on sothebys.com or through the Sotheby's App, please see www.sothebys.com. Bidders utilizing any online platform are subject to the Online Terms as well as the relevant Conditions of Sale. Online bidding may not be available for Premium Lots.

Employee Bidding Sotheby's employees may bid in a Sotheby's auction only if the employee does not know the reserve and if the employee fully complies with Sotheby's internal rules governing employee bidding.

US Economic Sanctions The United States maintains economic and trade sanctions against targeted foreign countries, groups and organizations. There may be restrictions on the import into the United States of certain items originating in sanctioned countries, including Cuba, Iran, North Korea and Sudan. The purchaser's inability to import any item into the US or any other country as a result of these or other restrictions shall not justify cancellation or rescission of the sale or any delay in payment. Please check with the specialist department if you are uncertain as to whether a lot is subject to these import restrictions, or any other restrictions on importation or exportation.

Hammer Price and the Buyer's

Premium For lots which are sold, the last price for a lot as announced by the auctioneer is the hammer price. A buyer's premium will be added to the hammer price and is payable by the purchaser as part of the total purchase price. The buyer's premium will be the amount stated in the Conditions of Sale.

Currency Board As a courtesy to bidders, a currency board is operated in many salesrooms. It displays the lot number and current bid in both U.S. dollars and foreign currencies. Exchange rates are approximations based on recent exchange rate information and should not be relied upon as a precise invoice amount. Sotheby's assumes no responsibility for any error or omission in foreign or United States currency amounts shown.

Results Sale results are available on Sothebys.com and on the Sotheby's App.

International Auctions If you need assistance placing bids, obtaining condition reports or receiving auction results for a Sotheby's sale outside the United States, please contact our International Client Services Department.

4. AFTER THE AUCTION

Payment If your bid is successful, you can go directly to Post Sale Services to make payment arrangements. Otherwise, your invoice will be mailed to you. The final price is determined by adding the buyer's premium to the hammer price on a per-lot basis. Sales tax, where applicable, will be charged on the entire amount. Payment is due in full immediately after the sale. However, under certain circumstances, Sotheby's may, in its sole discretion, offer bidders an extended payment plan. Such a payment plan may provide an economic benefit to the bidder. Credit terms should be requested at least one business day before the sale. However, there is no assurance that an extended payment plan will be offered. Please contact Post Sale Services or the specialist in charge of the sale for information on credit arrangements for a particular lot. Please note that Sotheby's will not accept payments for purchased lots from any party other than the purchaser, unless otherwise agreed between the purchaser and Sotheby's prior to the sale.

Payment by Cash It is against Sotheby's general policy to accept payments in the form of cash or cash equivalents.

Payment by Credit Cards Sotheby's accepts payment by credit card for Visa, MasterCard, and American Express only. Credit card payments may not exceed \$50,000 per sale. Payment by credit card may be made (a) online at https://www.sothebys.com/en/invoice-payment.html, (b) through the Sotheby's App, (c) by calling in to Post Sale Services at +1 212 606 7444, or (d) in person at Sotheby's premises at the address noted in the catalogue.

Payment by Check Sotheby's accepts personal, certified, banker's draft and cashier's checks drawn in US Dollars (made payable to Sotheby's). While personal and company checks are accepted, property will not be released until such checks have cleared, unless you have a pre-arranged check acceptance agreement. Application for check clearance can be made through the Post Sale Services.

Certified checks, banker's drafts and cashier's checks are accepted at Sotheby's discretion and provided they are issued by a reputable financial institution governed by anti-money laundering laws. Instruments not meeting these requirements will be treated as "cash equivalents" and subject to the constraints noted in the prior paragraph titled "Payment By Cash".

Payment by Wire Transfer To pay for a purchase by wire transfer, please refer to the payment instructions on the invoice provided by Sotheby's or contact Post Sale Services to request instructions.

Sales and Use Tax New York sales tax is charged on the hammer price, buyer's premium and any other applicable charges on any property picked up or delivered in New York State, regardless of the state or country in which the purchaser resides or does business. Purchasers who wish to use their own shipper who is not a considered a "common carrier" by the New York Department of Taxation and Finance will be charged New York sales tax on the entire charge regardless of the destination of the property. Please refer to "Information on Sales and Use Tax Related to Purchases at Auction" in the back of the catalogue.

Collection and Delivery

Post Sale Services +12126067444 FAX:+12126067043 uspostsaleservices@sothebys.com

Once your payment has been received and cleared, property may be released. Unless other-wise agreed by Sotheby's, all purchases must be removed by the 30th calendar day following a sale.

Shipping Services Sotheby's offers a comprehensive shipping service to meet all of your requirements. If you received a shipping quotation or have any questions about the services we offer please contact us.

Collecting your Property As a courtesy to purchasers who come to Sotheby's to collect property. Sotheby's will assist in the packing of lots, although Sotheby's may, in the case of fragile articles, choose not to pack or otherwise handle a purchase.

If you are using your own shipper to collect property from Sotheby's, please provide a letter of authorization and kindly instruct your shipper that they must provide a Bill of Lading prior to collection. Both documents must be sent to Post Sale Services prior to collection.

The Bill of Lading must include: the purchaser's full name, the full delivery address including the street name and number, city and state or city and country, the sale and lot number.

Sotheby's will contact your shipper within 24 hours of receipt of the Bill of Lading to confirm the date and time that your property can be collected. Property will not be released without this confirmation and

your shipper must bring the same Bill of Lading that was faxed to Sotheby's when collecting. All property releases are subject to the receipt of cleared funds.

Please see the Conditions of Sale for further details.

Endangered Species Certain property sold at auction, for example, items made of or incorporating plant or animal materials such as coral, crocodile, ivory, whalebone, tortoiseshell, rhinoceros horn, rosewood, etc., irrespective of age or value, may require a license or certificate prior to exportation and additional licenses or certificates upon importation to another country. Sotheby's suggests that buyers check on their government wildlife import requirements prior to placing a bid. Please note that the ability to obtain an export license or certificate does not ensure the ability to obtain an import license or certificate in another country, and vice versa. It is the purchaser's responsibility to obtain any export or import licenses and/ or certificates as well as any other required documentation. In the case of denial of any export or import license or of delay in the obtaining of such licenses, the purchaser is still responsible for making on-time payment of the total purchase price for

Although licenses can be obtained to export some types of endangered species, other types may not be exported at all, and other types may not be resold in the United States. Upon request, Sotheby's is willing to assist the purchaser in attempting to obtain the appropriate licenses and/or certificates. However, there is no assurance that an export license or certificate can be obtained. Please check with the specialist department or the Shipping Department if you are uncertain as to whether a lot is subject to these export/import license and certificate requirements, or any other restrictions on exportation.

The Art Loss Register As part of Sotheby's efforts to support only the legitimate art market and to combat the illegitimate market in stolen property. Sotheby's has retained the Art Loss Register to check all uniquely identifiable items offered for sale in this catalogue that are estimated at more than the equivalent of US\$1,500 against the Art Loss Register's computerized database of objects reported as stolen or lost. The Art Loss Register is pleased to provide purchasers with a certificate confirming that a search has been made. All inquiries regarding search certificates should be directed to The Art Loss Register, First Floor, 63-66 Hatten Garden, London EC1N 8LE or by email at artloss@artloss.com. The Art Loss Register does not guarantee the provenance or title of any catalogued item against which they search, and will not be liable for any direct or consequential losses of any nature howsoever arising. This statement and the ALR's service do not affect your rights and obligations under the Conditions of Sale applicable to the sale.

SELLING AT AUCTION

If you have property you wish to sell, Sotheby's team of specialists and client services representatives will assist you through the entire process. Simply contact the appropriate specialist (specialist departments are listed in the back of this catalogue), General Inquiries Department or a Sotheby's regional office representative for suggestions on how best to arrange for evaluation of your property.

Property Evaluation There are three general ways evaluation of property can be conducted:

(1) In our galleries

You may bring your property directly to our galleries where our specialists will give you auction estimates and advice. There is no charge for this service, but we request that you telephone ahead for an appointment. Inspection hours are 9:30 am to 5 pm, Monday through Friday.

(2) By photograph

If your property is not portable, or if you are not able to visit our galleries, you may bring in or send a clear photograph of each item. If you have a large collection, a representative selection of photographs will do. Please be sure to include the dimensions, artist's signature or maker's mark, medium, physical condition and any other relevant information. Our specialists will provide a free preliminary auction estimate subject to a final estimate upon first-hand inspection.

(3) In your home

Evaluations of property can also be made in your home. The fees for such visits are based on the scope and diversity of property, with travel expenses additional. These fees may be rebated if you consign your property for sale at Sotheby's. If there is considerable property in question, we can arrange for an informal "walkthrough."

Once your property has been evaluated, Sotheby's representatives can then help you determine how to proceed should you wish to continue with the auction process. They will provide information regarding sellers' commission rates and other charges, auction venue, shipping and any further services you may require.

SOTHEBY'S SERVICES

Sotheby's also offers a range of other services to our clients beyond buying and selling at auction. These services are summarized below. Further information on any of the services described below can be found at sothebys.com.

Valuations and Appraisals Sotheby's Valuations and Appraisals Services offers advice regarding personal property assets to trusts, estates, and private clients in order to help fiduciaries, executors, advisors, and collectors meet their goals. We provide efficient and confidential advice and assistance for all appraisal and auction services. Sotheby's can prepare appraisals to suit a variety of needs, including estate tax and planning, insurance, charitable contribution and collateral loan, Our appraisals are widely accepted by the Internal Revenue Service, tax and estate planning professionals, and insurance firms. In the event that a sale is considered, we are pleased to provide auction estimates, sales proposals and marketing plans. When sales are underway, the group works closely with the appropriate specialist departments to ensure that clients' needs are met promptly and efficiently.

Financial Services Sotheby's offers a wide range of financial services including advances on consignments, as well as loans secured by art collections not intended for sale.

Museum Services Tailored to meet the unique needs of museums and non-profits in the marketplace, Museum Services offers personal, professional assistance and advice in areas including appraisals, deaccessions, acquisitions and special events.

Corporate Art Services Devoted to servicing corporations, Sotheby's Corporate Art Services Department can prepare appraisal reports, advise on acquisitions and deaccessions, manage all aspects of consignment, assist in developing arts-management strategies and create events catering to a corporation's needs.

INFORMATION ON SALES AND USE TAX RELATED TO PURCHASES AT AUCTION

To better assist our clients, we have prepared the following information on Sales and Use Tax related to property purchased at auction.

Why Sotheby's Collects Sales Tax

Virtually all State Sales Tax Laws require a corporation to register with the State's Tax Authorities and collect and remit sales tax if the corporation either establishes or maintains physical or economic presence. within the state. In the states that impose sales tax, Tax Laws require an auction house, with such presence in the state, to register as a sales tax collector, and remit sales tax collected to the state. New York sales tax is charged on the hammer price, buyer's premium and any other applicable charges on any property picked up or delivered in New York, regardless of the state or country in which the purchaser resides or does business.

Where Sotheby's Collects Sales Tax

Sotheby's is currently registered to collect sales tax in the following states: Alabama. California, Colorado, Connecticut, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, Wisconsin and Wyoming. For any property collected or received by the purchaser in New York City, such property is subject to sales tax at the existing New York State and City rate of 8.875%.

Sotheby's Arranged Shipping If the property is delivered into any state in which Sotheby's is registered, Sotheby's is required by law to collect and remit the appropriate sales tax in effect in the state where the property is delivered.

Client Arranged Shipping Property collected from Sotheby's New York premises by a common carrier hired by the purchaser for delivery at an address outside of New York is not subject to New York Sales Tax, but if the property is delivered into any state in which Sotheby's is registered. Sotheby's is required by law to collect and remit the appropriate sales tax in effect in the state where the property is delivered. New York State recognizes shippers such as the United States Postal Service, United Parcel Service, FedEx, or the like as "common carriers". If a purchaser hires a shipper other than a common carrier to pick up property, Sotheby's will collect New York sales tax at a rate of 8.875% regardless of the ultimate destination of the goods. If a purchaser utilizes a freight-forwarder who is registered with the Transportation Security Administration ("TSA") to deliver property outside of the United States no sales tax would be due on this transaction.

Where Sotheby's is Not Required

to Collect Sales Tax Sotheby's is not required to collect sales tax on property delivered to states other than those listed above. If the property is delivered to a state where Sotheby's is not required to collect sales tax, it is the responsibility of the purchaser to self-assess any sales or use tax and remit it to taxing authorities in that state.

Sotheby's is not required to collect sales tax for property delivered to the purchaser outside of the United States.

Restoration and Other Services Regardless of where the property is subsequently transported, if any framing or restoration services are performed on the property in New York, it is considered to be a delivery of the property to the purchaser in New York, and Sotheby's will be required to collect the 8.875% New York sales tax.

Certain Exemptions Most states that impose sales taxes allow for specified exemptions to the tax. For example, a registered re-seller such as a registered art dealer may purchase without incurring a tax liability, and Sotheby's is not required to collect sales tax from such re-seller. The art dealer, when re-selling the property, may be required to charge sales tax to its client, or the client may be required to self-assess sales or use tax upon acquiring the property.

Local Tax Advisors As sales tax laws vary from state to state, Sotheby's recommends that clients with questions regarding the application of sales or use taxes to property purchased at auction seek tax advice from their local tax advisors.

Photography:

Scott Elam Peter Kutscher

International Departments

For a full listing of our offices and salerooms worldwide with detailed information on all of Sotheby's services, visit sothebys.com

NEW YORK	LONDON		PARIS
Richard Austin Head of Department +1 212 894 1642	Dr. David Goldthorpe Head of Department +44 (0)20 7293 5303	Music and Continental Manuscripts Dr. Simon Maguire +44 (0)20 7293 5016	Anne Heilbronn Head of Department +33 (0)1 53 05 53 18
Printed and Manuscript Americana, Maps and Atlases Selby Kiffer +1 212 894 1288	English Literature and History, Children's Books and Illustrations Peter Selley	John Arthur ‡ Dr. Stephen Roe ‡ Medieval and Renaissance	Books and Manuscripts Anne Heilbronn +33 (0)1 53 05 53 18 Patricia de Fougerolle
Modern Literature and Illustrated Books, Private Press, Natural History Justin Caldwell +1 212 606 7385 Early Printed Books and Manuscripts, Science and Technology Cassandra Hatton +1 212 894 2342	+44 (0)20 7293 5295 Dr. Philip W. Errington +44 (0)20 7293 5302 Dr. Gabriel Heaton +44 (0)20 7293 5670 Paige Thompson +44 (0)20 7293 5296	Manuscripts Peter Kidd ‡ +44 (0)20 7293 6182 Administrator Dina Andrzheychik +44 (0)20 7293 5297	+33 (0)1 53 05 52 91 Benoît Puttemans +33 (0)1 53 05 52 66
			Administrator Théodore Bing +33 (0)1 53 05 53 19
	Travel, Atlases, Maps and Natural History Dr. David Goldthorpe +44 (0)20 7293 5303 Richard Fattorini +44 (0)20 7293 5301 Cecilie Gasseholm +44 (0)20 7293 5292	Auction Operations Hannah Welfare Caroline D'Amario Luke McArthur General Enquiries Olivia Allen +44 (0)20 7293 6182	Books and Manuscripts Deborah Quackelbeen
Judaica Dr. Sharon Mintz ‡ +1 212 606 1118			+32 2 627 7182
Specialist Ella Hall +1 212 894 1193	Continental and Russian Books, Science, Medicine and Bindings		Books and Manuscripts Filippo Lotti +39 02 295 001 Consultant ‡
Associate Specialist Dr. Kalika Sands +1 212 606 7385	Charlotte Miller +44 (0)20 7293 5893		
Sale Coordinator Annelouise Finn +1 212 606 7385			
Administrator Claudia Ludwig +1 212 606 7385			

FORTHCOMING AUCTIONS

A comprehensive calendar of international auctions, in addition to all sale results, can be viewed at sothebys.com

SPACE PHOTOGRAPHY ONLINE 1-11 October

New York

CHARLES DICKENS: THE LAWRENCE DRIZEN COLLECTION 24 September

London

FINE BOOKS AND MANUSCRIPTS ONLINE 5-17 December

New York

BOARD OF DIRECTORS

Domenico De Sole

Chairman of the Board

The Duke of Devonshire

Deputy Chairman of the Board

Tad Smith

President and

Chief Executive Officer

Jessica Bibliowicz

Linus W. L. Cheung

Kevin Conroy

Daniel S. Loeb

Marsha E. Simms

Diana L. Taylor

Dennis M. Weibling

Harry J. Wilson

Michael J. Wolf

David Schwartz

Corporate Secretary

SOTHEBY'S EXECUTIVE MANAGEMENT

Jill Bright

Human Resources

& Administration

Worldwide

Amy Cappellazzo

Chairman

Fine Art Division

Valentino D. Carlotti

Business Development

Worldwide

John Cahill

Chief Commercial Officer

Worldwide

Kevin Ching

Chief Executive Officer

Asia

Ken Citron

Operations & Chief

Transformation Officer

Worldwide

Lauren Gioia

Communications

Worldwide

David Goodman

Digital Development

& Marketing

Worldwide

Mike Goss

Chief Financial Officer

Jane Levine

Chief Compliance Counsel

Worldwide

Laurence Nicolas

Managing Director

Jewelry & Watches

Worldwide

Jonathan Olsoff

General Counsel

Worldwide

Jan Prasens

Managing Director

Europe, Middle East, Russia,

India and Africa

Allan Schwartzman

Chairman

Fine Art Division

Patti Wong Chairman

Asia

SOTHEBY'S INTERNATIONAL COUNCIL

Robin Woodhead

Chairman

Jean Fritts

Deputy Chairman

John Marion

Honorary Chairman

Juan Abelló

Judy Hart Angelo

Anna Catharina Astrup

Nicolas Berggruen

Philippe Bertherat

Lavinia Borromeo

Dr. Alice Y.T. Cheng

Laura M. Cha

Halit Cingillioğlu

Jasper Conran

Henry Cornell

Quinten Dreesmann

Ulla Dreyfus-Best

Jean Marc Etlin

Tania Fares

Comte Serge de Ganay

Ann Getty

Yassmin Ghandehari

Charles de Gunzburg

Ronnie F. Heyman

Shalini Hinduja Pansy Ho

Prince Amyn Aga Khan

Catherine Lagrange

Edward Lee

Jean-Claude Marian

Batia Ofer Georg von Opel

Marchesa Laudomia Pucci Castellano

David Ross

Patrizia Memmo Ruspoli

Rolf Sachs

René H. Scharf

Biggi Schuler-Voith

Judith Taubman Olivier Widmaier Picasso

The Hon. Hilary M. Weston,

CM, CVO, OOnt

CHAIRMAN'S OFFICE

AMERICAS

Lisa Dennison Benjamin Doller

George Wachter

Thomas Bompard

Lulu Creel

Nina del Rio Mari-Claudia Jimenez

Brooke Lampley

Gary Schuler

Simon Shaw

Lucian Simmons

August Uribe

EUROPE

Oliver Barker

Helena Newman Mario Tavella

Alex Bell

Michael Berger-Sandhofer

David Bennett

Lord Dalmenv

Claudia Dwek

Edward Gibbs

George Gordon

Franka Haiderer

Henry Howard-Sneyd

Caroline Lang

Cedric Lienart

Daniela Mascetti

Wendy Philips

Lord Poltimore

Samuel Valette

Albertine Verlinde Roxane Zand

ASIA

Patti Wong

Nicolas Chow

Lisa Chow Jen Hua

Yasuaki Ishizaka

Wendy Lin Rachel Shen 7 7 69 NEIL ARMSTRONG 050



Sotheby's Example Collectors gather here.