

# *Po stopách programu Apollo*



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***HORNINA***

# *Hangár číslo 31*

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# Cesta do muzejí

## Moon Rock

*Lunar Sample No. 70215, 93 (008)*

This lunar sample, collected by Apollo 17 Astronaut Harrison Schmitt in December 1972, is a mare basalt. (Early astronomers called the dark areas of the moon "seas" or "maria." Mare is singular for maria.) Believed to be 3.7 billion years old, older than 99.9 percent of the earth's surface rocks, the sample weighs 114 grams.

Samples from the maria resemble earth basalts, but have more titanium & less volatile elements such as sodium and potassium than their terrestrial counterparts. Basalts are fine-grained volcanic rocks, which are dark in color and composed mainly of the minerals plagioclase feldspar and pyroxene.

*Lent by the National Aeronautics and Space Administration.*



# *Lunar Ambassador*



# *Dotknout se Měsíce*









# **KOSMICKÉ LODĚ**

### Apollo 4 Command Module

This Apollo command module was launched from the Kennedy Space Center on November 4, 1967. It was the first mission to splash land in the Atlantic Ocean, and the first to splash land in the Atlantic Ocean.

The Apollo 4 mission was the first test of the Apollo 4 mission. After successfully proving the command module in a 117 orbit mission, the first stage was required to prove the vehicle in an extended orbit with a 100 orbit mission.

The first and second stages of the Saturn V were being attached to Kennedy Space Center.

## MOON ROCK



**Apollo-4/Stennis Space Center**





When Does It  
Steps Up

### EVOLUTION OF SPACE FLIGHT

### Apollo 4 Command Module

This Apollo 4 Command Module was the first to be launched and returned to Earth. It was equipped with an improved thermal protection system.

The Apollo 4 Command Module was the first to be launched and returned to Earth. It was equipped with an improved thermal protection system.

The first and second stages of the Saturn V rocket were launched on November 14, 1968, and the Command Module was launched on November 14, 1968.





**Apollo-6/Atlanta**

APOLLO 6  
LAUNCH: 1968  
MISSION: 14 DAYS, 22 HOURS, 54 MINUTES  
ORBIT: 169,000 MILES  
REENTRY: 1968  
LANDING: 1968  
CARRIER: ATLAS SLV-2  
CREW: 3  
AGENCY: NASA  
STATUS: SUCCESSFUL  
MUSEUM: ATLANTA-Fulton County Stadium





Apollo-7/Dallas











**Apollo-8/Chicago**





Apollo 9

DO NOT TOUCH  
PLEASE DO NOT TOUCH

SUPPORT THE  
San Diego Regional Museum

ON SALE

**Apollo-9/San Diego**



## APOLLO 9 CREW ENTRY HATCH

This hatch was received from the National Air and Space Museum as you see it. Since the flight of "Gumdrop," various parts were used on succeeding command modules or have otherwise disappeared. The San Diego Aerospace Museum is in the process of replicating the missing items and will add them to the hatch as they become available.

If you have information or parts that would assist the Museum in this process, please contact the Curator.

APOLLO 9 ON LOAN FROM

Smithsonian Institution  
National Air and Space Museum

This is a reproduction of the original. It is intended to display the historical significance of the object. It is not intended to be used as a substitute for the original. It is not intended to be used as a substitute for the original.



*Apollo-10/Londýn*





T. James Aldrin

Apollo-11/Washington D.C.



Apollo-12/Virginia





**Apollo-13/Hutchinson**

The image shows the Apollo 14 Command Module, 'Kitty Hawk', displayed in a museum. The module is a large, conical, rusted metal structure with a glass-enclosed viewing area. The interior is visible through the glass, showing the seats and control panels. The module is mounted on a black base with white support struts. In the background, there are other museum exhibits, including a large vertical display panel and a glass case with information.

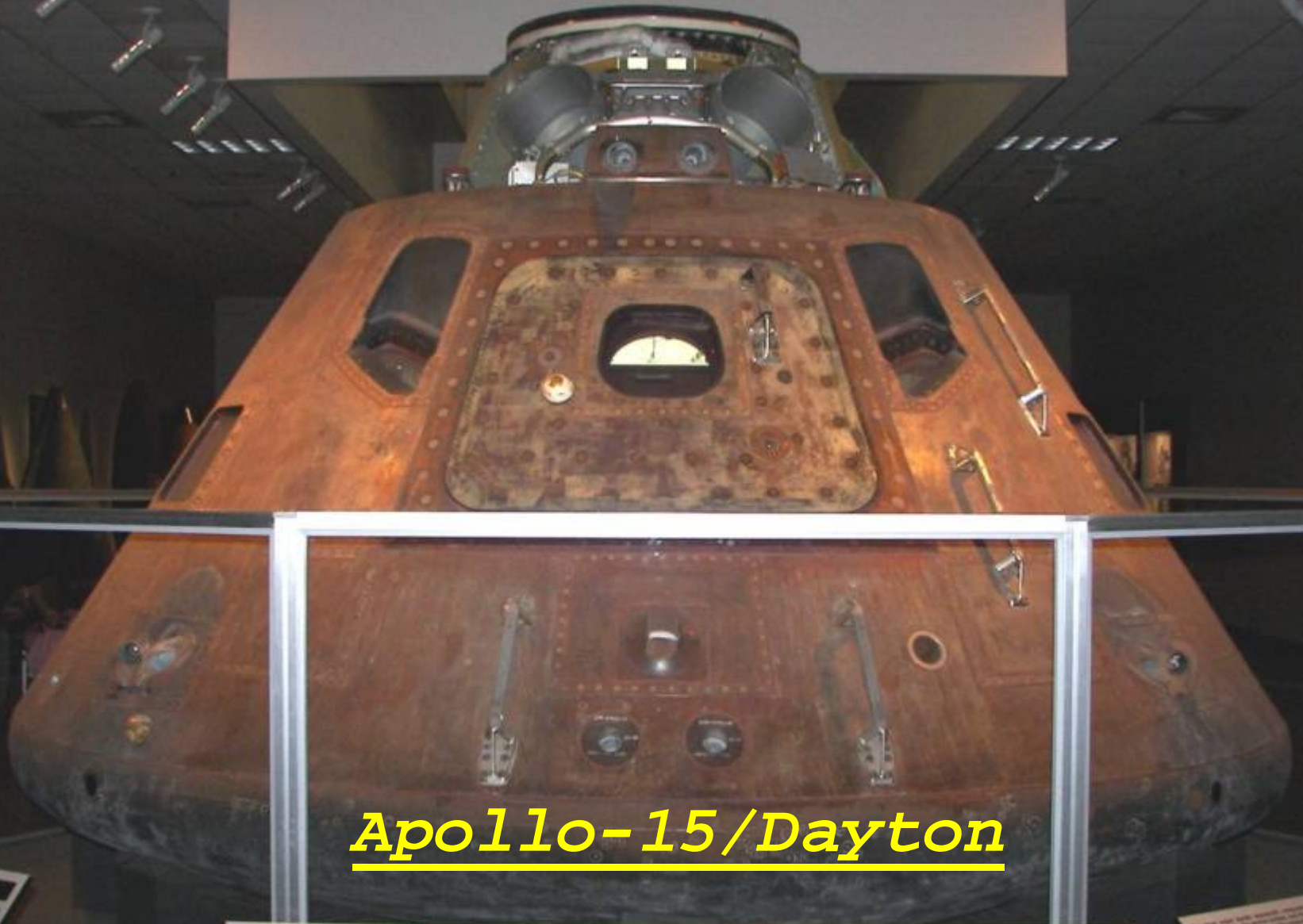
**APOLLO 14 COMMAND MODULE**  
*Kitty Hawk*

This spacecraft flew to the Moon  
and back January 31 February 9, 1971.

Alan Shepard, Commander  
Edgar Mitchell, Lunar Module Pilot  
Stuart Rogers, Command Module Pilot

**Apollo-14/Titusville**





## Apollo-15/Dayton

### Apollo 15 Command Module Endeavour

Apollo 15 was the fourth mission to land spacecraft on the moon and the only Apollo mission with an AS16-107 Free Flyer (Small Lunar Module) (SM-LM) in orbit. It was the first mission to use the Lunar Module in orbit, named Endeavour. The mission lasted 14 days. The crew consisted of Commander James Lovell, Jr., and Lunar Module Pilot James Irwin. The mission ended on July 14, 1969, after 17 days in space.



The Apollo 15 mission was the first to use the Lunar Module in orbit. It was the first mission to use the Lunar Module in orbit, named Endeavour. The mission lasted 14 days. The crew consisted of Commander James Lovell, Jr., and Lunar Module Pilot James Irwin. The mission ended on July 14, 1969, after 17 days in space.

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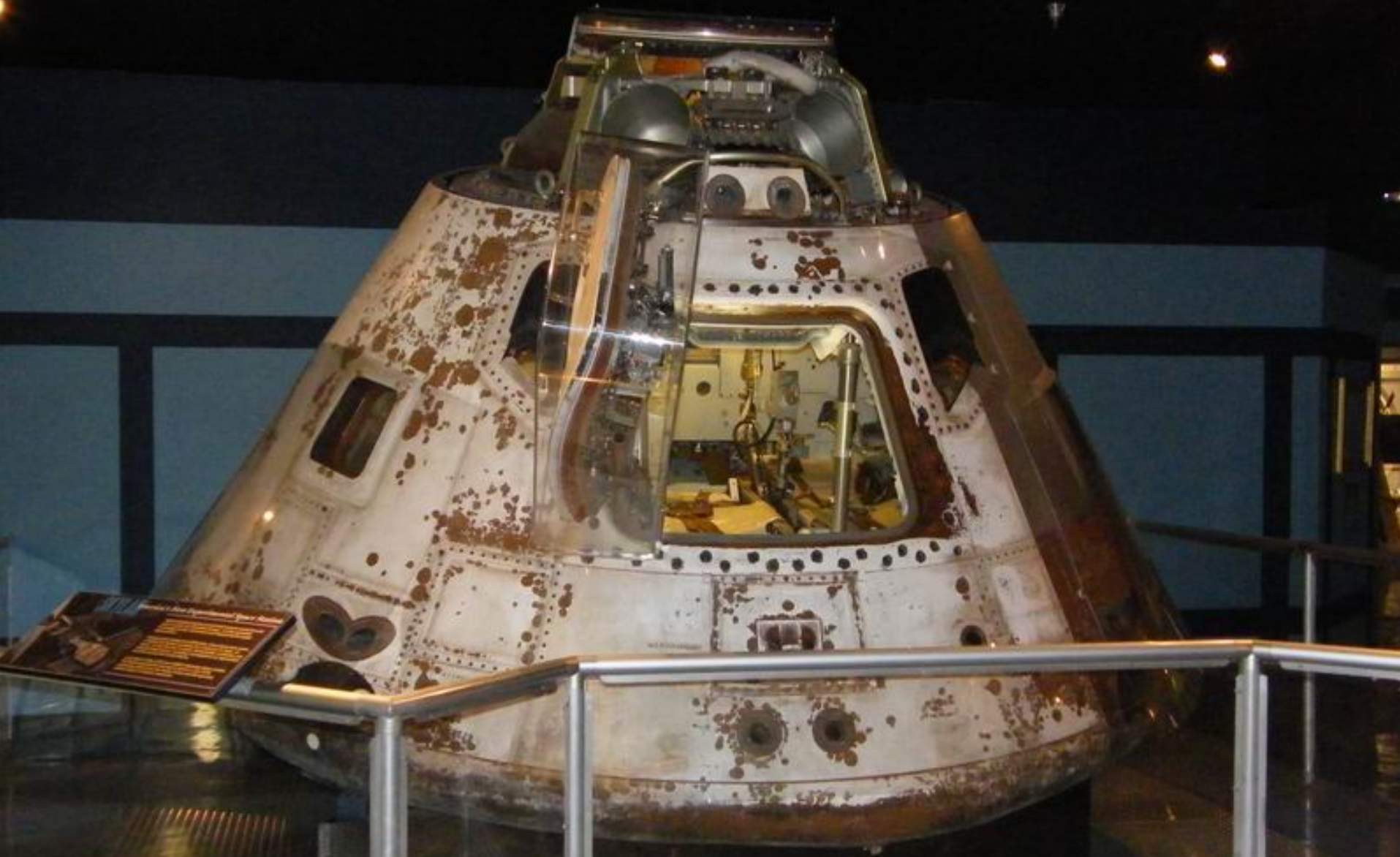


Apollo-16/Huntsville



*Apollo-17/Houston*



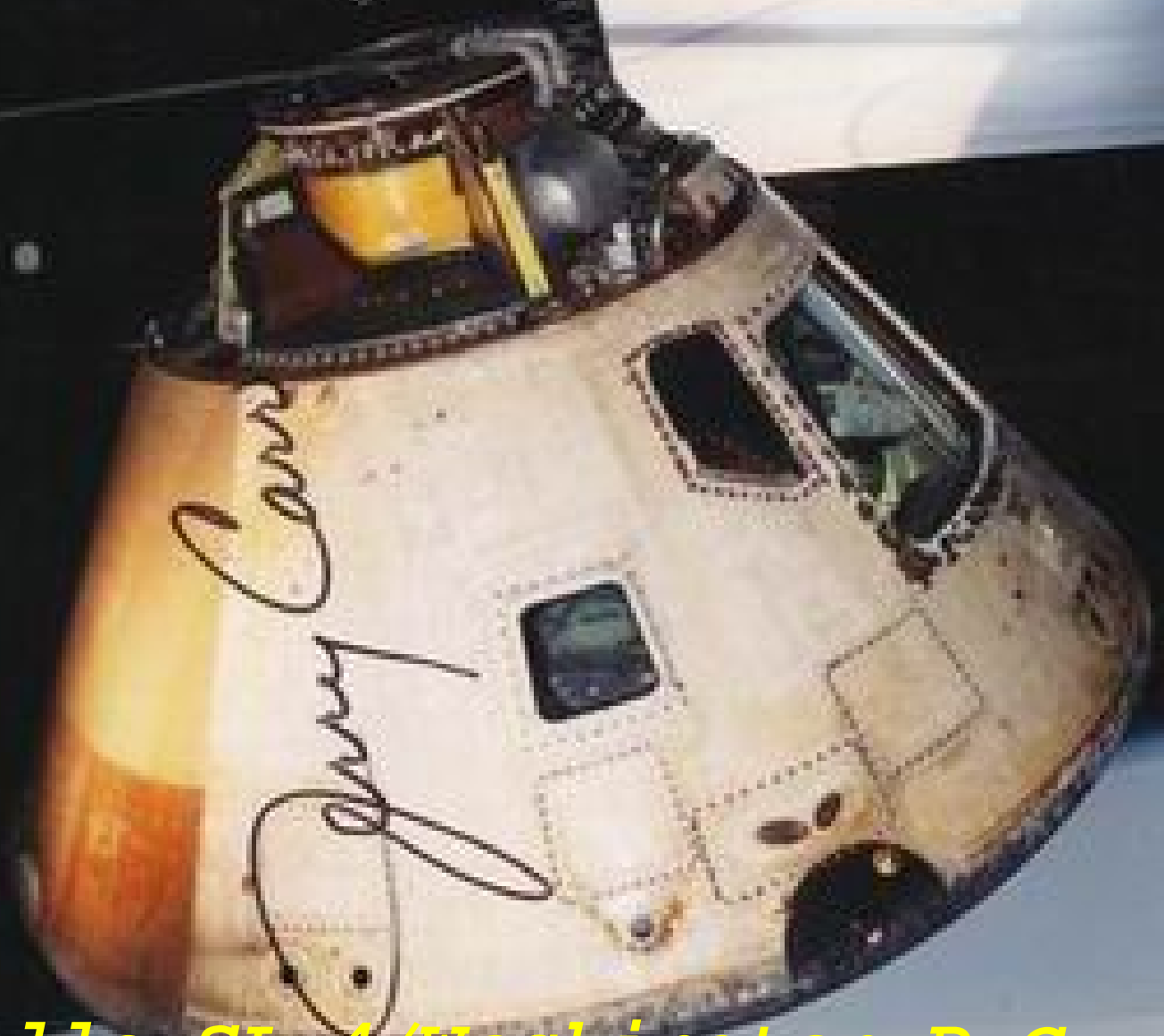


**Apollo SL-2/Pensacola**





*Apollo SL-3/Cleveland*



Apollo 11/16-17/Washington D.C.



Apollo-ASTP/Los Angeles

**WHAT DID THE ASTP ACCOMPLISH?**

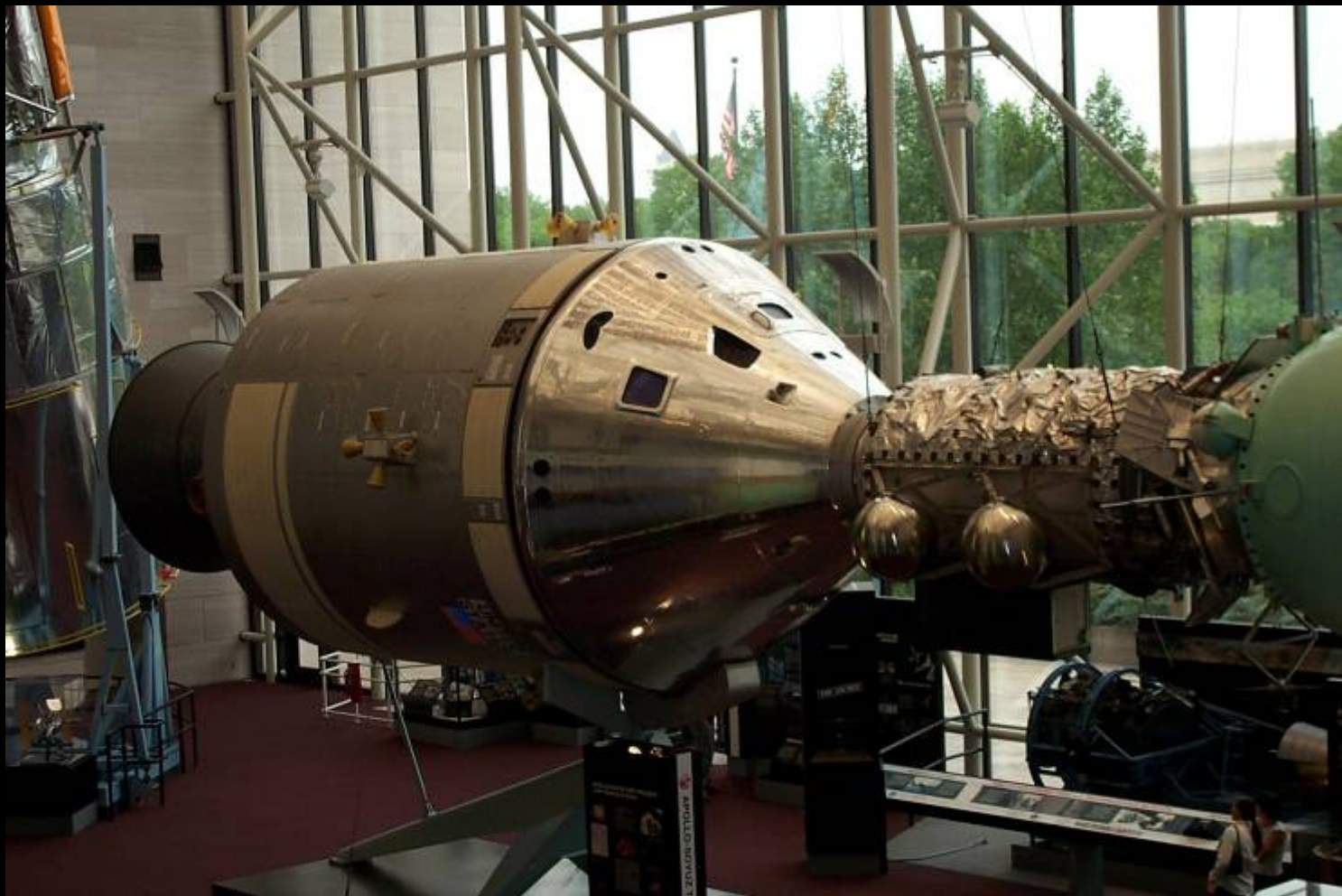
The Apollo-Soyuz Test Project (ASTP) was the first joint U.S.-Soviet space mission. It was a significant milestone in the history of space exploration, as it was the first time that two different spacecraft from different countries were docked together in space. The mission was a success, and it paved the way for future international space cooperation.

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UNITED STATES



103 - Apollo-8, 104 - Apollo-9,  
105 - akustické testy, 106 -  
Apollo-10, 107 - Apollo-11 atd.



**BP-29**





A white, conical nose cone of a spacecraft is mounted on a concrete base. The word "NASA" is printed in large, dark blue letters on the side of the cone. On top of the cone is a blue instrument pod with a circular opening and two orange rectangular panels. The object is situated outdoors on a concrete pad, with a chain-link fence and a line of trees in the background.

NASA

**BP-1228**

***RAKETY***





**Little Joe-II/BP-22**







**PA-2, LJ-2 A002**

SA-209/BP-18/30





SA-211, druhý stupeň neznámý



















1 - ASTS (All Systems Test Stage)

2, 3 - SA514





Jen dynamické testy!





1- SA514, 2 - SA515, 3 - SA513







# SA-515







# Číslo 16



## SATURN V PREVALVE

This valve is a very small part of a Saturn V rocket, the rocket type that launched the Apollo moon missions. It's one of the liquid oxygen (LOX) valves on the rocket.

LOX flowed through this valve at 110,000 bars (29,000 gallons) a minute—enough to fill a typical backpack swimming pool in a minute! In this 100-gram valve, 1425 pounds could exit at that flow in a third of a second.





***MOTORY***  

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# Florida





# Oklahoma City





# Weatherford, Oklahoma





# Nové Mexiko





# Georgia





# ***LUNÁRNÍ MODULY***

# Výrobní číslo 2

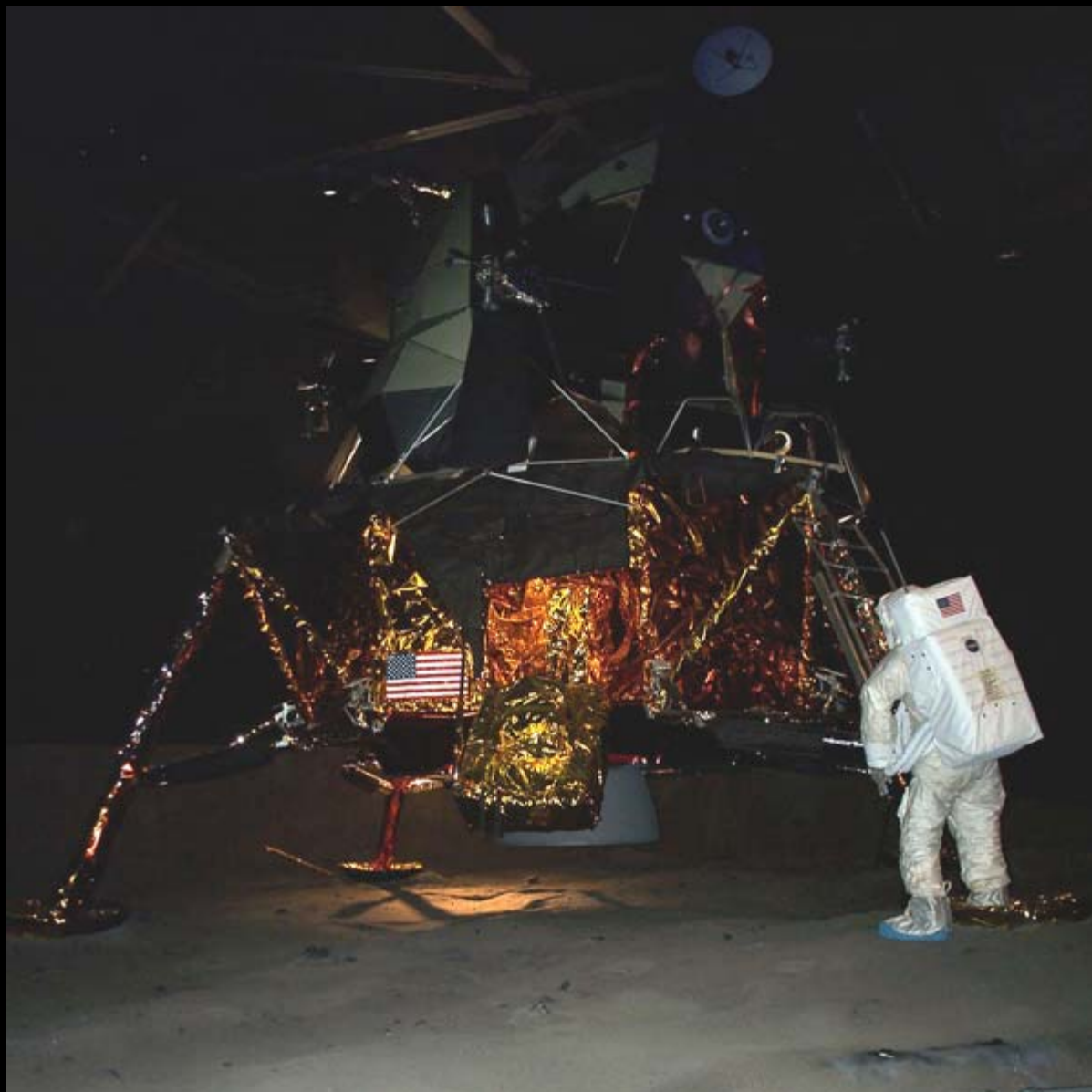




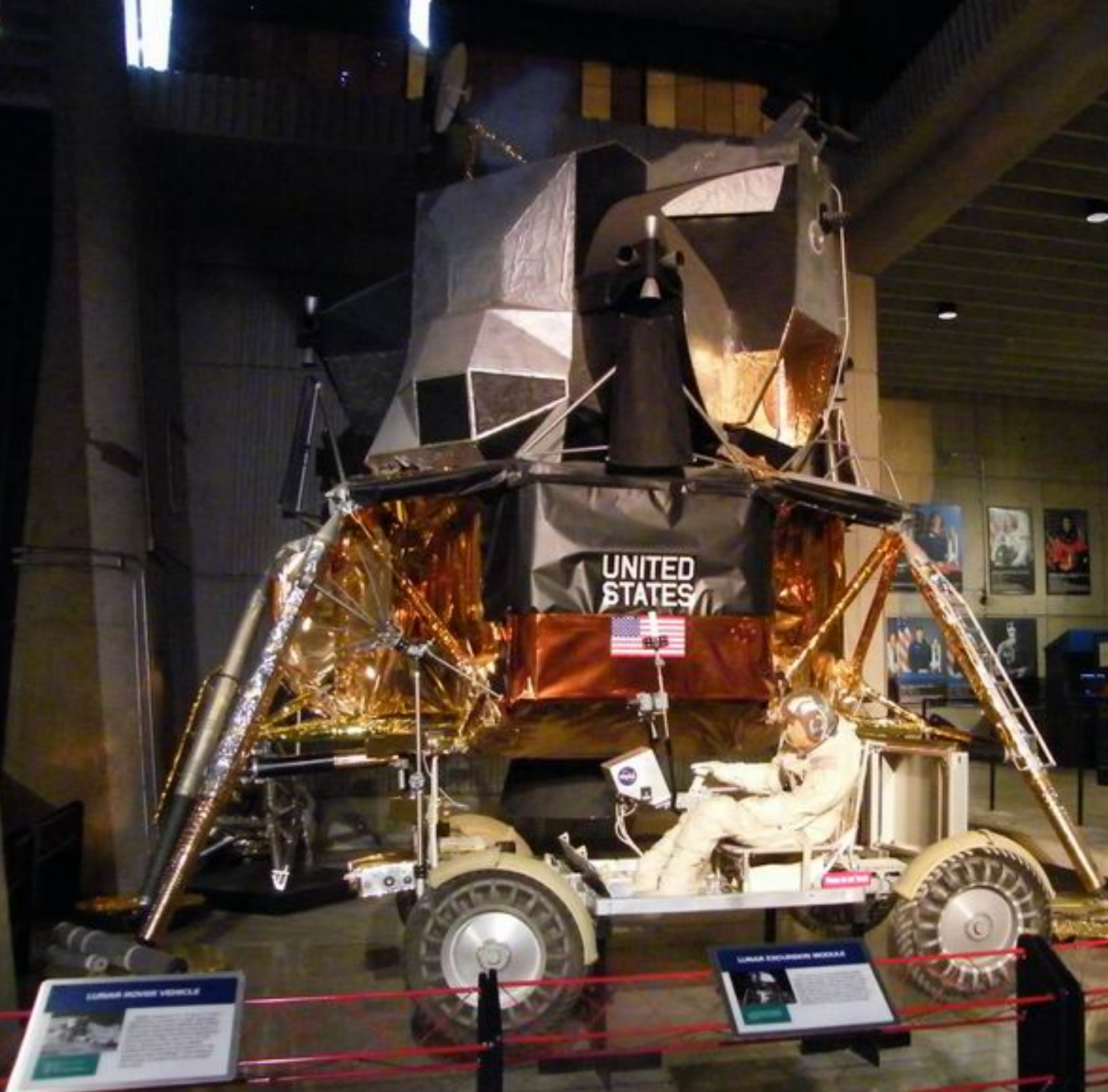
# Výrobní číslo 9



# Výrobní číslo 13







UNITED STATES



LUNAR EXCURSION VEHICLE

LUNAR ROVING VEHICLE



8:52 p.m., 1969  
THE FIRST WATCH TO BE WORN ON THE MOON  
BY APOLLO 11 ASTRONAUTS  
THIS IS THE ORIGINAL  
WATCH WORN BY NEIL  
ARMSTRONG DURING HIS  
FIRST STEP ON THE MOON

At least a  
Columbus  
Challenger  
Discovery  
Enterprise





STARSHIP  
GALLERY

STARSHIP



***SKAFANDRY***

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**Apollo Glove, Left  
Charles Conrad**

ART 0887

This glove was worn by Astronaut Charles Conrad, Jr., on Apollo 12, the 2<sup>nd</sup> mission to the moon, November 1969





## THE APOLLO SPACE SUIT

### James Lovell, Apollo 13

This is the actual space suit worn by Apollo 13 Commander James Lovell on the ill-fated *Odissey* spacecraft, had the mission not been aborted en-route to the Moon.

Lovell would have worn the suit when he explored the lunar surface.



### A Successful Failure

Although the Apollo 13 crew never landed on the Moon, NASA considered the mission a "successful failure" when the crew splashed down safely in the South Pacific.



"Apollo 13 showed the true level of capability of the country and what Americans, American and American could do in terms of crisis."

—James Lovell





The original spacesuit  
has been removed  
and sent to the  
Smithsonian Institute  
for cleaning and  
inspection. The  
spacesuit on display  
is a mock up of the  
original.





**Apollo 8**  
The first crewed mission to orbit the Moon. It was the eighth mission in the Apollo program, and the first to orbit the Moon. The mission was launched on December 16, 1968, and lasted 29 days, 17 hours, and 55 minutes. The crew consisted of Commander Frank Borman, Lunar Module Pilot James A. Lovell, and Command Module Pilot William A. Anders. The mission was a major success, as it was the first time humans traveled beyond Earth's orbit.

**William A. Anders**  
William Anders was the Command Module Pilot of the Apollo 8 mission. He was the first of three Apollo 8 crew members to be born in the 20th century. Anders was a pilot and test pilot before joining NASA. He was selected for the Apollo 8 mission in January 1968. He was the only crew member to have a background in test piloting. Anders was a member of the United States Air Force and was a pilot of the F-4 Phantom II. He was a member of the United States Air Force and was a pilot of the F-4 Phantom II. He was a member of the United States Air Force and was a pilot of the F-4 Phantom II.



# CONRAD



A member of the Gemini flight crew, Charles Conrad was Mission Specialist for the second Gemini flight, Gemini 10, with the Command Module Pilot, Michael Smith. Conrad's flight was the last of the Gemini program.



Conrad was born in 1921 in St. Louis, Missouri. He served in the U.S. Navy during World War II and was a test pilot. He was selected for the Gemini program in 1964. He was the first American to fly in a space helmet.

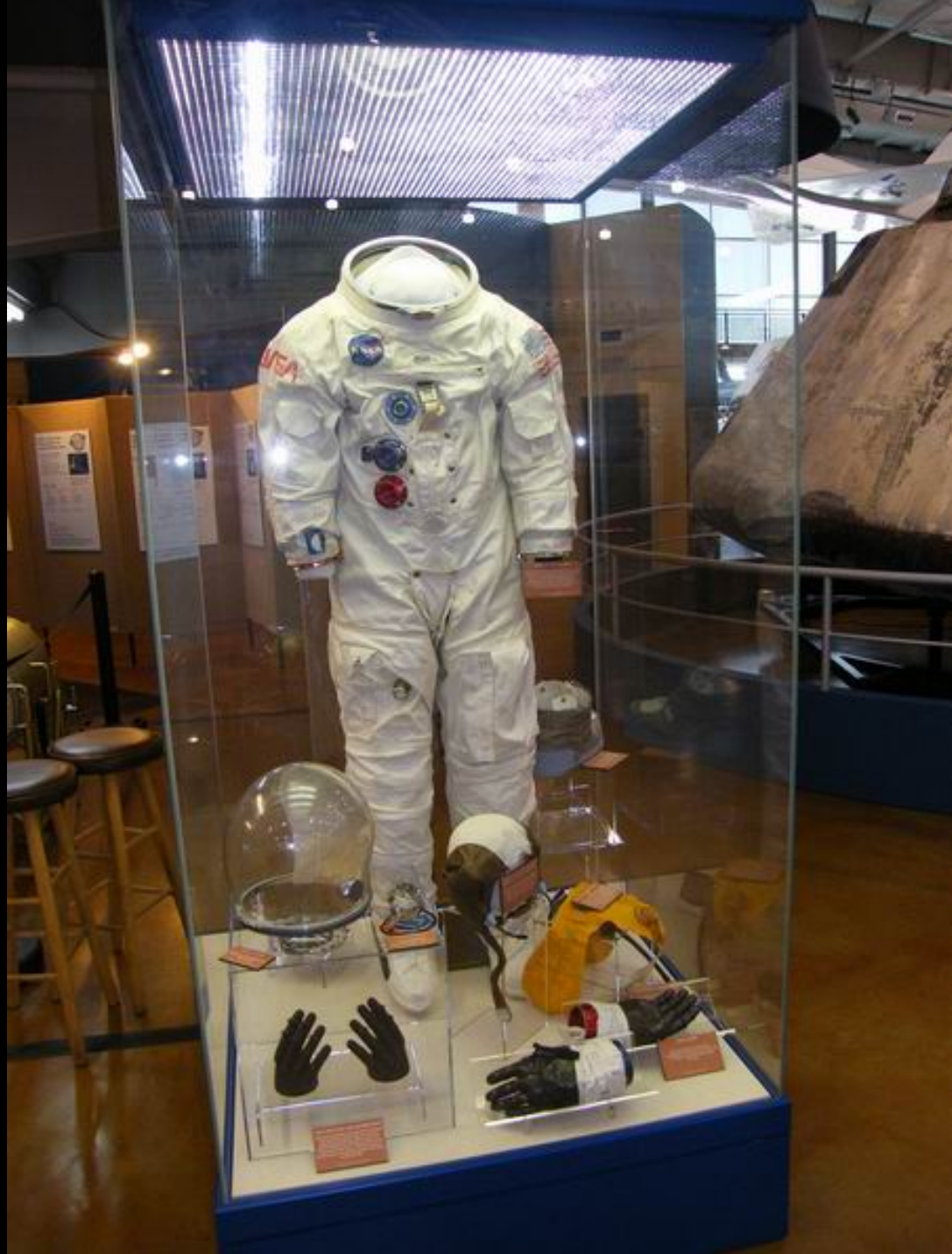
Conrad served as the backup for the Gemini 10 mission. He was scheduled to fly with Michael Smith on the Gemini 10 mission, but the mission was cancelled due to technical problems.



Conrad and Smith were scheduled to fly on the Gemini 10 mission, but the mission was cancelled. Conrad was later selected for the Apollo 12 mission as the backup for the Lunar Module Pilot, Alan Bean.







***PODPISY***



# APOLLO 11 INSURANCE COVER

Over the last half of Family Space Collection

## FROM TO APOLLO 11'S LAUNCH

The launch was insured for the year by New American Life Insurance, New York, and Mission Oceanic Insurance Co. of New York. The Apollo 11 flight was insured by the NAFLA Mutual Insurance Company (New York) and Mission Oceanic Insurance Co. of New York. The insurance policy covered the cost of the launch and the cost of the flight.

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## THESE COVERS PLAYED AN INTEGRAL ROLE IN THE FLIGHT.

The covers played an integral role in the flight. The covers played an integral role in the flight. The covers played an integral role in the flight. The covers played an integral role in the flight.





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
 MANNED SPACECRAFT CENTER  
 2101 WEBSTER SEABROOK ROAD  
 HOUSTON, TEXAS 77058

IN REPLY REFER TO:

MARCH 17, 1965

R E RITCHIE  
 4401 NESTLE AVE  
 CYPRESS CAL

AS ASTRONAUTS, WE FULLY APPRECIATE YOUR PLEDGE OF CONTINUED DEDICATION AND SUPPORT IN YOUR WORK WITH THE APOLLO SPACECRAFT PROGRAM.

IT IS THIS SENSE OF TEAMWORK AND THE DEDICATED EFFORTS OF EVERY PERSON INVOLVED THAT IS OUR OWN ASSURANCE OF SUCCESS IN THE EXPLORATION OF SPACE. AS MEMBERS OF THIS TEAM, WE GIVE YOU, IN TURN, OUR PLEDGE TO DO OUR BEST IN THIS JOINT EFFORT.

TOGETHER, WITH PERSONAL DEDICATION IN APPLYING OUR SKILLS AND KNOWLEDGE, WE WILL GET THE JOB DONE.

SINCERELY,

<i>William</i>	<i>Lee Driscoll</i>	<i>James Lovelock</i>
<i>Charles Conrad</i>	<i>Richard F. Gordon</i>	<i>Andrew B. Brant</i>
<i>Francis G. White</i>	<i>Clarence A. Bassett Jr.</i>	<i>Edwin E. Aldrin Jr.</i>
<i>James A. McDivitt</i>	<i>Elliot S. See</i>	<i>W. M. Sullivan</i>
<i>Scott Carpenter</i>	<i>Alan B. Shepard</i>	<i>Donald S. Davis</i>
<i>Michael Collins</i>	<i>Roger B. Chaffee</i>	<i>Deke Slayton</i>
<i>Frank Borman</i>	<i>W. G. Anderson</i>	<i>Deane K. Kieckhefer</i>
<i>Richard S. Johnson</i>	<i>Thomas P. Stafford</i>	<i>Robert F. Kennedy</i>
<i>Walter Cunningham</i>	<i>John Young</i>	<i>Neil A. Armstrong</i>
<i>Edward H. White II</i>		
<i>T. S. S. Olson</i>		

12-10-05 Frank Borman 14 Mar 65



SINCERELY,

William

CHARLES COOPER

James H. Robinson

James A. McDowell

Scott Carpenter

Richard Collins

Frank Borman

Eugene Cernan

~~William Cunningham~~

Edward H. White II

T. Eugene Aldrin

Sue Sisson

Richard F. Gordon

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Alan B. Shepard

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W. G. Anders

Thomas P. Stafford

John Young

12-10-05

James Lovell

Andrew Bean

Edwin E. Aldrin Jr

W. M. Scherer

Duff R. Scott

Deke Slayton

Michael F. Smith

Richard Gordon

Neil Armstrong

Frank Borman 14 Dec 05

MOONWALKERS  
Complete Collection  
Authentic Autographs  
\$24,000

(World Wide Shipping Available)



MOONWALKERS  
Complete Collection  
Authentic Autographs  
\$24,000



Small framed text block, likely a list of items or terms and conditions.





***KARENTÉNA***





**MQF002**









**MQF004**

# ***SIMULÁTORŮ***







# APOLLO MISSION SIMULATOR



**APOLLO MISSION SIMULATOR**  
The Apollo Mission Simulator is a full-scale replica of the Apollo Lunar Module (LM) descent stage, used for training astronauts in the procedures and techniques required for lunar operations. It provides a realistic environment for practicing the complex tasks involved in landing on the Moon, from engine starts to ascent stage liftoff.

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# ***DROBNOSTI A ZAJÍMAVOSTI***





NEIL A. ARMSTRONG  
EDWIN E. ALDRIN JR.  
MICHAEL COLLINS

7/20/69

APOLLO

XI



-4:00 RATE/ERR MON (BOTH) - LDG RDR/CMPTR  
 ATT MON (BOTH) - AGS  
 RATE SCALE - 5°/SEC  
 THR CONT - MAN ~~AUTO~~  
 MAN THROT - CDR  
 ATT/TRANSL - 4 JET  
 BAL CPL - OFF  
 ENG GMBL - ~~ENABLE~~ OFF  
 DES ENG CMD OVRD - OFF  
 DEADBAND - MIN  
 ATT CONT: ROLL - PULSE  
           PITCH - PULSE  
           YAW - MODE CONT  
 MODE CONT (BOTH) - ATT HOLD (BOTH) - ATT Hold  
 PRPLNT QTY MON - DES 1  
 TTCA (CDR) - THROT (MIN) FOR DPS, JETS FOR RCS  
 TTCA (LMP) - JETS

-1:00 MASTER ARM - ON

- :35 V98E  
 F-16 83 ΔVX, Y, Z (All Zero) (.1fps)  
 ENG ARM - DES

~~10~~ 10:00 MANUAL ULLAGE (LMP)

- :02 ~~EMC MODE - FREE~~

ACA - Out of Detent (Yaw) (Zero Error Needles)

:00 ENG START (CDR) - PUSH +X ULLAGE  
 Ignition

+ :05 TTCA (CDR) - Throttle Up As Req'd  
 ATT CONT: PITCH, ROLL - As Req'd

+ :15 MASTER ARM - OFF

Basic Date 1/6/70  
 Changed 3/23/70

















### Mission Control Console Buttons

These buttons are from the console manned by Jerry Elliott during the Apollo 11 mission. Connected directly to the lunar lander's transmission signal, Elliott was one of the first to know of the successful landing.

Jerry Elliott Collection

2005.237.009









0000300

0000300







**VIRGIL "GUS" GRISSOM**

**EDWARD H WHITE II**

**ROGER B CHAFFEE**



***DODNES POUŽÍVANÉ***

















# **PŘÍNOSY**



# Ekologie

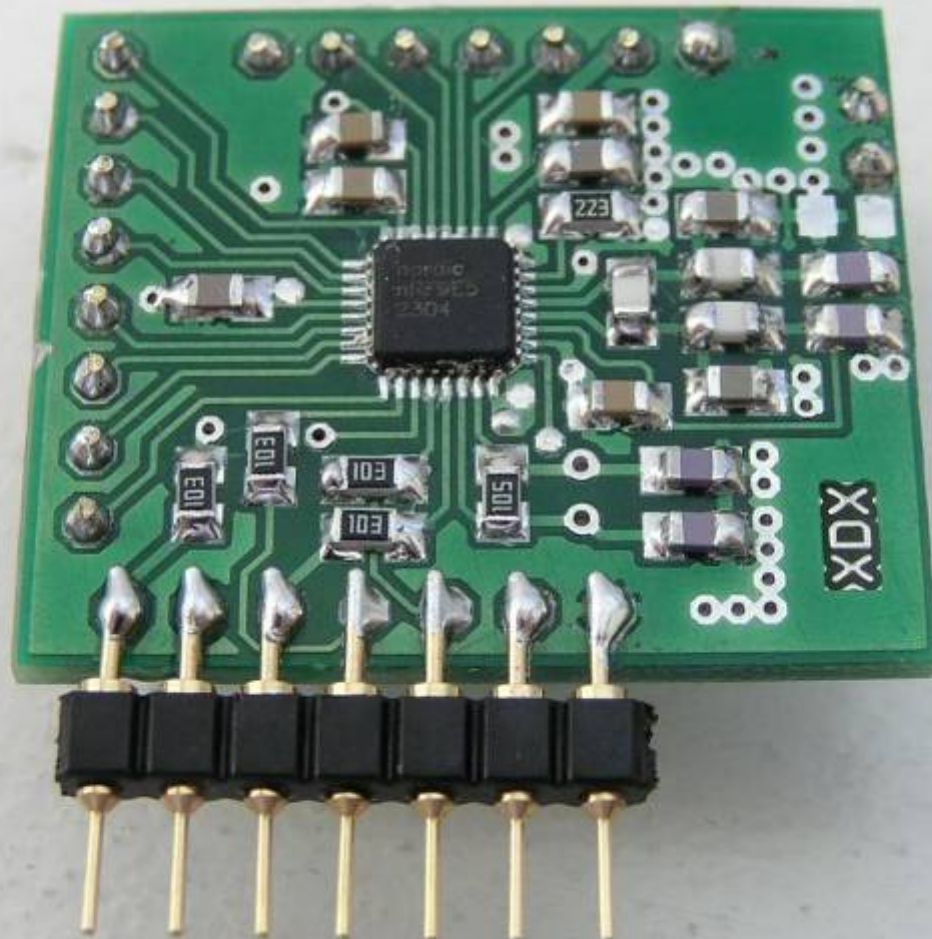


# CNC nástroje





# Integrované obvody



# Palivový článek

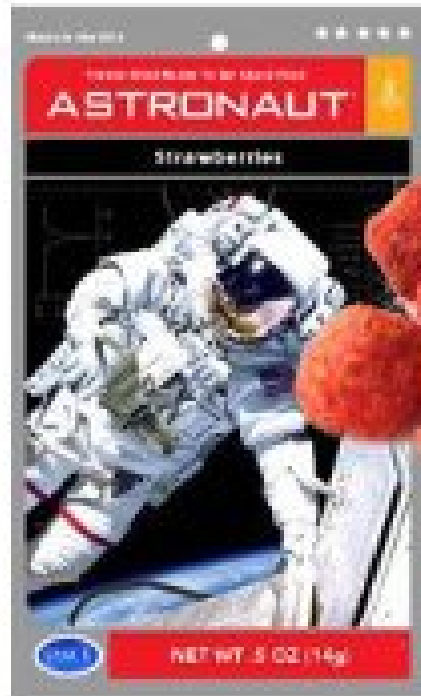




# Přenosná akumulátorová zařízení



# Vymrazování potravin





# Rozvoj technologie bimetalu



# Ohnivzdorné nátěry





# Metodika řízení velkých projektů



# *Dotazy?*

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[www.kosmonaut.cz](http://www.kosmonaut.cz)