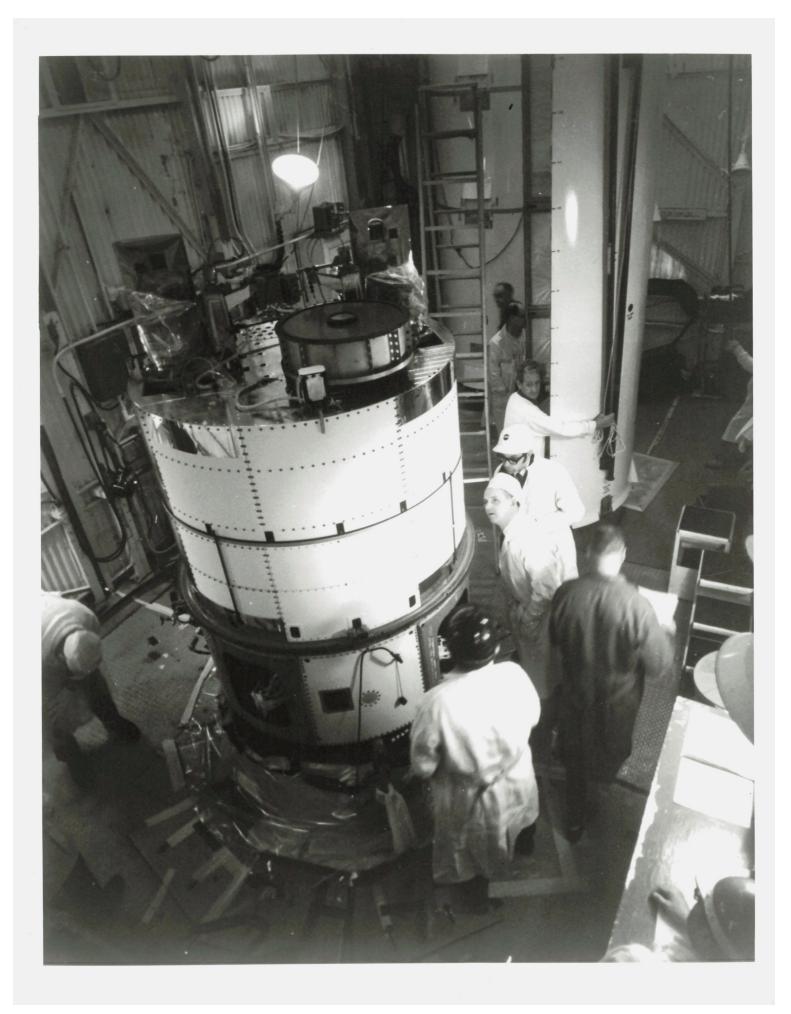
# CHAPTER 9

**SERT** Skylab Solrad **Space Centers Space Station Spacesuits** SPED Stratascope STS STS-7 Surveyor Thor-Delta Misc I, Misc II





FOR RELEASE:

February 2, 1970

PHOTO NO.

70-H-133

70-HC-102

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EEB 78 1810

OMPOC, Calif. -- SERT II spacecraft is being mated to the ad Booster. The spacecraft will test how one type of electric rocket engine operates in space. The test thrusters are two electron-bombardment ion engines. Ion engines, one of several types of electric thrusters, may be used in the future to position Earth-orbiting spacecraft or to propel spacecraft to distant planets. The National Aeronautics and Space Administration spacecraft, SERT 2 (Space Electric Rocket Test) will be launched from the Western Test Range in California by a Thorad-Agena-D booster. SERT 2 will be placed in a circular orbit 621 statute miles above the Earth and in a plane inclined 99.1 degrees to the Equator. In this orbit, it will take about 105 minutes to complete each revolution. SERT 2 will provide the first orbital test of electron-bombardment ion engines. Satisfactory operation for a period of six months or longer will be a milestone in the advancement of electric propulsion. A SERT 1 suborbital flight in July 1964 provided the first successful test of an ion engine in space. The electron-bombardment ion engine was invented at the NASA Lewis Research Center, Cleveland, Ohio,





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, SW, WASHINGTON, D. C. 20546

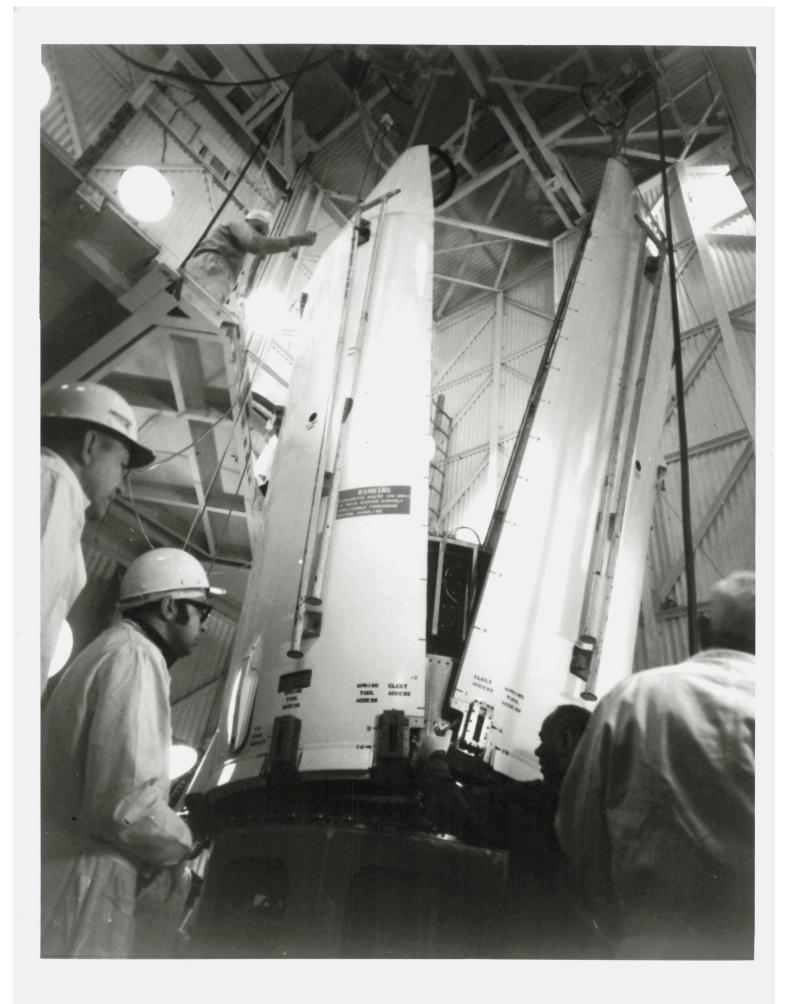
FOR RELEASE: July 14, 1964 PHOTO NO.: 64-sert 1-1

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IN A SURGICALLY CLEAN room, National Aeronautics and Space Administration scientists check SERT I (Space Electric Rocket Test) for its flight on July 20, 1964. The Jaunch proved that electrostatic (ion) engines can efficiently produce thrust in space.



Good





FOR RELEASE: February 2, 1970

PHOTO NO. 70-H-134 70-HC-103

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LOMPOC, Calif. -- Shroud is placed over the SERT II spacecraft. The spacecraft will test how one type of electric rocket engine operates in space. The test thrusters are two electron-bombardment ion engines. Ion engines, one of several types of electric thrusters, may be used in the future to position Earth-orbiting spacecraft or to propel spacecraft to distant planets. The National Aeronautics and Space Administration spacecraft, SERT 2 (Space Electric Rocket Test) will be launched from the Western Test Range, in California by a Thorad-Agena-D booster. SERT 2 will be placed in a circular orbit 621 statute miles above the Earth and in a plane inclined 99.1 degrees to the Equator. In this orbit, it will take about 105 minutes to complete each revolution. SERT 2 will provide the first orbital test of electron-bombardment ion engines. Satisfactory operation for a period of six months or longer will be a milestone in the advancement of electric propulsion. A SERT 1 suborbital flight in July 1964 provided the first successful test of an ion engine in space. The electron-bombardment ion engine was invented at the NASA Lewis Research Center, Cleveland, Ohio.







FOR RELEASE: February 2, 1970

PHOTO NO.

70-H-135 70-HC-104

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POC, Calif. -- The National Aeronautics and Space Administration spacecraft, SERT 2 (Space Electric Rocket Test ) will be launched from the Western Test Range in California by a Thorad-Agena-D booster. SERT 2 will be placed in a circular orbit 621 statute miles above the Earth and in a plane inclined 99.1 degrees to the Equator. In this orbit, it will take about 105 minutes to complete each revolution. SERT 2 will provide the first orbital test of electronbombardment ion engines. Satisfactory operation for a period of six months or longer will be a milestone in the advancement of electric propulsion. A SERT 1 suborbital flight in July 1964 provided the first successful test of an ion engine in space. The test thrusters are two electronbombardment ion engines. Ion engines, one of several types of electric thrusters, may be used in the future to position Earth-orbiting spacecraft or to propel spacecraft to distant planets. The electron-bombardment ion engine was invented at the NASA Lewis Research Center, Cleveland, Ohio.



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FEB 19 1970



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D.C. 20546

FOR RELEASE: February 3, 1970

PHOTO NO. 70-H-136

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LOMPOC, CALIF. -- A spacecraft to test how one type of electric rocket engine operates in space work launched into Earth orbit Feb. 3, 1970 at 9:50 p.m. EST. The test thrusters are two electron-bombardment ion engines. Ion engines, one of several types of electric thrusters, may be used in the future to position Earth-orbiting spacecraft or to propel spacecraft to distant planets. The National Aeronautics and Space Administration spacecraft, SERT 2 (Space Electric Rocket Test) was launched from the Western Test Range in California by a Thorad-Agena-D booster. SERT 2 was placed in a nearly circular orbit ranging from 618 to 625 statute miles above the Earth and in a plane inclined 99 degrees to the Equator. In this orbit, it takes 105 minutes to complete each revolution. SERT 2 will provide the first long-duration orbital test of electron-bombardment ion engines. Satisfactory operation for a period of six months or longer will be a milestone in the advancement of electric propulsion. A SERT 1 suborbital flight in July 1964 provided the first successful test of an ion engine in space. The electron-bombardment ion engine was invented at the NASA Lewis Research Center, Cleveland, Ohio.





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, SW., WASHINGTON, D. C. 20546

FOR RELEASE: July 14, 1964 FROTO NO.: 64-Sert 1-1

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IN A SURGICALLY CLEAN room, National Aeronautics and Space Administration scientists check SERT I (Space Electric Rocket Test) for its flight on July 20, 1964. The launch proved that electrostatic (ion) engines can efficiently produce thrust in space.

FEB 1 1965



IN A SURGICALLY CLEAN room, National Aeronautics and Space Administration technicians check SERT I (Space Electric Rocket Test) for its flight on July 20, 1964. The launch proved that electrostatic (ion) engines can efficiently produce thrust in space.





FOR RELEASE:

Filed: October 3, 1971

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71-H-1575 71-HC-1223

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WASHINGTON: Astronaut Bruce McCandless evaluates the Skylab food.

Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56-day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food item. Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts' preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use aboard Skylab.

NASA Astronauts who have participated in the food testing program to date are:

Vance Brand Karol Bobko Gerald Carr Robert Crippen
Owen Garriott Edward Gibson Joe Kerwin Don Lind
Jack Lousma Bruce McCandless Story Musgrave Eill Force

Other astronauts will be scheduled for the final week of the test.

PHOTO CREDIT - NASA or National Aeronautics and Space Administration





FOR RELEASE:

Filed: October 3, 1971

PHOTO NO.

71-H-1577 71-HC-1225

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WASHINGTON: Deanna Davis, Food Technician, weighing potatoes for Skylab Food Program. Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56-day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food item. Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts' preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use aboard Skylab. NASA Astronauts who have participated in the food testing program to date are: Vance Brand Karol Bobko Gerald Carr Robert Crippen Owen Garriott Edward Gibson Joe Kerwin Jack Lousma Bruce McCandless Story Musgrave Bill Poque Other astronauts will be scheduled for the final week of the test.





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#### WASHINGTON:

Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56-day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food item. Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use aboard Skylab.

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Owen Garriott Edward Gibson Joe Kerwin Don Lind

Jack Lousma Bruce McCandless Story Musgrave Bill Poque

Other astronauts will be scheduled for the final week of the test.

PHOTO CREDIT -- NASA or National Aeronautics and Space Administration





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#### WASHINGTON:

Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56-day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food item. Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts' preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use aboard Skylab.

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PHOTO CREDIT -- NASA or National Aeronautics and Space Administration





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Filed: October 3, 1971

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71-H-1578 71-HC-1226

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WASHINGTON: Astronauts (L-R) Joseph P. Kerwin and William R. Pogue evaluate Skylab Food. Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56-day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food item. Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts' preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use aboard Skylab. NASA Astronauts who have participated in the food testing program to date are: Vance Brand Karol Bobko Gerald Carr Robert Crippen Owen Garriott Edward Gibson Joe Kerwin Don Lind Jack Lousma Bruce McCandless Story Musgrave Bill Poque Other astronauts will be scheduled for the final week of the test.





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Filed: October 3, 1971

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WASHINGTON: Astronaut Joseph Kerwin evaluates food for the Skylab Program. Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use aboard Skylab. NASA Astronauts who have participated in the food testing program to date are: Vance Brand Karol Bobko Gerald Carr Robert Crippen Edward Gibson Owen Garriott Joe Kerwin Don Lind Jack Lousma Bruce McCandless Story Musgrave Bill Poque Other astronauts will be scheduled for the final week of the test.





FOR RELEASE:

Filed: October 3, 1971

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WASHINGTON: Deanna Davis, Food Technician prepares coffee for Skylab Food Evaluation. Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56-day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food item. Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use aboard Skylab. NASA Astronauts who have participated in the food testing program to date are: Vance Brand Karol Bobko Robert Crippen Owen Garriott Edward Gibson Joe Kerwin Don Lind Jack Lousma Bruce McCandless Story Musgrave Bill Poque Other astronauts will be scheduled for the final week of the test.





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Filed: October 3, 1971

PHOTO NO.

71-H-1576 71-HC-1224

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WASHINGTON: Astronauts Joseph Kerwin and William Poque evaluate Skylab food as Food Technicians (L-R) Jean Johnson and Deanna Davis watch. Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56-day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food item. Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use aboard Skylab. NASA Astronauts who have participated in the food testing program to date are: Vance Brand Karol Bobko Gerald Carr Robert Crippen Owen Garriott Edward Gibson Joe Kerwin Don Lind Eruce McCandless Story Musgrave Bill Poque Other astronauts will be scheduled for the final week of the test.







Filed: October 20, 1971 71-H-1628

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HOUSTON, TEXAS-Four Skylab trainers are scheduled to arrive at the NASA Manned Spacecraft Center between October 6 and October 15 for use in the Skylab astronaut training program. Two trainers—the Orbital Workshop and the Apollo Telescope Mount-will leave the Marshall Space Flight Center, Huntsville, Alabama, on October 1 aboard the NASA barge Orion. The Workshop trainer is an engineering workup which has been convexted by the Marshall Center for its training role. It is a replica of the flight model and contains training versions of experiments and equipment. The Apollo Telescope Mount model was previously used in extensive thermal vacuum tests. This ATM has also been modified at the Marshall Center. The four Skylab trainers will be used at MSC for training prospective Skylab crewmen. While Skylab crews have not yet been maked, the training program is expected to begin later this year. The Skylab missions are scheduled to begin early in 1973.





FOR RELEASE:

Filed: December 16, 1971

РНОТО МО.

71-H-1889

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DENVER, COLO.

INSIDE SKYLAE -- Stephanie Smith, associate engineer in crew systems at the Martin Marietta Corporation's Denver division, outlines equipment location for Astronaut William R. Pogue during the NASA acceptance checkout of the Skylab Multiple Docking Adapter. The docking adapter, one of the five major segments of the United States' first experimental space station, will serve as an experiment control center and the docking port for Skylab. The docking adapter flight article, assembled at the Denver division, will be shipped to St. Louis for mating with the Airlock Module, another major element of Skylab. The experimental space station is scheduled to be launched by NASA in the spring of 1973.





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DENVER, COLO.

The Skylab Multiple Docking Adapter (MDA) Flight Article is being positioned on a test stand for final checkout tests before shipment and mating to the airlock module at the Mc Donnell Douglas Plant in St. Louis, Mo.

The Multiple Docking Adapter, one of the five major segments of the Skylab will provide facilities for docking of the Command Module, and crew working areas for operation of the Apollo Telescope Mount, Earth Resources and Space Manufacturing Experiments, it also provides for transfer of personnel, equipment, and electrical signals between the Command Module and Orbital Workshop. Skylab, the United States' next major manned space program, is an experimental space station to be launched by NASA in the spring of 1973. Successive three-man astronaut crews will live and work in Skylab for three periods—one of 28 days, and two of 56 days each—performing experiments to gather data on space medicine, space equipment, space science and Earth resources.







FOR RELEASE:

Filed: December 17, 1971

PHOTO NO.

71-H-1903 71-HC-1492

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DENVER, COLO.

A Test Engineer examines the film magazines for the multi-spectral cameras to be carried aboard the Skylab.

The Multiple Docking Adapter, one of the five major segments of the Skylab will provide facilities for docking of the Command Module, and crew working areas for operation of the Apollo Telescope Mount, Earth Resources and Space Manufacturing Experiments, it also provides for transfer of personnel, equipment, and electrical signals between the Command Module and Orbital Workshop. Skylab, the United States' next major manned space program, is an experimental space station to be launched by NASA in the spring of 1973. Successive three-man astronaut crews will live and work in Skylab for three periods--one of 28 days, and two of 56 days each--performing experiments to gather data on space medicine, space equipment, space science and Earth resources.





FOR RELEASE:

Filed: December 17, 1971

PHOTO NO.

71-H-1902 71-HC-1491

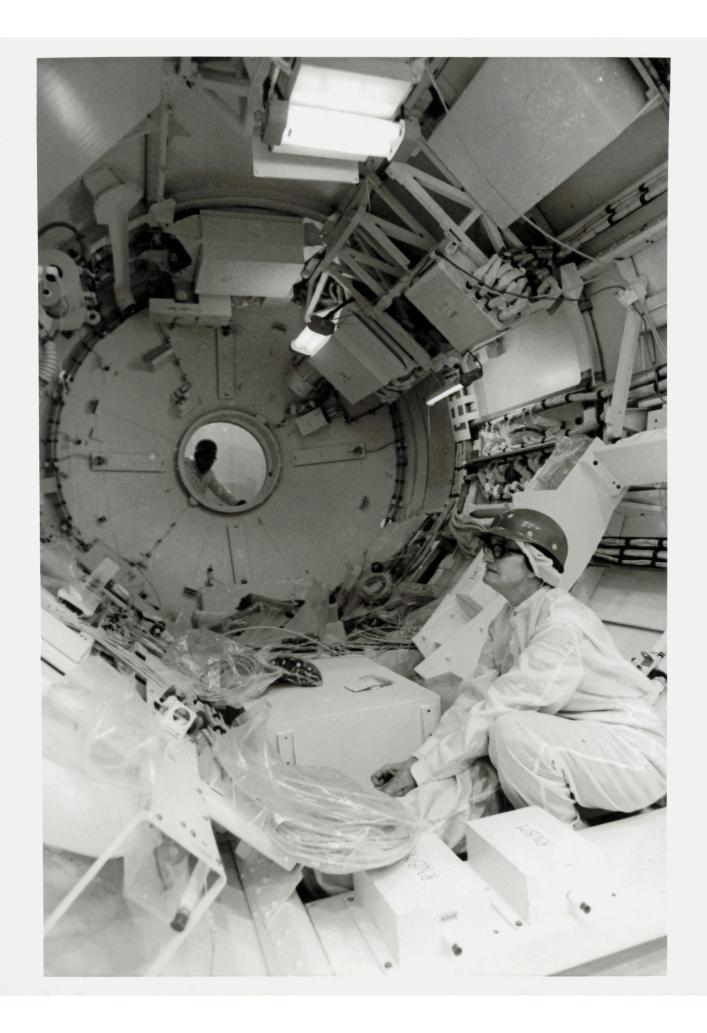
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DENVER, COLO.

A Test Engineer examines Flight Articles for the Skylab Docking Adapter.

The Multiple Docking Adapter, one of the five major segments of the Skylab will provide facilities for docking of the Command Module, and crew working areas for operation of the Apollo Telescope Mount, Earth Resources and Space Manufacturing Experiments, it also provides for transfer of personnel, equipment, and electrical signals between the Command Module and Orbital Workshop. Skylab, the United States next major manned space program, is an experimental space station to be launched by NASA in the spring of 1973. Successive three-man astronaut crews will live and work in Skylab for three periods—one of 28 days, and two of 56 days each—performing experiments to gather data on space medicine, space equipment, space science and Earth resources.





FOR RELEASE:

Filed: December 17, 1971

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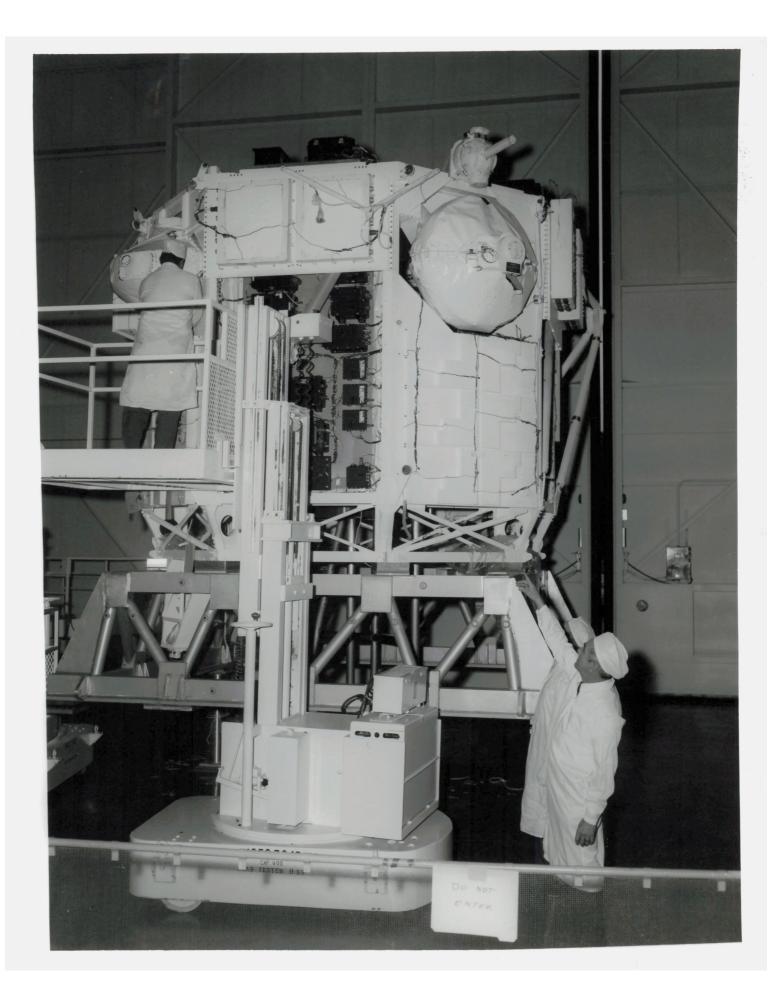
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DENVER, COLO.

Technicians install wiring in a mock-up of the Skylab Multiple Docking Adapter.

The Multiple Docking Adapter, one of the five major segments of the Skylab will provide facilities for docking of the Command Module, and crew working areas for operation of the Apollo Telescope Mount, Earth Resources and Space Manufacturing Experiments, it also provides for transfer of personnel, equipment, and electrical signals between the Command Module and Orbital Workshop. Skylab, the United States' next major manned space program, is an experimental space station to be launched by NASA in the spring of 1973. Successive three-man astronaut crews will live and work in Skylab for three periods—one of 28 days, and two of 56 days each—performing experiments to gather data on space medicine, space equipment, space science and Earth resources.







## NASA-MARSHALL SPACE FLIGHT CENTER HUNTSVILLE, ALABAMA

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FOR RELEASE: Immediate

PHOTO NO: 0-07381

PHOTO CREDIT: NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MARSHALL SPACE FLIGHT CENTER, Ala. -- Work on the first ground test version of an Apollo Telescope Mount manned solar observatory is nearing completion at the NASA-Marshall Space Flight Center. This ground test model, called a thermal systems unit, will be used for thermal vacuum tests. Technicians are shown installing equipment prior to adding a large experiment cannister to the model. Fabrication has also been started on three other ATM ground test units here. The Marshall Center is building the ATM for the Skylab Program. Solar astronomy scientific experiments to be carried by the ATM are the largest and most complex ever designed for performing solar research from an orbiting spacecraft.

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Conrace, Charles, Jr. "Pete"
NATIONAL AERONAUTICS A AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D.C. 20546 The Huntsville Times

LIBRARY

PHOTO NO.

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WESTERN WHITE HOUSE -- Soviet Communist Party Leader Leonid I. Brezhnev and President Nixon during ceremonies at San Clemente examine plaques presented by Skylab Astronauts (center) Charles Conrad, (1-r) Paul Weitz and Joseph Kerwin.

LIBRARY



Conrad, Charles, fr. "Pete"

Astronaut

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C. 20546

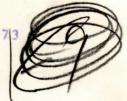
The Huntsville Dimer

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June 22, 197

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Conrad. Jr., and Pilot Paul J. Weitz chat with Carrier Skipper Capt. Norman Green during a break from medical tests. Aboard the prime recovery ship U.S.S. Ticonderoga after recovery.

Skylab I was launched from the NASA Kennedy Space Center, Fla., into a Earth orbit at 1:30 P.M. EDT May 14, 1973 by a Saturn V launch vehicle. Skylab II was launched 9 A.M. EDT, May 25, 1973. The Saturn-IB Astronauts were, Charles Conrad, Jr., Commander; Dr. Joseph P. Kerwin, Science Pilot; and Paul J. Weitz, Pilot. The three Astronauts spent 28 days aboard the Skylab workshop conducting investigations in Solar Astronomy, Earth Resources; Medical and other scientific and technical data. The Astronauts returned to Earth 9:50 A.M. EDT June 22, 1973 landing in the Pacific Ocean approx. 834 miles SW of San Diego, Ca.

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ME 30 1979



Michael L. Lampton

Spacelab!





FOR RELEASE:

Filed: July 9, 1970

PHOTO NO.

70-H-947

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MARSHALL SPACE FLIGHT CENTER, ALA. -- Three test engineers, a simulated flight crew, prepare a meal in the wardroom section of the Skylab Workshop mockup. The Mational Aeronautics and Space Administration's Skylab Program is a three-man Earth orbit station being developed for launch in late 1972 to gain a better understanding of the requirements for a permanent man-made platform in space. Major components of the Skylab include the Saturn Workshop, airlock, multiple docking adapter, and Apollo Telescope Mount.

BOSTON HERA

202

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FOR RELEASE:

Filed: November 26, 1971

PHOTO NO.

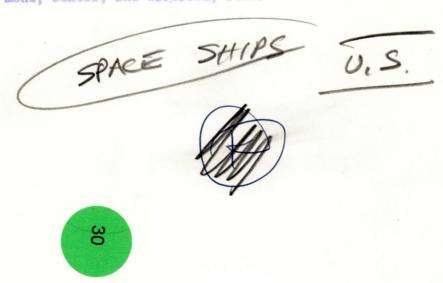
71-H-1795

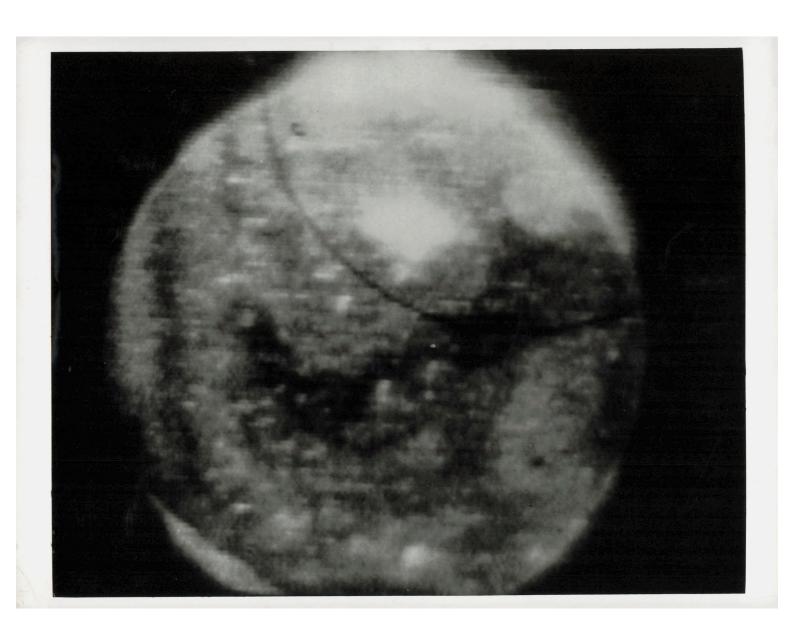
71-HC-1429

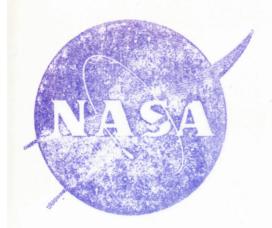
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HUNTINGTON BEACH, CALIFORNIA -- SKYLAB MOCKUP INTERIOR -- Overall interior view of crew quarters in the Skylab Hi Fidelity mockup at McDonnell Douglas. The sleep compartment is to far right; waste management compartment, center; and wardroom, left.







FOR RELEASE:

August 21, 1973

PHOTO NO.

73-11-868

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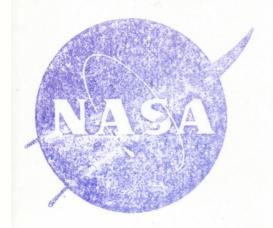
JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB 3 TV PICTURE -- The solar sphere viewed through the Skylab solar physics experiment (SO82) Extreme Ultraviolet Spectroheliograph is seen in this photographic reproduction taken from a color television transmission made by a TV camera aboard the Skylab space station in Earth orbit. The solar chromosphere and lower corona are much hotter than the surface of the Sun characterized by the white light emissions. To observe these hotter regions of the solar atmosphere one must observe in the ultraviolet or even in the x-ray region. The spectroheliograph will cover the wavelength region from 150 to 650 angstroms. SO82 is one of eight Skylab Apollo Telescope Mount experiments being used to monitor the various solar phenomena. This image was recorded during the huge solar prominence which occurred on August 21, 1973.



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# S052 WLC 234:04:00 P=4E GDS(T)



FOR RELEASE:

August 22, 1973

PHOTO NO.

73-H-867

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JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAR 3 TV PICTURE -- A view of the solar corona as seen through the White Light Coronagraph, Skylab Experiment S052, on August 21, 1973, and transmitted back to Warth the next day by a color television transmission from the Skylab space station in Earth orbit. Note the huge, bubble-shaped solar prominence which Astronaut Alan L. Bean reported was three-quarters the size of the Sun. The S052 coronagraph is one of eight Apollo Telescope Mount instruments which are being used to observe various solar phenomena. The solar corona is the halo around the Sun which is seen only during a total eclipse. Prominences are flame-like bursts of gas that are ejected from the surface of the Sun. The Skylab coronagraph uses an externally-mounted disk system which occults the brilliant solar surface while allowing the fainter radiation of the corona to enter an annulus and be photographed. A mirror system allows either TV viewing of the corona or photographic recording of the image. This view of the corona was received here on the ground on the 234th day of the year 1973.

PHOTO CREDIT -- NASA or National Aeronautics and Space Administration





Carry Gerald Paul
Astronaut NATION

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

FOR RELEASE: November 8, 1973

PHOTO NO.

108-KSC-73P-616

73-H-1098

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KENNEDY SPACE CENTER, FLA. -- Technician Dan McCarthy prepares to place helmet on head of Skylab 4 mission Commander Gerald P6 Carr during spacesuit fit checks a few days prior to his scheduled launch to the orbiting space station with Dr. Edward G. Gibson, seated in center couch, and William R. Pogue, at resr. The planned 60-day-plus mission will be the third and final manned visit to Skylab. The space pilots will gather additional information about the Earth and Sun, conduct extensive medical experiments and view the recently discovered Comet Kohoutek.



Carr, Gerold Paul Astronaut

Ohe Funtsville Cimen

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

LIBRARY

PHOTO NO.

FOR RELEASE: Neventier 7, 1973

108-KSC-73F-604 73-H-1079

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RENNEDY SPACE CENTER, FLA. -- Skylab 4 Mission Commander Gerald Carr undergoes prelaunch medical examination at Johnson car center, Houston, Texas. Carr, and Astronauts Dr. Edward G. Gibson and William R. Pogue will be launched to the orbiting Skylsb space station no aerlier than November 15, 1973.







FOR RELEASE: Filed: January 4, 1974

PHOTO NO. 73-H-1174

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#### JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB 4 TV PICTURE -- Astronaut Gerald P. Carr (on left), Skylab 4 Commander, reads a message from the three crewmen containing their original thoughts on Christmas during a television transmission made by a color TV camera in the forward compartment of the Orbital Workshop of the Skylab space station in Earth orbit. Scientist-Astronaut Edward G. Gibson, Science Pilot, is in the center. On the right is Astronaut William R. Pogue, Pilot. Behind them can be seen a makeshift Christmas tree fashioned from food can containers and mounted on the waste management odor fileter in the OWS. This scene was on Christmas Eve.





FOR RELEASE:

June 22, 1973

PHOTO NO.

73-H-543

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SKYLAB II PACIFIC RECOVERY AREA -- Commander Pete Conrad passes a balance test at the Carrier's medical lab. He is supported by Drs. Charles Ross and Robert Dawson.

Skylab I was launched from the NASA Kennedy Space Center, Fla, into a Earth orbit at 1:30 P.M. EDT May 14, 1973 by a Saturn V launch vehicle. Skylab II was launched 9 A.M. EDT, May 25, 1973. The Saturn-IB Astronauts were, Charles Conrad, Jr., Commander; Dr. Joseph P. Kerwin, Science Pilot; and Paul J. Weitz, Pilot. The three Astronauts spent 28 days aboard the Skylab workshop conducting investigations in Solar Astronomy, Earth Resources; Medical and other scientific and technical data. The Astronauts returned to Earth 9:50 A.M. EDT June 22, 1973 landing in the Pacific Ocean approx. 834 miles SW of San Diego, Ca.





FOR RELEASE:

Filed: June 6, 1973

PHOTO NO.

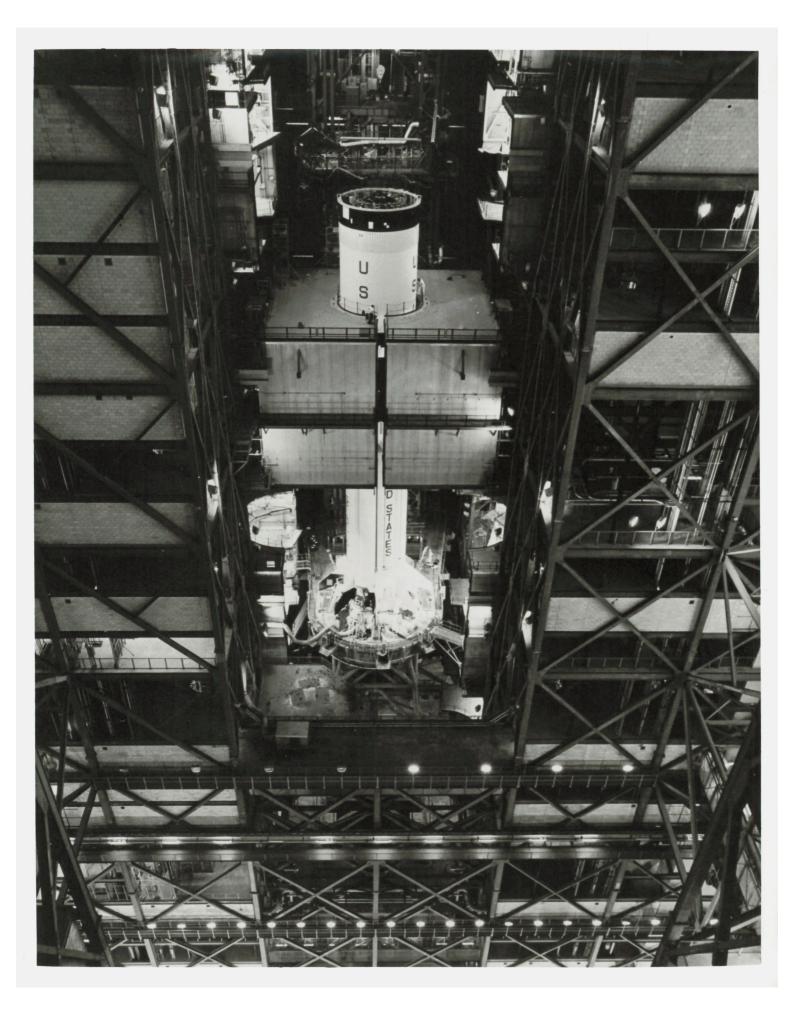
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JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB 1/2 TV PICTURE -- Scientist-Astronaut Joseph P. Kerwin (right), Skylab 2 science pilot and a doctor of medicine, takes a blood sample from Astronaut Charles Conrad Jr., Skylab 2 commander, as seen in this reproduction taken from a color television transmission made by a TV camera aboard the Skylab 1/2 space station cluster in Earth orbit. The blood sampling was part of the Skylab Hematology and Immunology Experiment M110 series.





FOR RELEASE:

Filed: September 29, 1972

**РНОТО NO.** 

72-H-1307

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KENNEDY SPACE CENTER, FLA. — Saturn 18 first and second stages for Skylab 2 space vehicle atop a 129-foot pedestal on a mobile launcher following mating today. Work platform and enclosure for environmental control when technicians enter the two stages during checkout operations hides part of both stages. On the Skylab 2 mission, an Apollo spacecraft will carry Astronauts Charles Conrad. Dr. Joseph Kerwin and Paul Weitz into Earth orbit to rendezvous and dock with Skylab 1, the first United States manned orbiting space station. They will enter the space station to live and conduct experiments during a 28-day mission, then return to Earth in the Apollo.





FOR RELEASE: PHOTO NO.

Fileds Seprember 76, 1970

73-H-911 73-HC-730

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days sould divers leap from the belicopter to place a floatering collect around the Skyleb III spacecraft. A two-stage Saturn be rocket carrying the Skyleb 3 estronaute Alan L. Bean, Connector, Dr. Owen K. Carriott, Science Pilot, and Jack R. Lousan, Filot, were leavable to the orbiting Skyleb at 7:12 4.m. 3. If the 23, 1973 from Kennedy Space Center's Complex 198. The istronaute aplashed down September 25, 1973 at 6:20 p.m. E.D.T. about 362 kilometers (215 statue piles) southwest of San Diego, CA. The occord Skyleb mission of 59 days was man's longest mission to date





#### HATIONAL AERONAUTICS AND SPACE APARIMOTRATION HOUSTON TEXAS TIESE

FOR RELEASE PHO 22 NO.

S-72-48760

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12 SEPT 1972

S-72-48760

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

SKYLAB SIMULATIC Non-The three members of the prime crew of the first manned Skylab mission are seen in the wardroom of the Orbital Workshop trainer during the 11-day simulation of the selected days of the mission which is scheduled for launch in the spring of 1973. Scientist-Astronaut Joseph P. Kerwin (left) and Astronaut Paul J. Weitz (center) are eating, while Astronaut Charles Conrad Jr., commander, reads a checklist. The simulation, which will end an September is being conducted in trainers and simulators in the Mission Simulation and Astronaut Training Facility at the NASA Manned Spacecraft Center.

EVEN THE CUISINE IS INSPECTED BY THE FIRST SKYLAB SPACE STATION CREW Astronauts Joe Kerwin (Left), Paul Weitz (Center) and Charles Conrad

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SKNLA





FOR RELEASE: PHOTO NO.

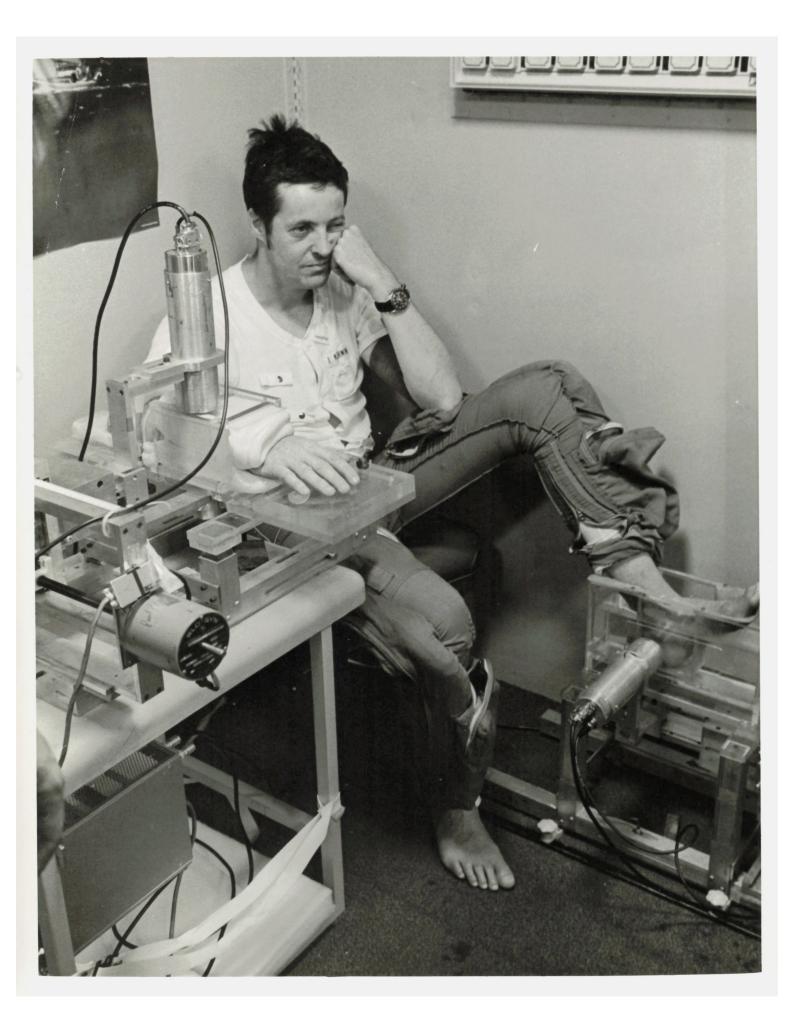
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SKYLAB II IN FLIGHT: This excellent view of the Skylab space station was taken from the Command Module during a final "fly around" inspection. The three-man crew spent 28 days in Skylab after their May 25, 1973 launch from Kennedy Space Center.







FOR RELEASE:

June 22, 1973

PHOTO NO.

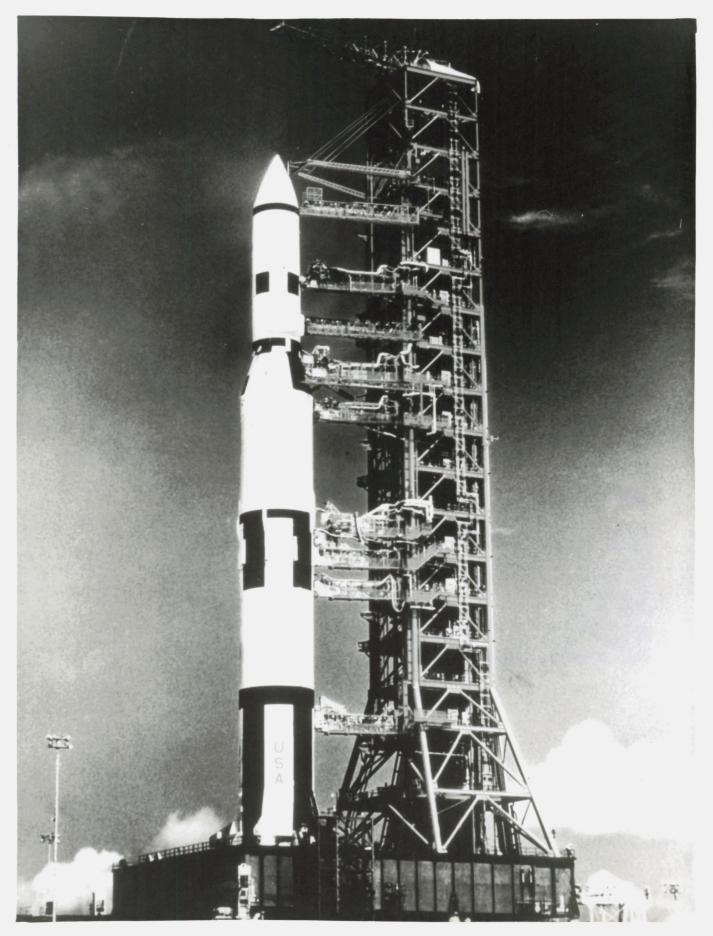
73-H-544 73-HC-488

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SKYLAB II PACIFIC RECOVERY AREA -- Dr. Joseph P. Kerwin, Science Pilot undergoes a medical check aboard the U.S.S. Ticonderoga.

Skylab I was launched from the NASA Kennedy Space Center, Fla., into a Earth orbit at 1:30 P.M. EDT May 14, 1973 by a Saturn V launch vehicle. Skylab II was launched 9 A.M. EDT, May 25, 1973. The Saturn-IB Astronauts were, Charles Conrad, Jr., Commander; Dr. Joseph P. Kerwin, Science Pilot; and Paul J. Weitz, Pilot. The three Astronauts spent 28 days aboard the Skylab workshop conducting investigations in Solar Astronomy, Earth Resources; Medical and other scientific and technical data. The Astronauts returned to Earth 9:50 A.M. EDT June 22, 1973 landing in the Pacific Ocean approx. 834 miles SW of San Diego, Ca.



#### NASA-Apollo 16



# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

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8-71-31127

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12 NOV 1970

8-77-31127

KENNEDY SPACE CENTER, FLORIDA

SKYLAB LAUNCH CONFIGURATION——An artist's concept of a Skylab launch configuration. One Saturn V, like the one illustrated here, and one Saturn IB launch vehicle will be used to place the first Skylab payloads into orbit. They will be launched from NASA's Kennedy Space Center and placed in a 235-natuical mile circular orbit, inclined 50 degrees to the equator. Skylab flights are planned as long-duration flights, lasting up to 56 days. A broad set of experiments are planned to be carried out, including medical and solar astronomy.



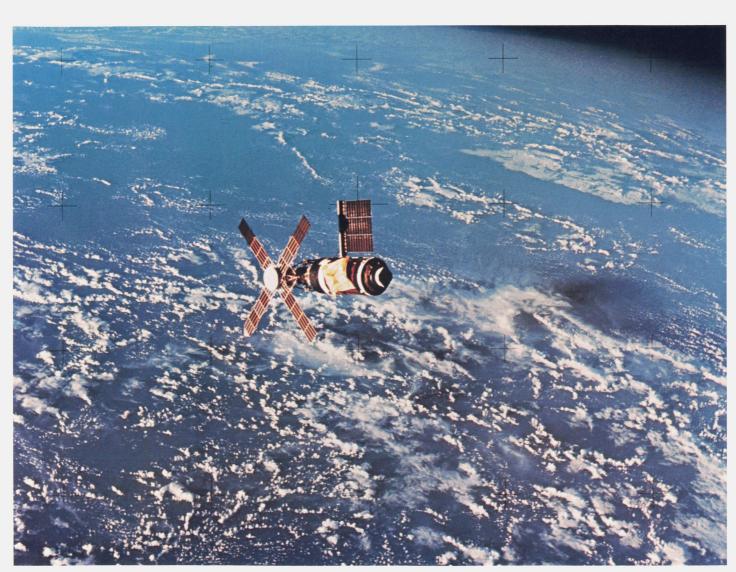
SKYLAB SPACE STATION IN EARTH ORBIT



SKYLAB 3 ON-BOARD PHOTO—This outstanding view of the Skylab space station cluster in Earth orbit was taken from the Skylab 3 Command/Service Module during the "fly around" inspection by the CSM. Clouds and water are below. Note that one of the two solar array system (SAS) wings on the Orbital Workshop is missing. The Apollo Telescope Mount has four solar panels deployed.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973—779-982/07

JSCL-115



SKYLAB SPACE STATION CLUSTER DEPLOYED IN EARTH ORBIT



#### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SKYLAB 1-2 ON-BOARD PHOTO—This excellent view of the Skylab 1 space station cluster in Earth orbit was taken from the Skylab 2 Command/Service Module during the final "fly around" inspection of the CSM. Clouds over water are in the background. Note the deployed parasol solar shield which shades the Orbital Workshop where the micrometeoroid shield is missing. The one remaining OWS solar array system wing has been fully deployed successfully. The OWS solar panel on the opposite side is completely missing.





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SKYLAB II IN FLIGHT: This excellent view of the Skylab space station was taken from the Command Module during a final "fly around" inspection. The three-man crew spent 28 days in Skylab ir May 25, 1973 launch from Kennedy Space Center.



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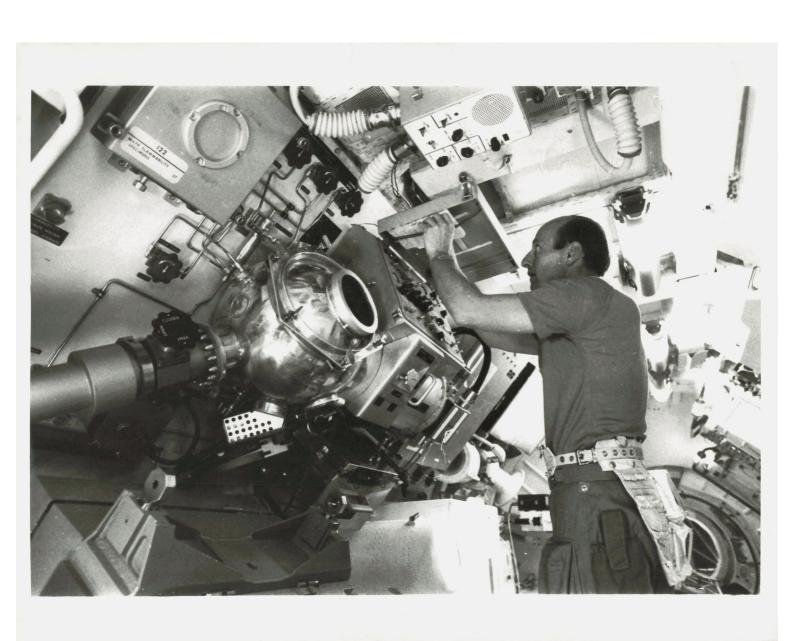
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SKYLAB II IN FLIGHT: This excellent view of the Skylab pace station was taken from the Command Module during a final "fly around" inspection. The three-wan crew spent 28 days in Skylab after their May 25, 1973 launch from Kennedy Space Center.

SEP 27 1973





FOR RELEASE:

Filed: April 19, 1973

PHOTO NO.

73-H-262

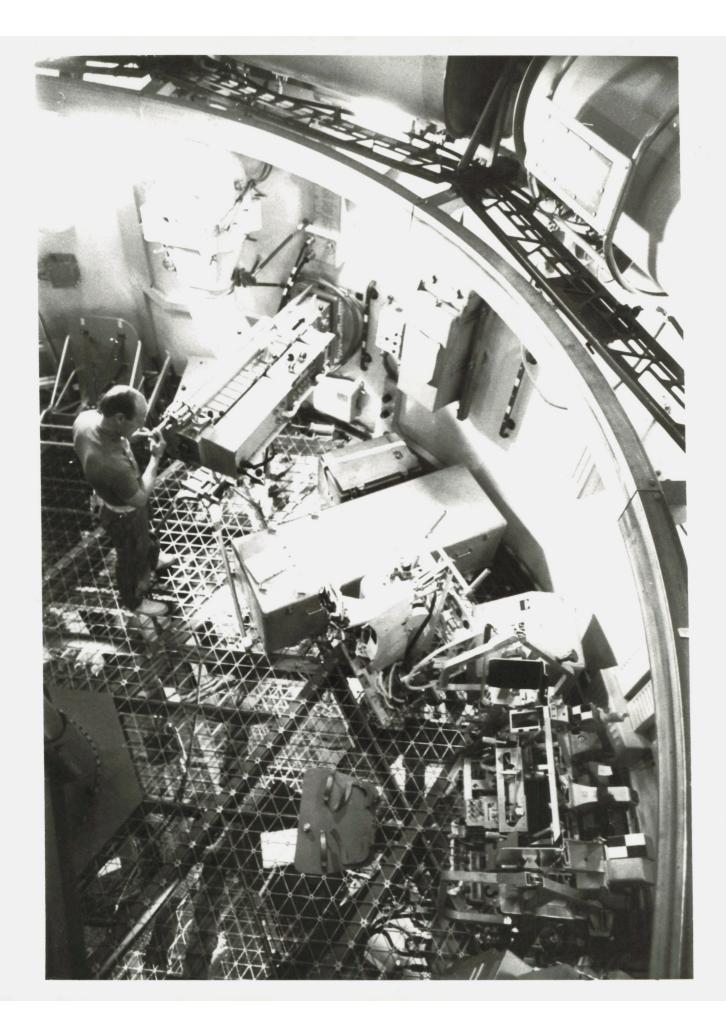
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JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB TRAINING -- Astronaut Charles Conrad, Jr., commander of the first manned Skylab mission, takes items from the M512 materials processing equipment storage assembly during Skylab training at the Johnson Space Center. Conrad is standing in the Multiple Docking Adapter (MDA) trainer in the JSC Mission Simulation and Training Pacility. The assembly holds equipment designed to explore space manufacturing capability in a weightless state. The MDA is one of the five major components of the Skylab space station cluster.







FOR RELEASE

Filed: April 19, 1973

PHOTO NO.

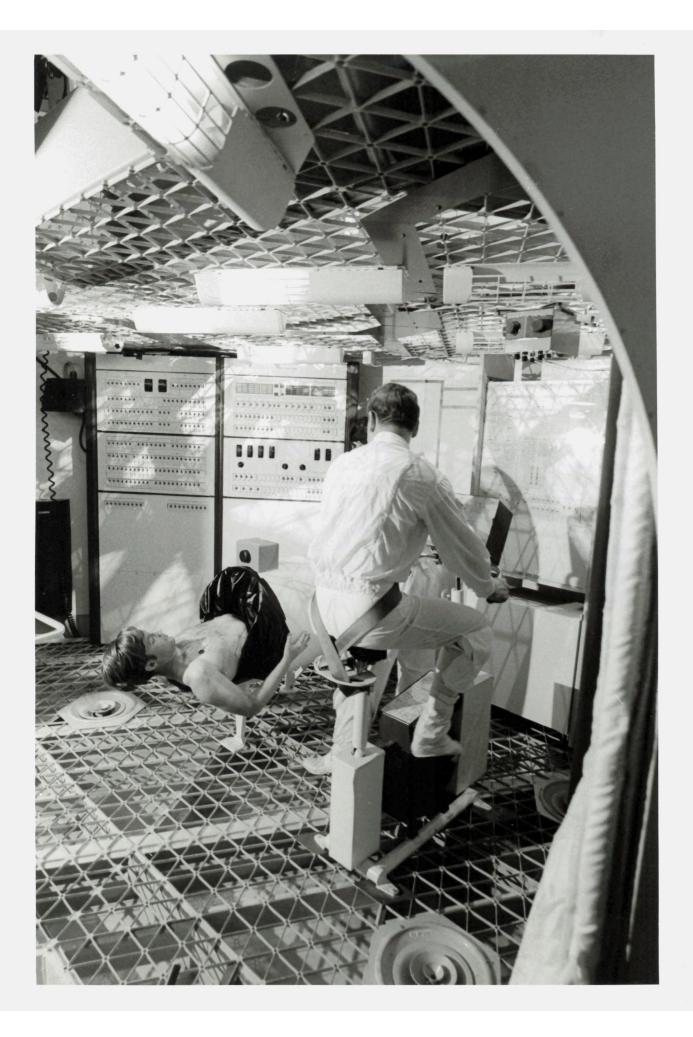
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ROUSTON, TEXAS -- Skylab Training -- Astronaut Charles Corrad, Jr., Commander of the Skylab II mission operates the TO 27 photometer system experiment in the Orbital Workshop. The objective of the TO 27 photometer system is to measure the brightness and polarization of the scattered sunlight from the solar illumination of the particle contaminant cloud surrounding Skylab. Data vill be returned by telemetry during operation of the experiment and Command Module return of film and data log books. The prime craw members are astronauts Charles Conrad, Jr., Commander, Paul J. Weitz Pilot, and Joseph P. Kerwin, Science Pilot. The mission will be of 28 days duration in a near-circular orbit at an altitude of 432 kilometers (270 miles) and at an inclination of 50 degrees from the equator, performing scientific, medical, and technological experiments

MAY 18 1973





FOR RELEASE:

Filed: July 9, 1970

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MARSHALL SPACE FLIGHT CENTER, ALA. -- Test engineers simulate bio-medical expirements in the work compartment of the Skylab Workshop mockup. One engineer is shown on the exerciser (Metabolic Activity Ergometer) the second engineer is shown in the lower body negative pressure device. The National Aeronautics and Space Administration's Skylab Program is a three-man Earth orbit station being developed for launch in late 1972 to gain a better understanding of the requirements for a permanent manmade platform in space. Major components of the Skylab include the Saturn Workshop, airlock, multiple docking adapter, and Apollo Telescope Mount.



# **OWS LIVING QUARTERS**





FOR RELEASE: Filed: September 17, 1970

PHOTO NO. 70-H-1173

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MARSHALL SPACE FLIGHT CENTER, ALA. -- The National Aerolautics and Space Administration's Skylab program is a three-man Earth orbit station being developed for launch in late 19'2 to gain a better understanding of the requirements for a permanent manemade platform in space. Major components of the Skylab include the Saturn Workshop, arilock, multiple docking adapter, and Apollo Telescope Mount.



# OWS WARD ROOM







FOR RELEASE:

Filed: September 17, 1970

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MARSHALL SPACE FLIGHT CENTER, ALA. - The National Aeronautics and Space Administration's Skylab program is a three-man Earth orbit station being developed for launch in late 1972 to gain a better understanding of the requirements for a permanent manmade platform in space. Major components of the Skylab include the Saturn Workshop, airlock, multiple docking adapter, and Apollo Telescope Mount.





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HATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C. 20546

FOR RELEASE:

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PHOTO NO.

72-H-1183

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Charles Conrad Jr., who will lead the first research team aboard Skylab next May, shows how he will sleep during the 28 days in space. The upright restraint will prevent the weightless astronauts from drifting around while they sleep.

STEI 68 030





FOR RELEASE: Filed: November 12, 1970

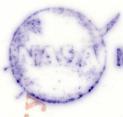
PHOTO NO. 70-H-1464 70-HC-1043

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MANNED SPACECRAFT CENTER, HOUSTON, TEXAS--SKYLAB FOOD TRAY--A close-up view of the type of food tray now being developed for Skylab. Each of the three crewmen on a Skylab mission will have one of these trays. For the first time astronauts will prepare their meals from an assortment of frozen as well as the conventional space foods similar to that carried on manned Gemini and Apollo missions. The food tray will measure 13 1/2 inches by 15 inches by 4 1/2 inches. The tray has individual recessed compartments into which the canned food item is placed for heating. At meal time the crew member selects his meal, places the items to be warmed in the food tray, then flips the warmer switch and presto he has a three course meal. Frozen foods will be stored in a freezer. All food and water for the three manned Skylab missions will be stowed aboard the Orbital Workshop which will be launched by a Saturn V.





#### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

FOR RELEASE: PHOTO NO.

\$13-130-3130

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COLOR

JULY-SEPT. 1973

\$13-130-3130

JOHNSON SPACE CENTER. HOUSTON, TEXAS

SKYIAB 3 CN-BOARD PHOTO-----An excellent view of the southern aurora, luminous bands or streamers of light, in the Southern Hemisphere, as photographed from the Skylab space station in Barth croit. The space station was moving into the sunlight when this picture was taken. This view is near the edge of the aurora cap. The surface of the Earth is in the foreground. The permanent aurora over the South Fole is in the tackground. Scientist-Astronaut Owen K. Carriott, Skylab a science pilot, took this photograph with a hand-held 35mm Niken camera, with a four-second exposure at f/1.2, using high-speed Ektachrome film. Because auroras are caused by solar activity, they never at the same time in the Northern and Southern hemispheres.

PHOTO CREDIT: HASA or Kational Asconautics and Space Administration





# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

FOR RELEASE: PHOTO NO.

S13-130-3131

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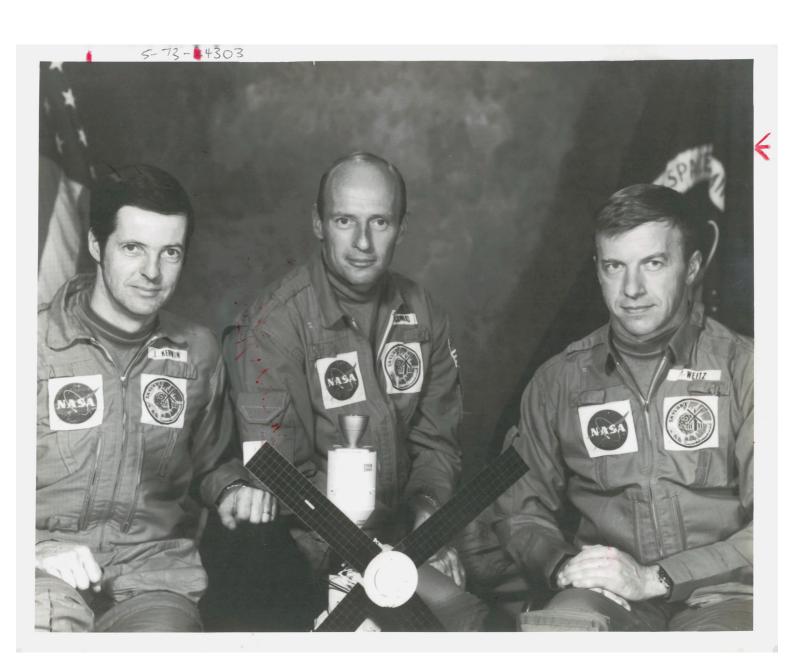
JULY-SEPT. 1973

SL3-130-3131

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB 3 ON-BOARD PHOTO----An excellent view of the southern aurora, luminous bends or streamers of light, in the Southern Hemisphere, as photographed from the Skylab space station in Earth orbit. The space station was moving into the sunlight when this picture was taken. This view is near the edge of the aurora cap. The surface of the Earth is in the foreground. The permanent aurora over the South Pole is in the background. Scientist-Astronaut Owen K. Garriott, Skylab 3 science pilot, took this photograph with a hand-held 35mm Nikon camera, with a four-second exposure at f/1.2, using high-speed Extechrome film. Because auroras are caused by solar activity, they occur at the same time in the Northern and Southern hemispheres.

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PHOTO NO.

MAY 10, 1973

TOR RELEASE

KENNEDY SPACE CENTER, FLA. --

Charles Conrad Jr.,

un Buruneds

Joe Kerwin, left, poses for official NASA photo of the original Skylab crew with Charles "Pete" Con-rad, Jr., center, and Paul J. Weitz. Their mission

went from scientific research to saving the very life of the craft itself within days after it was launched in 1973.

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FOR RELEASE: PHOTO NO.

Filed: January 9, 1976

76-H-15 76-HC-11 SL3-123-2638

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SKYLAB 3 ON-BOARD PHOTO -- Astronaut Owen K. Garriott, Skylab 3 science pilot, floating in the Skylab Orbital Workshop dome area with a book. This picture was taken with a hand-held, 35mm, Nikon camera during the Skylab 3 mission, July 28-Sept. 25, 1973. Astronauts Garriott, Jack R. Lousma, and Alan L. Bean remained with the Skylab space station in Earth orbit for 59 days conducting numerous medical, scientific, and technological experiments.





FOR RELEASE: PHOTO NO.

Filed: May 25, 1973

108-KSC-73P-344 73H-467

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KENNEDY SPACE CENTER, FLA. -- Skylab 2 mission commander Charles Conrad Jr., leads crawmates Paul J. Weitz and Dr. Joseph P. Kerwin through hallway of Manned Spacecraft Operations Building on route to van which carried them to Launch Complex 39B at start of NASA's first manned Skylab mission. The astronauts are slated to remain aloft 28 days, working and living in the orbiting Skylab space station which they will cover with a solar shield to lower emboard tamperatures. They also may attempt to free an undeployed solar array on the Orbital Workshop.



700 NOW

NASA)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77082

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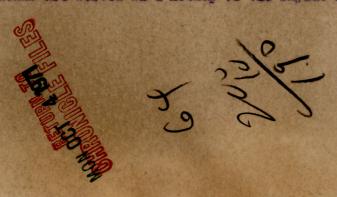
B & W

24 SEPT 1971

8-71-50755

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

SKYLAB FOOD COMPATIBILITY TEST--Five of some 15 astronauts taking part in a Skylab food compatibility test are joined by Skylab program officials in eating a typical test lunch at the Manned Space-craft Center (MSC). Kenneth S. Kleinknecht, far end of left row, Skylab Program Manager; and Clifford E. Charlesworth, center of left row, join the astronauts in the test lunch, while Dr. Malcolm Smith, far end of right row, Chief of Food and Nutrition at MSC, observes. Astronaut participants of the five-day test include Astronaut William R. Pogue, left foreground; and, from bottom right to top center, Bruce McCandless II, Robert L. Crippen, Karol Bobko ., and Scientist-Astronaut Joseph P. Kerwin. Test menls are served in a mockup of the Skylab food tray.



Space Lod



### File: Space Station



#### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

HOUSTON CHRONICLE LIBRARY

#### CREWS FOR SKYLAB THE MANNED ORBITAL SCIENTIFIC SPACE STATION

Skylab, a 100-ton manned orbital scientific space station, is scheduled to be launched and placed in near-earth orbit in 1973. The Program is designed to expand our knowledge of Manned Earth Orbital Operations and to accomplish selected scientific, technological, and medical investigations. The first flight, designated Workshop Launch, will be unmanned and will be used to place the space station in orbit. It will be followed over an eight-month period by three manned flights which will take the crews to and from the orbital laboratory.

manned flights which will take the crews to and from the orbital laboratory.

Three-man crews will go aloft for each of the manned flights—the first will last up to 28 days; the other two will be up to 56 days. The crews will include a commander, science pilot and pilot. They have been selected on the basis of astronautical, scientific and medical skills.

Prime growmen for the First Skylah Mission are Charles

astronautical, scientific and medical skills.

Prime crewmen for the First Skylab Mission are Charles Conrad, Jr., Commander, Joseph P. Kerwin, Science Pilot, and Paul J. Weitz, Pilot. Conrad, a U. S. Navy captain, flew on Gemini V and XII flights, and was commander of Apollo 12 with a total of 506 hours in space. Kerwin is a doctor of medicine from the Northwestern University and a commander in the U. S. Navy Medical Corps. Weitz holds a

mander in the U. S. Navy Medical Corps. Weitz holds a masters degree in aeronautical engineering from the U. S. Naval Postgraduate School. Both Kerwin and Weitz will be making their first trip into space.

Prime crewmen for the Second Skylab Mission are Alan L. Bean, Commander, Owen K. Garriott, Science Pilot, and Jack R. Lousma, Pilot. Bean was lunar module pilot on Apollo 12. He graduated from the University of Texas with a degree in aeronautical engineering and is a U.S. Navy

captain. Garriott, Science Pilot, holds a doctorate in electrical engineering. Lousma, a Marine major, has aeronautical engineering degrees from the University of Michigan and the U. S. Naval Postgraduate School. Neither Garriott nor Lousma have flown in space.

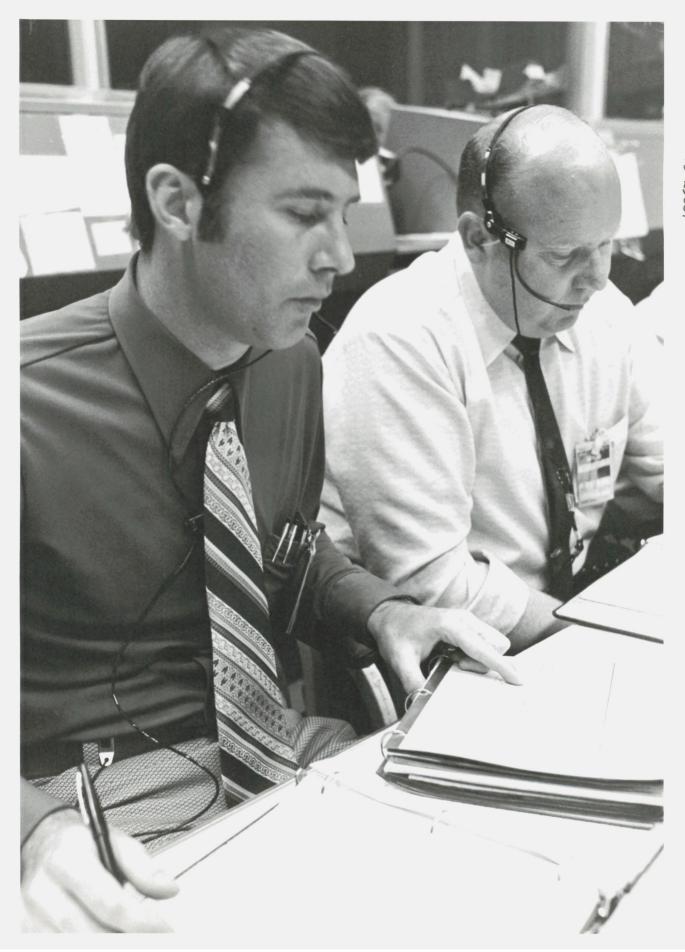
The Third Skylab Mission prime crew will consist of three space rookies. Commander, Gerald P. Carr is a U. S. Marine lieutenant colonel with a masters degree in aeronautical engineering from Princeton University. Science Pilot, Edward G. Gibson, has a doctorate in engineering and minor in physics from California Institute of Technology. William R. Pogue, Pilot, is an Air Force lieutenant colonel with a masters degree in mathematics from Oklahoma State University. University.

University.

Backup crewmen for the First Skylab Mission are Russell L. Schweickart, Story Musgrave and Bruce McCandless, II. The backup team for the Second and Third Skylab Missions will be Vance D. Brand, William B. Lenoir and Don L. Lind. The crew's day will be a busy one with activation of systems, housekeeping, and other flight functions. Approximately 28 percent of their time will be devoted to conducting experiments and keeping records. In addition, the crew will have eight hours of sleep and the rest of the time will be taken up with eating, personal hygiene, rest and recreation. The temperature outside the Skylab will vary between 200° Fahrenheit above to 200° below zero, but inside the Skylab, the crew will have shirt-sleeve environment.

Skylab, the crew will have shirt-sleeve environment.

After the first 28 days, the crew will have accumulated over a half ton of experiment film, specimens and records to stow and bring back to earth in the Apollo command module.



Lyndon B. Johnson Sapce Center-Houston





FOR RELEASE: PHOTO NO.

8-73-25687

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BAW

14 MAI 1973

5-73-25687

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB I MC - Skylab Flight Directors Donald R. Fuddy (foreground) and Fhilip C. Shaffer are seated at the flight director's console in the Mission Control Center at the Johnson Space Center during the early hours of the Skylab I unmensed space mission. The Skylab I payload was the space station cluster which was launched by a Saturn V and placed in Earth orbit.

PHOTO CREDIT: NASA or Mational Aeronautics and Space Administration



# HATIONAL AEROHAUTIES AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

FOR RELEASE. PHOTO NO.

S-72-15409

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BAW

FEBRUARY 1972

8-72-15409

MANNED SPACECRAFT CENTER, BOUSTON, TEXAS

SKYLAB SPACE FOOD --- A close-up view of a food tray which is scheduled to be used in the Skylab Program Several packages of space food lie beside the tray.

MON FEB 28 1972

For the first time, foods may be heated and chilled for astronauts' consumption in space. This new food tray was developed for use in the Skylab Program in late '73.

Space Food

NANA SL2-9-735

Skylab

RETURN TO CHRONIGLE FILES

COLOR

JUNE 1973

S12-9-755

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB 1/2 ON-BOARD PHOTO---Astronaut Charles Conrad Jr., Skylab 2 commander, trims the hair of Astronaut Paul J. Weitz, Skylab 2 pilot, during the 28-day Skylab 2 mission in Earth orbit. They are in the orew quarters wardroom of the Orbital Workshop of the Skylab 1/2 space station. Weitz is holding a vacuum hose in his right hand. This picture was taken by Scientist-Astronaut Joseph P. Kerwin, Skylab 2 science pilot.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA S-73-25688

Lyndon B. Johnson Space Center - Hat.



FOR RELEASE: PHOTO NO.

8-73-25688

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BAW

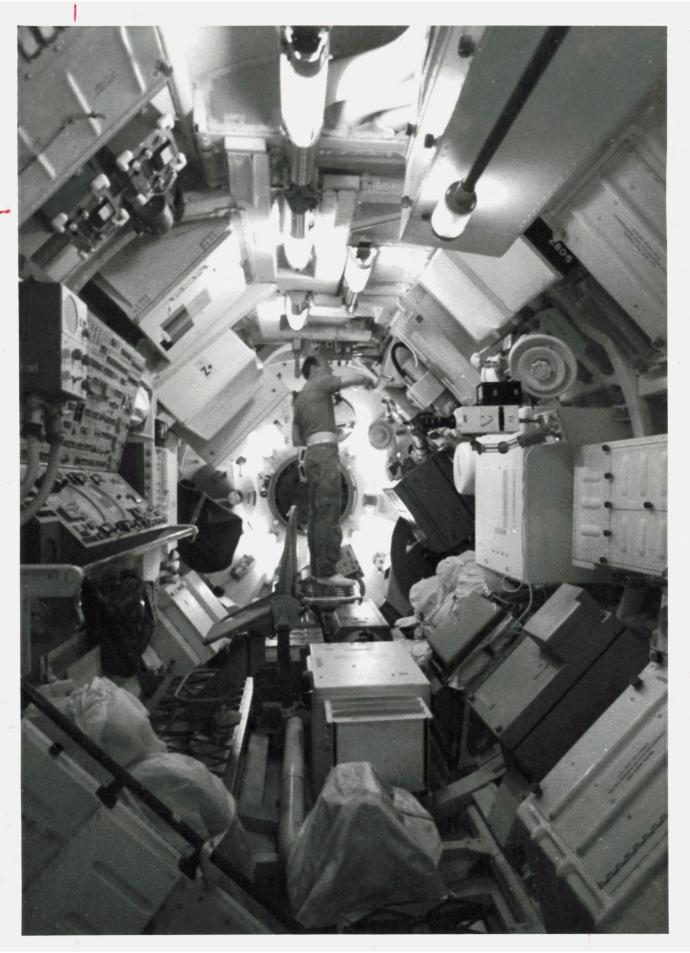
#### RETURN TO CHRONICLE FILES

8-73-25688

SON SEAR CHOOSE THEAS

State I MCC---- around Flight Director Donald R. Puddy's console in the Mission Operations Control Room in the Mission Control Conter at the Johnson Space Center during consideration on the problem of the undeployed solar panels on the Skylab I Orbital Workshop. Dr. Christopher C. Kraft Jr. (wearing coat), JSC Director, is standing behind Puddy.

PHOTO CREDIT: NASA or National Asronautics and Space Administration



B. Johnson Space Center MON AUG 21 1978

#### NATIONAL ALROMAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

FOR RELEASE PHOTO NO.

S-73-20774

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COLOR

MARCH 1973

S-73-20774

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB TRAINING --- Astronaut Charles Conrad Jr., commander of the first manned Skylab mission, goes through a checklist of experiment activity during Skylab training at the Johnson Space Center. Conred is standing in the Multiple Docking Adapter (MDA) in the Mission Simulation and Training Facility at JSC. He is working at the "materials processing in space" facility in the MDA. The MDA is one of the five main components of the Skylab space station cluster. The MDA provides a permanent interface with the Airlock Module and a docking interface with the Command/Service Module. The MDA permits the transfer of personnel, equipment, power and electrical signals between the docked module, the Airlock Module and the Orbital Workshop. Many of the Skylab enginearing, scientific and technology experiments will be performed in the MDA.

PHOTO CREDIT: NASA or National Aeronauties and Space Administration





Skylab





# NATIONAL AEROHAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

FOR RELEASE.
PHOTO NO.

8-73-26018

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BAW

17 MAY 1973

8-73-26018

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SKYLAB TRAINING——The inspection "fly around" by the Skylab II Command/Service Module is discussed by Astronaut Charles Conrad Jr. (right), Tex Ward (left), and Roger Burke (center) during preflight activity at the Johnson Space Center. Conrad is the commander of the first manned Skylab mission (Skylab II). Durke and Ward are with the Crew Training and Simulation Division at JSC. They are using models of the Skylab II GSM and the Skylab I space station cluster. The space station cluster was launched by a Saturn V on May 14, 1973 and is in Earth orbit. Frior to docking to the space station cluster the Skylab II CSM will make an inspection "fly around" of the cluster. The two training personnel are wearing face masks to protect Conrad from possible expessure to disease prior to the Skylab II launch.

PHOTO CREDIT: NASA or National Agrenauties and Space Administration





FOR RELEASE: Filed: August 29, 1972

PHOTO NO.

72-H-1182 72-HC-649

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HOUSTON, Texas -- Dr. Joseph P. Kerwin, Science rilot on the firs three-man crew to visit the Earth-orbiting Skylab space station next year, checks out bicycle ergometer. The "bike" is part of the equipment used to help determine if man's effectiveness in doing mechanical work is progressively altered by a prolonged stay in space. The crew will be aboard Skylab for 28 days. Dr. Kerwin, 40-year-old native of Oak rark, Ill., is shown inside lower level of a full-scale mockup of Skylab's Orbital Workshop. Habitable volume of the two-level workshop is 270 cubic meters (9,550 cubic feet). Skylab is a NASA experimental orbiting laboratory to conduct scientific, technical and biomedical investigations from the vantage





FOR RELEASE:

Filed: February 2, 1972

PHOTO NO.

72-H-110 72-HC-89

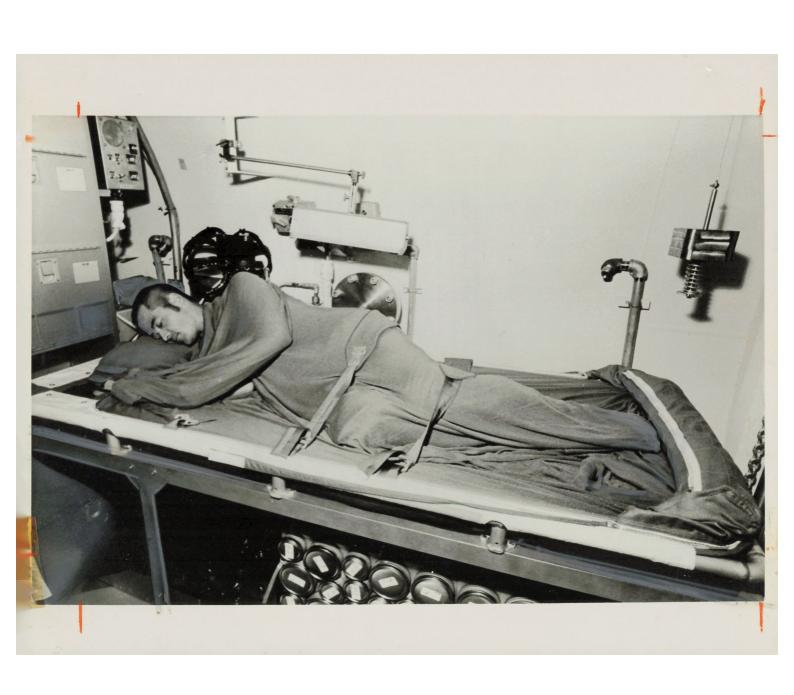
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MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

SKYLAB FIRST MANNED MISSION CREWMEN-Gathered around the display console of a training model of Skylab at the Manned Spacecraft Center (MSC) are members of the crew-the first three men who will orbit earth under the Skylab program. They are, left to right, Astronaut Charles Conrad Jr., commander; Scientist-Astronaut Joseph P. Kerwin, science pilot; and Astronaut Paul J. Weitz, pilot.







FOR RELEASE:

Filed: June 27, 1972

PHOTO NO.

72-H-853 S-72-41857

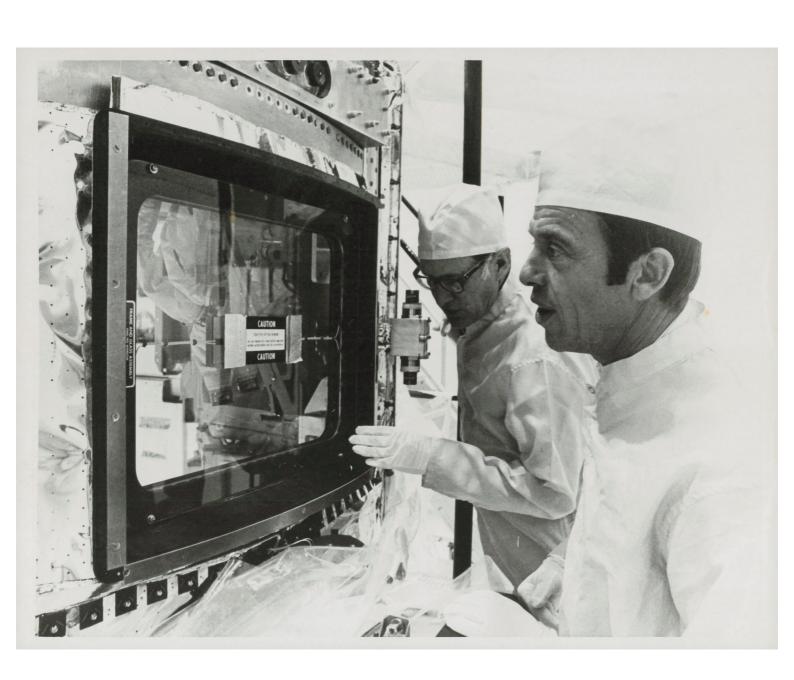
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MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

SMEAT ACTIVITY -- Giving a preview of an upcoming Skylab Medical Experiment Altitude Test (SMEAT) in a 20-foot chamber at the Manned Spacecraft Center (MSC), Astronaut Robert Crippen dozes in a simulated Skylab sleep restraint. Crippen is one of three astronauts who will spend up to 56 days in an altitude test chamber at MSC beginning in mid-July to obtain medical data and evaluate medical experiment equipment for Skylab which is scheduled for flight in 1973. Skylab astronauts will sleep vertically in a weightless environment.







FOR RELEASE:

Filed: December 16.

PHOTO NO.

71-H-1891

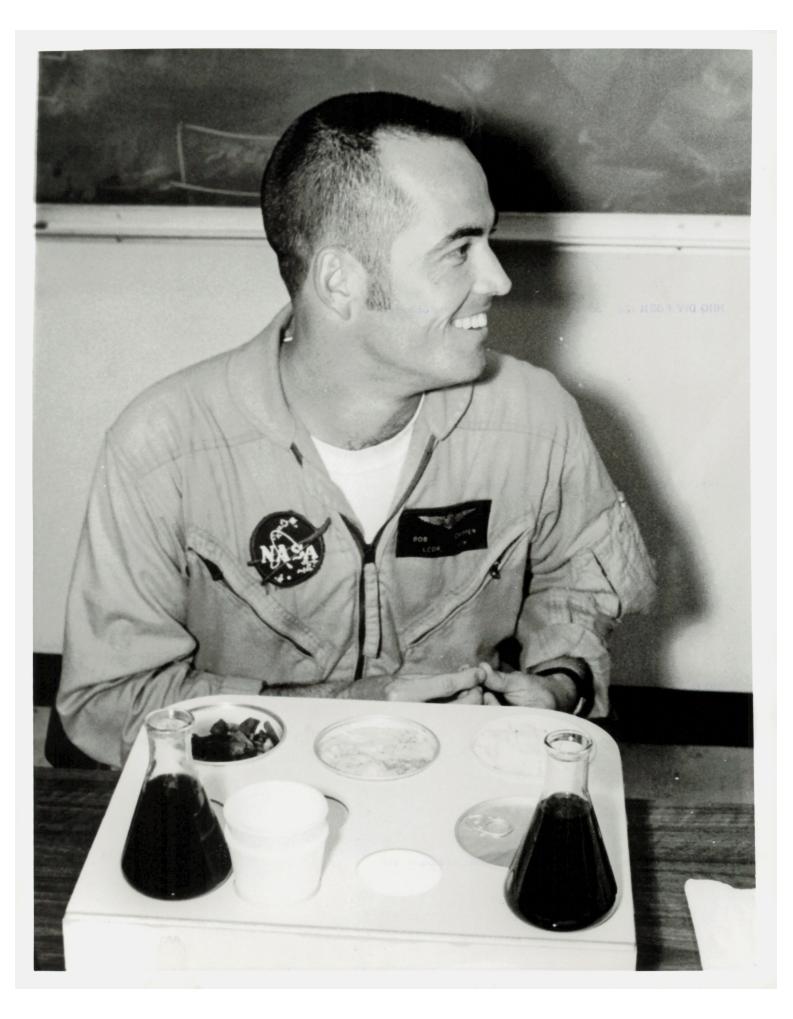


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DENVER, COLO.

OPTICAL WINDOW -- Astronaut Alan B. Shepard, right, and Kenneth P. Timmons, Martin Marietta Skylab Program Director-MSFC, inspect the Skylab orbiting laboratory's optical window at the Corporation's Denver division. The window was meticulously hand-polished for weeks to attain an optical quality that will allow six cameras to scan the earth as if no window were present. It is located in the Skylab Multiple Docking Adapter which was assembled for NASA's Marshall Space Flight Center, Huntsville, Ala. The docking adapter will serve as an experiment control center and "reception room" for arriving Skylab crewmen when the orbiting laboratory is put to use in 1973. This photograph was taken during crew review of the docking adapter training unit by nine prospective Skylab astronauts. The window shown in the photo is located in the actual flight article.





FOR RELEASE:

Filed: October 3, 1971

PHOTO NO.

71-H-1581 71-HC-1229

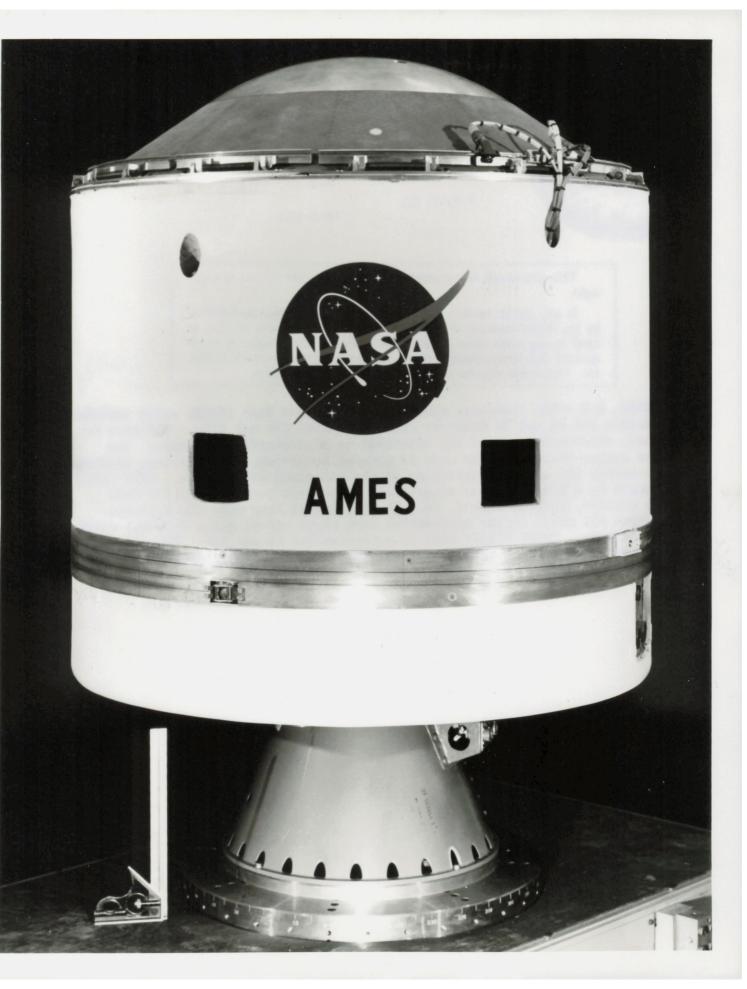
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WASHINGTON: Astronaut Robert Crippen evaluates Skylab food. Astronauts who may fly Earth orbit missions of tomorrow are today taste-testing the food scheduled to be aboard for the 28 and 56-day long Skylab missions in 1973. More than 15 astronauts are taking part in the food compatability test which began last week at the NASA Manned Spacecraft Center. The food test calls for the astronauts to eat three specially prepared meals a day for five days and then record on a score sheet his comments - good, bad or indifferent on each food item. Purpose of the test, according to Dr. Malcolm Smith, Chief of the Food and Nutrition at the NASA Manned Spacecraft Center, is to evaluate proposed Skylab food items, determine astronauts preference and most importantly, determine individual astronaut energy requirements. In addition to evaluating many of the food items already selected for Skylab, the astronauts are being asked to evaluate and comment on new food items being considered for use abcard Skylab. NASA Astronauts who have participated in the food testing program to date are: Vance Brand Karol Bobko Gerald Carr Robert Crippen Owen Garriott Edward Gibson Joe Kerwin Don Lind Jack Lousma Bruce McCandless Story Musgrave Bill Poque

Other astronauts will be scheduled for the final week of the test.







FOR RELEASE:

June 13, 1971

PHOTO NO.

71-H-923

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WASHINGTON, D.C.—The Planetary Atmosphere Experiment Test (PAET) entry vehicle is 36 inches (91.44 cm) in diameter and 25.2 inches (64 cm) long. The nose is a blunted, flattened cone and the afterbody is hemispherical in shape. The circular center section of the nose is made of beryllium, and a silicon elastomer ablator covers the aluminum structure of the remainder of the nose. PAET will be launched by a Scout, a four stage-solid propellant rocket, from the NASA Wallops Station, Wallops Island, Va. It will splash down into the Atlantic Ocean about 702 miles (1,130 kilometers) down range and 98 miles (158 km) northeast of Bermuda. Total flight time is approximately 14 minutes. The experiment will investigate means of determining the structure and composition of an unknown planetary atmosphere.





FOR RELEASE: PHOTO NO.

July 2, 1971 AM's 71-H-979 71-%C-820

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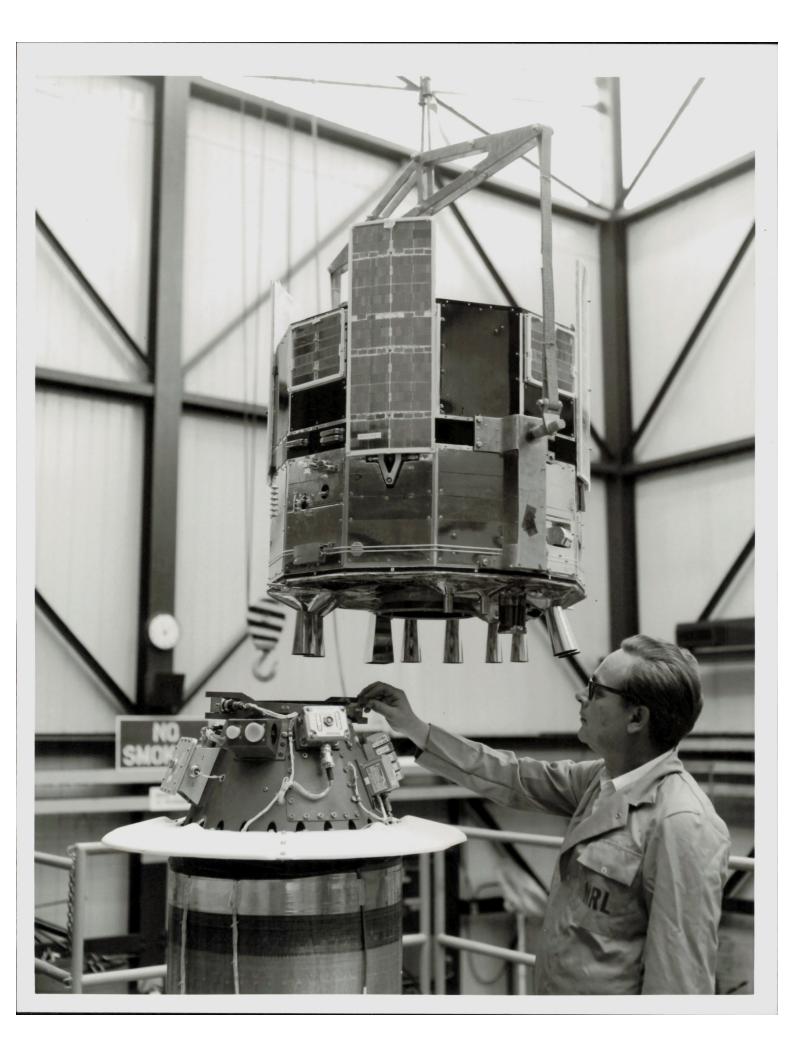
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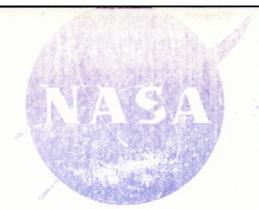


WALLOPS ISLAND, VA .--- D



Wallops ISLAND, VA. --- SOLRAD 10 satellite psyload is being checked-out by Joseph Spano, engineer, at the Wallops Island Test Facility. The National Aeronautics and Space Administration will launch the Naval Research Laboratory's latest solar radiation (SOLRAD) measuring satellite. The 260-pound spacecraft, SOLRAD 10 (C) will be boosted into a near circular orbit, about 370 miles (600 kilometers) above the Earth by NASA's all-solid propellant Scout launch vehicle. There are 14 experiments aboard the NRL satellite, designed to monitor continuously solar electromagnetic radiation (X-ray and ultraviolet and to measure, on command, stellar radiation (X-ray) from other celestial sources. Information gained by the satellite is expected to contribute to a better understanding of the physical processes involved in solar flares and other solar activity, and the potential effects of this activity on shortwave communications, as well as on future manned space travel.





FOR RELEASE: PHOTO NO.

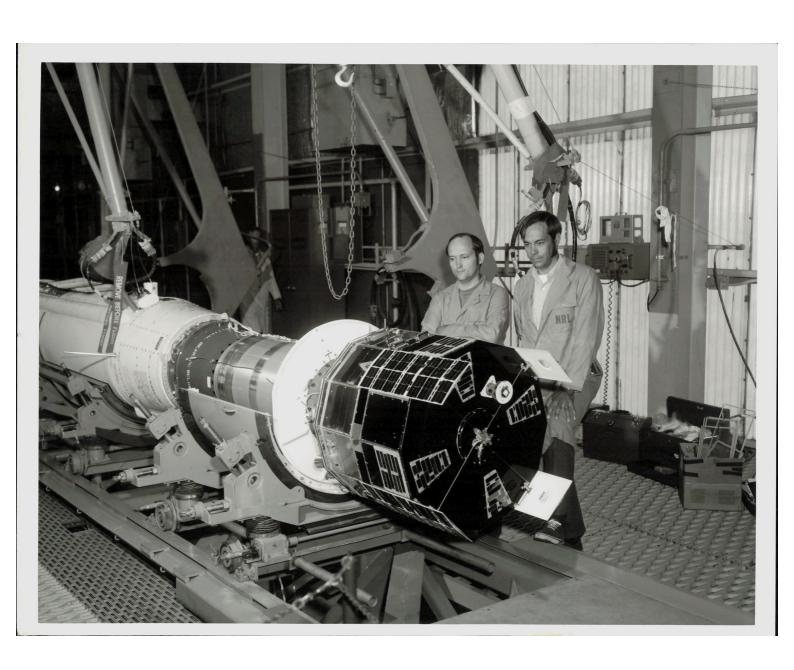
Filed: July 2, 1971

71-H-1013 71-HC-837

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WALLOPS ISLAND, VA.---The spacecraft for the Naval Research Laboratory (NRL) and the National Aeronautics and Space Administration's SOLRAD 10 (C) is shown being mated to the 4th stage adapter of the Scout launch vehicle. The 260 pound space-craft will be boosted into a near circular orbit, about 360 miles above the Barth with 14 experiments aboard to monitor continuously Solar electromagnetic radiation (X-ray) from other calestial sources. Information gained by the satellite is expected to contribute to a better understanding of the physical processes involved in Solar flares and other Solar activity and the potential effects on short-wave communications and future manned space travel.





# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

FOR RELEASE: PHOTO NO.

Filed: July 9, 1971

71-H-1064 71-HC-853

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WALLOPS ISLAND, VA. -- The 260-pound spacecraft, SCLARD 10 (C) is being mated to the Scout launch vehicle at NASA's Wallops Island Test Station, Vs. The National Agromatics and Space Administration will launch the Naval Research Laboratory's latest solar radiation (SCLRAD) measuring satellite from Wallops Island, Vs. There are 14 experiments aboard the NRL satellite, designed to monitor continuously solar electromagnetic radiation (X-ray and ultraviolet and to measure, on command, stellar radiation (X-ray) from other celestial sources. Information gained by the satellite is expected to contribute to a better understanding of the physical processes involved in solar flares and other solar activity, and the potential effects of this activity on shortwave communications, as well as on future manned space travel. The SOLRAD program is sponsored jointly by the Naval Air Systems Command and NASA's Office of Space Science and Applications (OSSA) with NRL providing project management for the mission. SOLRAD 10 is the most complex spacecraft in the SOLRAD series and extends the measurements of the Sun's emission spectrum into regions previously investigated only in short rocket flights.





# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION . WASHINGTON, D. C. 20546

FOR RELEASE: PHOTO NO.

Filed: July 9, 1971

71-H-1065 71-HC-854

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Bool Center wild Sun pup

CONSTRUCTION of the National Aeronautics and Space Administration's Manned Spacecraft Center at Clear Lake near Houston, Tex., is 75 per cent complete. The first large personnel move into the center is scheduled in October.

SEP 1 51963



# N'ASA-MARSHALL PHOTO

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8-1962



(4) Nelson - space flybt

from

Louis Alexander 59 Shorewood Drive Asheville, NC 28804

Houston, Texas 77508

# National Aeronautics and Space Administration

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19 OCTOBER 1983

5-83-42896

JOHNSON SPACE CENTER, HOUSTON, TEXAS

A1-C/WEIGHTLESS ENVIRONMENT TRAINING---Astronaut George D. Nelson, 41-C mission specialist, goes through a rehearsal of a task he'll be performing in space in less than half a year when part of Flight 41-C's objective is to visit the damaged Solar state. The astronaut is equipped in this underwater simulation with a mockup of the manned maneuvering unit (MIU), a gaseous—initially on Flight 41-B next February. This photograph was facility (NET-F) by Ctis Imboden.

UW alum George 'Pinky Nelson glides through a space Administration rehearsal in an underwater weightless-simulation tank at the Johnson Space Center in Houston.

APR 6 1984

Locals get space in shuttle



# NASA- SPACE SUITS



Mouston, Torons 77008

For Release:

Photo Mo.

3-79-28911

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21. MARCH 1979

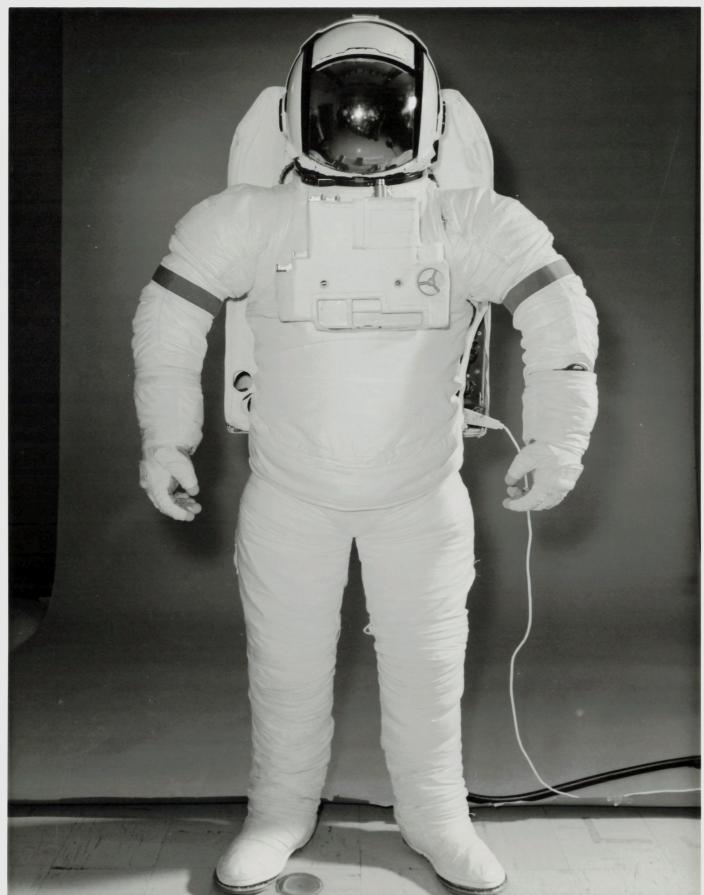
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JOHNSON SPACE CENTER, HOUSTON, TEXAS

SHUTTLE SPACESUIT — A front view of a Space Shuttle extravehicular mobility unit (EMU), modeled by a test subject in the crew systemslaboratory at the Johnson Space Center (JSC), Shuttle astronauts in the quickly-approaching new era of space transportation will be wearing this type suit for going out side the shirt-sleeve environment of their erbiter vehicles to perform any of a variety of tasks. Among chores that can be handled by an astronaut attired in this type suit will be those conducted in the orbiter's payload bay, which will house a number of kinds of experiments and cargo.

PHOTO CREDIT: NASA or National Aeromautics and Space Administration





NASA - SPACE Suites

Houston, Texas 77058

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For Releases Columbia mission

Photo No.

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JOHNSON SPICE CENTER, BOUSTON, TX

SHIFFILE SP CESUT --- ' frot view of Spice Shuttle etr vehicul r mobility unit (MMU) modeled by test subject to the disc systems I bordery it the Jih en Spice Center (JSC). Shottle stringte in the mickly-pproching ever of space transport ties ill be ie ring this type suit for going sute de the shirt-steems en roment of their orbiter vehicles to perform my of worlety of trais. Smong chores that can be hadled by an strength thired in this type suit will be those en ducted in the ophiter's pylond by which will house a number of kinds of experiments and c cg . The red etripe to the hard taren's arms indicates the commander.

PHOTO CREDIT: NASA or National Associatios and Space Administration

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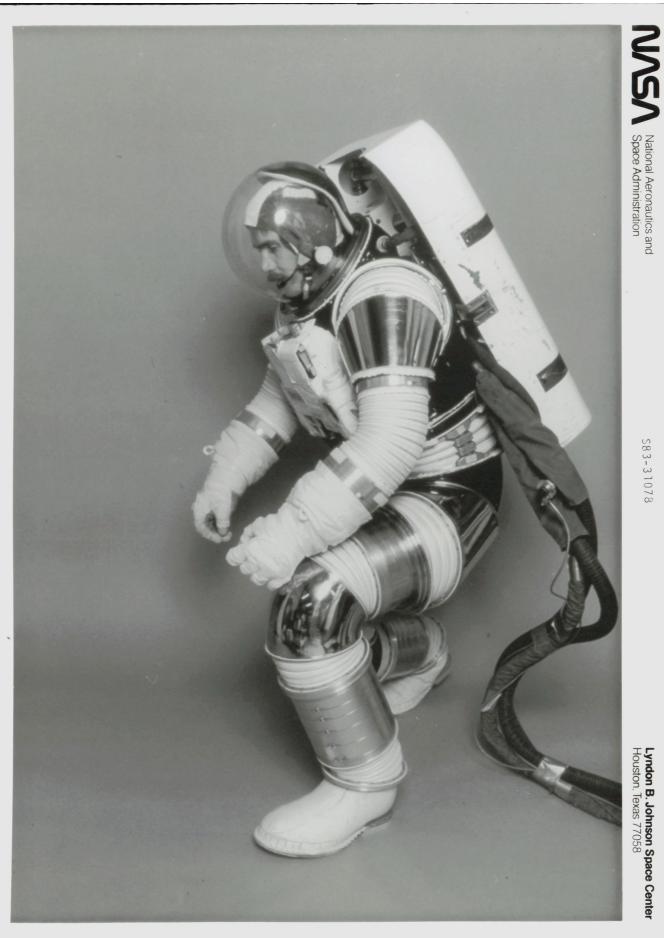
21 MARCH 1979

S-79-28908

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SHUTTLE SPACESUIT —— A test subject models an extravehicular mobility unit (EMU) like those to be used by Shuttle astronauts. Here, the subject demonstrates mobility; note the turned position of the torso. Although somewhat different in appearance from the Apollo and Skylab extravehicular garments, the Shuttle suit will allow crew members again to egress their orbiting craft and perform a variety of tasks outside the spacecraft. Many of those tasks will be in the open payload bay area, where will be housed a variety of experiments and other cargo, requiring the crew members to temporarily vacate the shirt—sleeve environment inside the orbiter vehicle.

PHOTO CREDIT: NASA orNational Aeronautics and Space Administration



NASA- SPACE SUITS





NASA - SPACE SUITS



## SPACE SHUTTLE



Washington, D.C. 20546

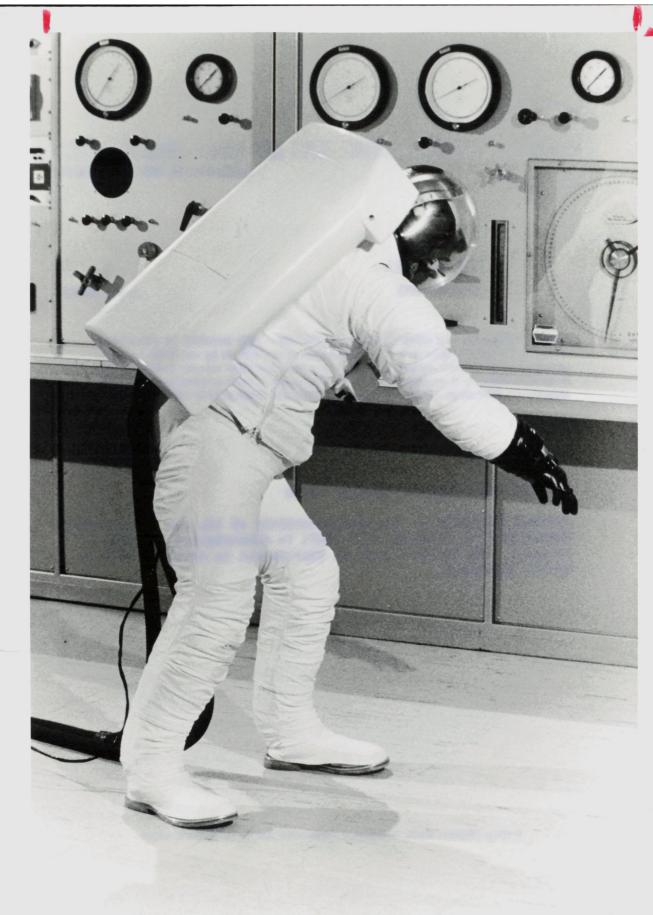
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YOUNG IN SHUTTLE SUIT----Astronaut John V. Young checks the confort and mobility of a developmental Space Shuttle pressure garment during a spacesuit demonstration at the Johnson Space Center. The suit was being evaluated by experts and officials at JSC. The JSC-developed Shuttle spacesuit is a two-piece modular design with separate upper and lower torso sections joined by a waist body seal closure instead of the slide fastener used on previous suits. The life surport system is integral with the upper terso. Adjustable-fit suit segments will come in small, medium and large to fit Shuttle crew members of both sexes. Capt. Young is the Chief of the Astronaut Office at JSC.

# Houston Chronicle Library TUE NOV 2 3 1976





FOR RELEASE: PHOTO NO.

S-77-28442

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SEPTEMBER 1977

S-77-28442

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SHUTTLE SPACESUIT -- The maneuverability of the new Space Shuttle Extravehicular Mobility Unit (EMU) is demonstrated by Edgar H. Brisson. The design allows an improvement in mobility over the Apollo spacesuit.

THURSDAY NOV 18 1982





### Space Suits

Hausten, Tomas 770618

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21 MARCH 1979

S-79-28911

JOHNSON SPACE CENTER, HOUSTON, TEXAS

SHUTTLE SPACESUIT — A front view of a Space Shuttle extravehicular mobility unit (EMU), modeled by a test subject in the crew systemslaboratory at the Johnson Space Center (JSC), Shuttle astronauts in the quickly-approaching new era of space transportation will be wearing this type suit for going outside the shirt-sleeve environment of their orbiter vehicles to perform any of a variety of tasks. Among chores that can be handled by an astronaut attired in this type suit will be those conducted in the orbiter's payload bay, which will house a number of kinds of experiments and cargo.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration





# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

FOR RELEASE:

Filed: Sept. 17, 1971

PHOTO NO.

71-8-1506

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DOVER, DELAWARE-The lunar module pilot for the National Aeronautics and Space Administration's Apollo 16 mission, Astronaut Charles M. Duke, Jr.; underwent a final flight suit fit check at the ILC Industries' Dover plant. Astronaut Duke demonstrates the flexibility of the extra-vehicular activity 7 lb. space suit.





# A33813- space suits

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, S. W., WASHINGTON, D. C. 20546

FOR RELEASE

October 21, 1965

PHOTO NO .:

65-H-1580

NOV 26 '65

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Houston, Texas - The familiar white space helmets are on the way out, due to the efforts of a psychologist and a mechanical engineer in Crew Systems Division of the National Aeronautics and Space Administration's Manned Spacecraft Center. Dr. Robert L. Jones and James O'Kane have developed a "bubble" helmet which is smaller and lighter than previous helmets, and yet is more comfortable and provides more visibility. The helmet, which is made from a plastic material called polycarbonate, is transparent except for a small section at the back of the head. Hence the name, "bubble" helmet. The Apollo suits which will be used for the moon landing will have this new type of helmet design. The helmet started as a development project, but its design offered so many advantages over the other helmets that it was incorporated into the Apollo suit, and will be worn by astronauts exploring the surface of the moon.

Type-BUBBLE-





# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION . WASHINGTON, D. C. 20546

FOR RELEASE: PHOTO NO.

July 25, 1971

71-H-1166 108-KSC-71P-439

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KENNEDY SPACE CENTER, Fla.--Apollo 14 Astronaut Edgar D. Mitchell demonstrates the flexibility of the new Apollo spacesuit, designated the EV-A-7LB. The suit, shown here without its outer layers, differs from earlier Apollo spacesuits by having a waist joint that allows greater mobility while the suit is pressurized. This enables the astronauts to stoop down to set up lunar surface experiments, gather samples and sit on the lunar roving vehicle. It incorporates other features used in earlier suits, including special joints at the knees, wrists, elbows, ankles and thighs. ILC Industries, Inc. fabricates the Apollo spacesuit for the National Aeronautics and Space Administration.





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Astronaut Slayton tries on a space suit at Goodrich. The suit is a prototype of the space gear which will be worn at the time of actual space flights.



Johnston, Hang Helew Scientist

The Annistille Times

George C. Marshall Space Flight Center Marshall Space Flight Center, Alabama 35812 AC 205 453 0034

Aeronautics and

ido lee

Administration

12-18-75

MARSHALL SPACE FLIGHT CENTER, Ala. -- Dr. Mary Helen Johnston, a specialist in metallurgical science at the NASA-Marshall Space Flight Center's Materials and Processes Laboratory, makes a communications check before the helmet is sealed to encase her in a pressure suit. Dr. Johnston underwent checkout in the astronaut suit as part of her program to qualify herself better for her duties of designing and conducting experiments on materials processing in space. Designers of such experiments need to know what can and cannot be done in a bulky space suit and under weightless conditions. Dr. Johnston has also completed scuba training for underwater work, which simulates weightlessness, and has passed the checkout in an altitude chamber at Craig Air Force Base, Selma, Ala. She has also conducted experiments while in zero-g flights aboard a KC-135 aircraft operating out of Ellington Air Force Base, Houston, Tex.

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Administration

George C. Marshall Space Flight Center Marshall Space Flight Center, Alabama 35812 AC 205 453-0034

FOR RELEASE: 12-18-75
PHOTO NO. 6-69588

MARSHALL SPACE FLIGHT CENTER, Ala. -- Mrs. Carolyn Griner, astronautical engineer specializing in materials sciences at the NASA-Marshall Space Flight Center, waits for the helmet to be put on the space suit. Mrs. Griner is one of three women scientists at the Marshall Center who recently underwent checkout and training in pressurized space suits as part of a personal program of qualifying themselves better for their current duties. They are involved in designing and conducting experiments on materials processing in space, the types of investigations to be included on Spacelab missions. Performing tasks in pressurized space suits gives the women a feel for what can and cannot be done by persons wearing the bulky garments.

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**George C. Marshall Space Flight Center** Marshall Space Flight Center. Alabama 35812 AC 205 453-0034

FOR RELEASE:

12-18-75

PHOTO NO.

6-69592

MARSHALL SPACE FLIGHT CENTER, Ala. -- Mrs. Carolyn Griner astronautical engineer specializing in materials sciences at the NASA-Marshall Space Flight Center's Materials and Processes Laboratory, does a communications check while wearing a pressurized space suit. Mrs. Griner, who designs and conducts experiments on materials processing in space, needed to get a first-hand feel for what could and could not be done by space crew members wearing bulky space suits. She and two other women scientists at MSFC have completed underwater scuba training, checked out in an altitude chamber at Craig Air Force Base, Selma, Ala., and conducted experiments while undergoing zero-g flights in a KC-135 aircraft flying from Ellington Air Force Base, Houston, Tex.

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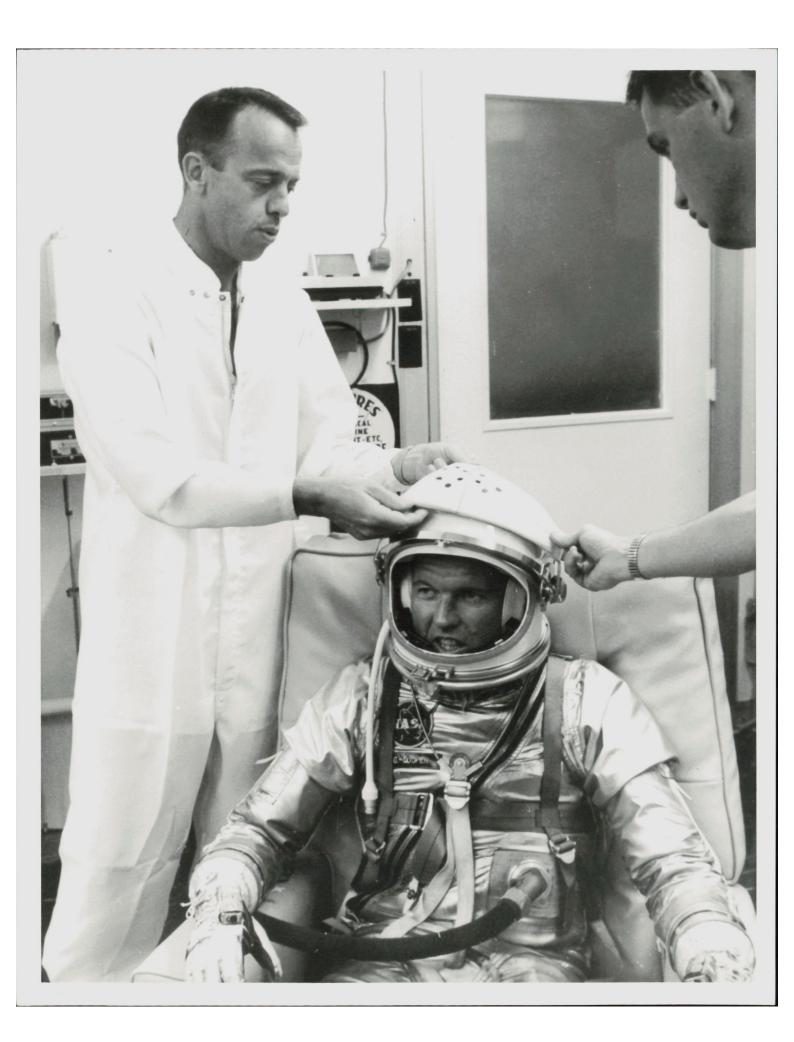
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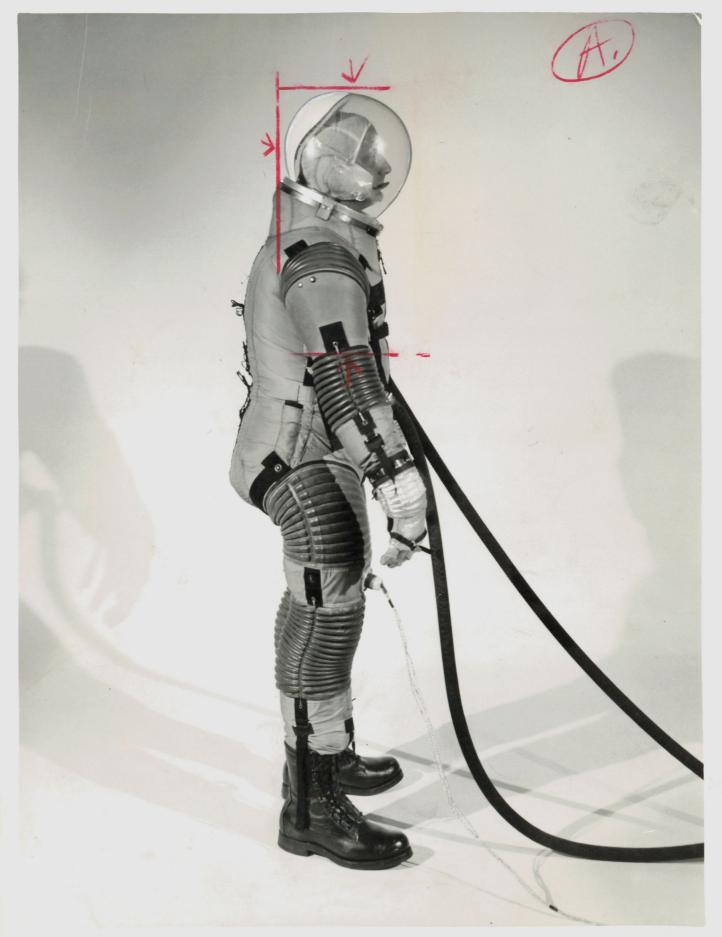


MATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, SW. WASHINGTON 25, D.C.

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CAPE CANAVERAL, FLA. - Astronaut Alan Shepard, Copera backup and Al Rochford, suit technicism places the protective covering on visor of Astronaut Cooper's helmet.





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### NASA - SPACE SUITS



For Reissens

Photo No.

Mouston, Tosas 77053

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FEB 10 1983

B & W

DECEMBER 1982

S-82-41358

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-6 TRAINING -- Astronaut Story Musgrave, STS-6 mission specialist, checks a sequence list on his spacesuit during the final stages of a suit-donning exercise in the weightless environment test facility (WET-F) at the Johnson Space Center. Dr. Musgrave, along with Astronaut Donald H. Peterson, will perform an extravehicular activity (EVA) during STS-6, and this JSC facility offers a giant pool in which the astronauts can simulate their EVA tasks, attired in pressurized EMU's. Dr. Musgrave's activity on this day did not include actual exposure to the pool. Peterson, the second STS-6 mission specialist, is out of the frame, but also participated in a "dry" simulation today.

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SPACY SINT

NASA - SPACE SUITS



NASA suit with modular-concept components





Houston, Yexas 77058

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8-80-36846

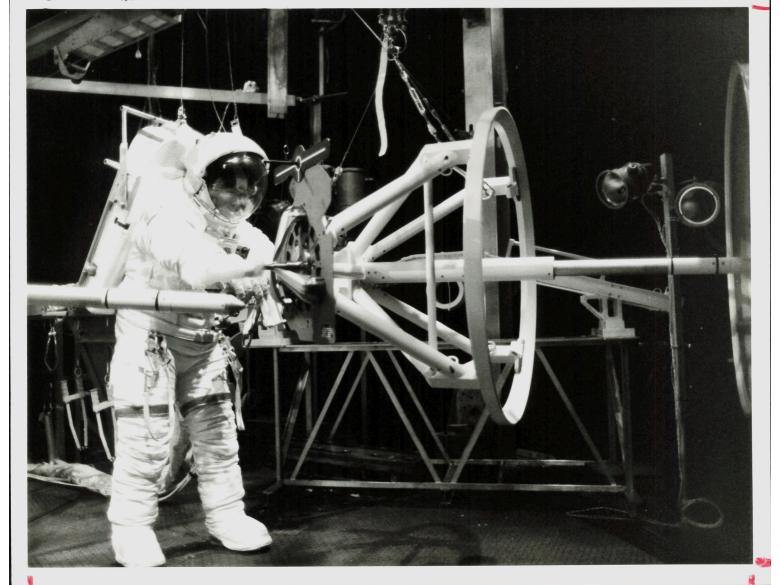
MARTIN MARIETTA AEROSPACE, DENVER, COLORADO

MANNED MANEUVERING UNIT MOCKUP - This is a pressurized extravehicular mobility unit (EMU) with a personal propulsion device developed by Martin Marietta called a manned maneuvering unit (MMU). The MAU will be used to accommodate Space Shuttle extravehicular activities and assist in a large variety of planned and contingency extravehicular activities connected the Space Shuttle missions.





PHOTO CREDIT: NASA or Metional Aeronautico and Space Adulata tratica



# NASA-SPACE SHUTTLE



### N.A.S. A. - ASTRONAUTS Spacesuits





JUL 1 4 1976

Chief of the astronauts, John Young, was photographed by NASA checking out a new shuttle space suit



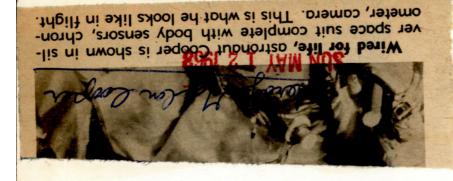
# Lyndon B Johnson Space center

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Astronaut L. Gordon Cooper on weight and balance scale. Hangar "S" White Room.

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COLOR

25 FEBRUARY 1979

5-79-29596

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT CANDIDATES IN NEW FLIGHT SUITS —— Contrasting the old with the new, six astronaut candidates pose for photographers in their new constant wear garments, ideal for the zero-gravity tasks in the pressurized environs of Space Shuttle. The "old" is an Apollo type spacesuit used for extravehicular activity (EVA). From left to right are Shannon W. Lucid, Rhes Seddon, Kathryn D. Sullivan, Judith A. Sullivan, Judith A. Resmit, Anna L. Fisher and Sally K. Rids.

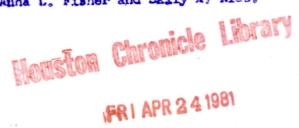
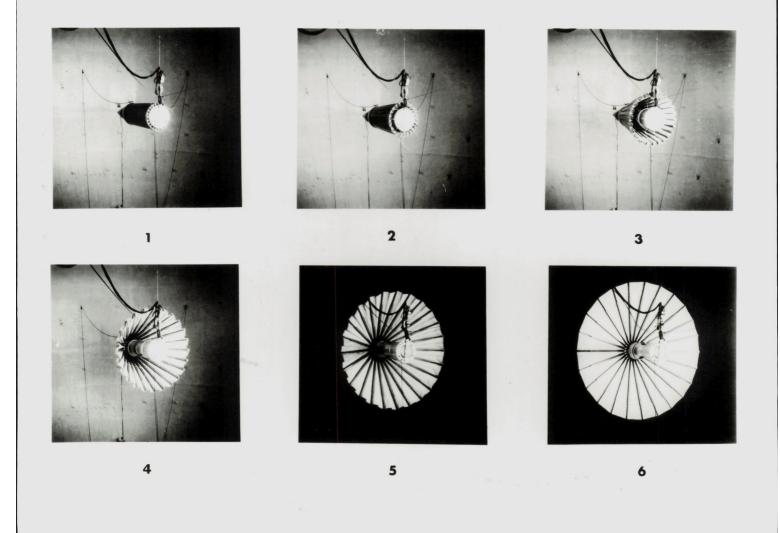


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Hampton, Va. -- Photo sequence captures lightning-fast opening of the erectable Supersonic Planetary Entry Decelerator (SPED) aeroshell used in a National Aeronautics and Space Administration flight experiment to study characteristics of parachutes designed for landing instruments on Mars. The parasol-like aeroshell is built to pop open in six-tenths of a second at high altitude to simulate a Mars entry spacecraft. An attached test parachute is deployed in the disturbed wake behind it as they travel about 2.7 times the spead of sound in the thin atmosphere. The aeroshell is 15 feet in diameter. SPED is a project of NASA's Office of Advanced Research and Technology. The NASA Langley Research Center here is project manager. Launch date will be no earlier than October 7, 1970 from Wallops Island, Va.





FOR RELEASE: Re-Release: October 5, 1970

PHOTO NO.

70-H-876

70-HC-648

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WALLOPS ISLAND, VIRGINIA -- The parasol for the SPED II (Supersonic Planetary Entry Decelerator) is shown deployed in systems check-out prior to mating with the single-stage Castor Rocket Motor. A "parasol-popping" flight experiment to study the characteristics of a parachute designed to help land instruments on Mars will be rocketed over the Atlantic Ocean by the National Aeronautics and Space Administration no earlier than October 7, 1970. Purpose of the Supersonic Planetary Entry Decelerator (SPED) flight is (1) to study the deployment characteristics of a parachute designed to operate in a thin atmosphere in the disturbed wake of a blunt-shaped spacecraft and (2) to verify the new engineering technique (the erectable aeroshell) for testing parachutes or other drag devices attached to simulated planetary entry spacecraft. The SPED test will be launched from NASA's Wallops Station Wallops Island, Virginia, by a single-stage Castor Rocket with two smaller Recruit rockets attached for additional liftoff thrust.





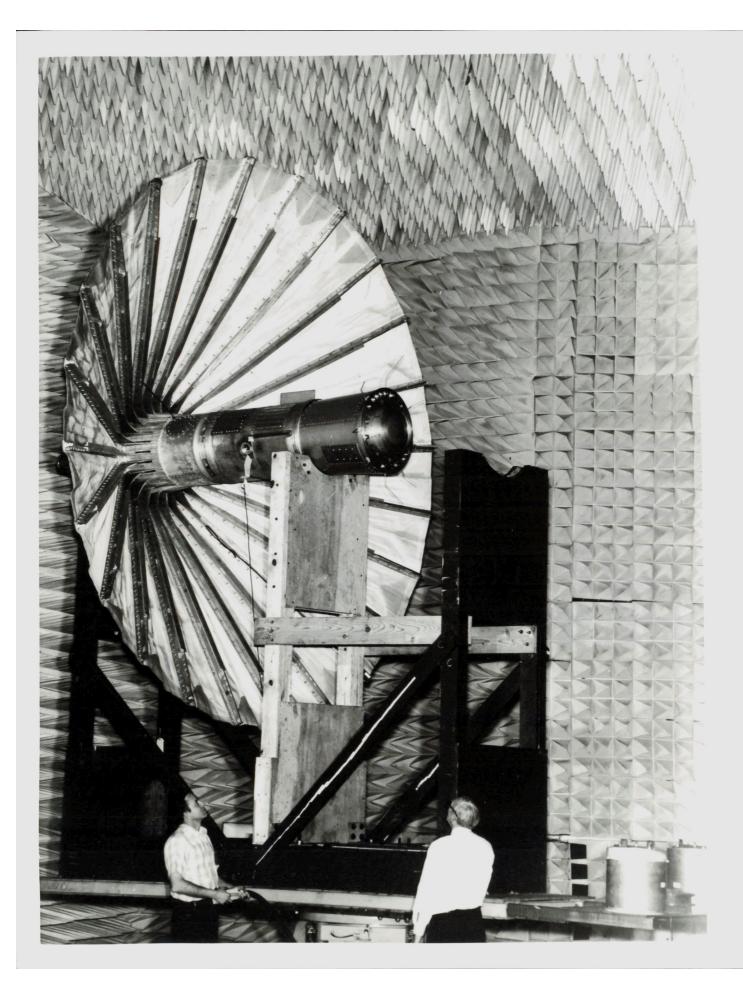
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WALLOPS ISLAND, VIRGINIA—The SPED 11 (Supersonic Planetary Entry Decelerator) is shown on the launcher in vertical position. A "parasol-popping" flight experiment to study the characteristics of a parachute designed to help land instruments on Mars will be rocketed over the Atlantic Ocean by the National Aeronautics and Space Administration no earlier than October 7, 1970. Purpose of the Supersonic Planetary Entry Decelerator (SPED) flight is (1) to study the deployment characteristics of a parachute designed to operate in a thin atmosphere in the disturbed wake of a blunt-shaped spacecraft and (2) to verify the new engineering technique (the erectable aeroshell) for testing parachutes or other drag devices attached to simulated planetary entry spacecraft. The SPED test will be launched from NASA's Wallops Station. Wallops—Island, Virginia, by a single—stage Castor Rocket with two smaller Recruit rockets attached for additional liftoff thrust.





FOR RELEASE: Reereleased October 5, 1970

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Sound chamber is wed to test the erectable Supersonic Planetary Entry Decelerator (SPED) aeroshell used in a National Aeronautics and Space Administration flight experiment to study characteristics of parachutes designed for landing instruments on Mars. The parasol-like aeroshell is built to pop open in six-tenths of a second at high altitude to simulate a Mars entry spacecraft. An attached test parachute is deployed behind it as they travel about 2.7 times the speed of sound in the thin atmosphere. The aeroshell is 15 feet in diameter, SPED is a project of NASA's Office of Advanced Research and Technology. The NASA Langley Research Center, Hampton, Va., is project manager. Launch date will be no earlier than October 7, 1970 from Wallops Island, Va.





FOR RELEASE:

Re-release October 5, 1970

PHOTO NO.

70-H-875

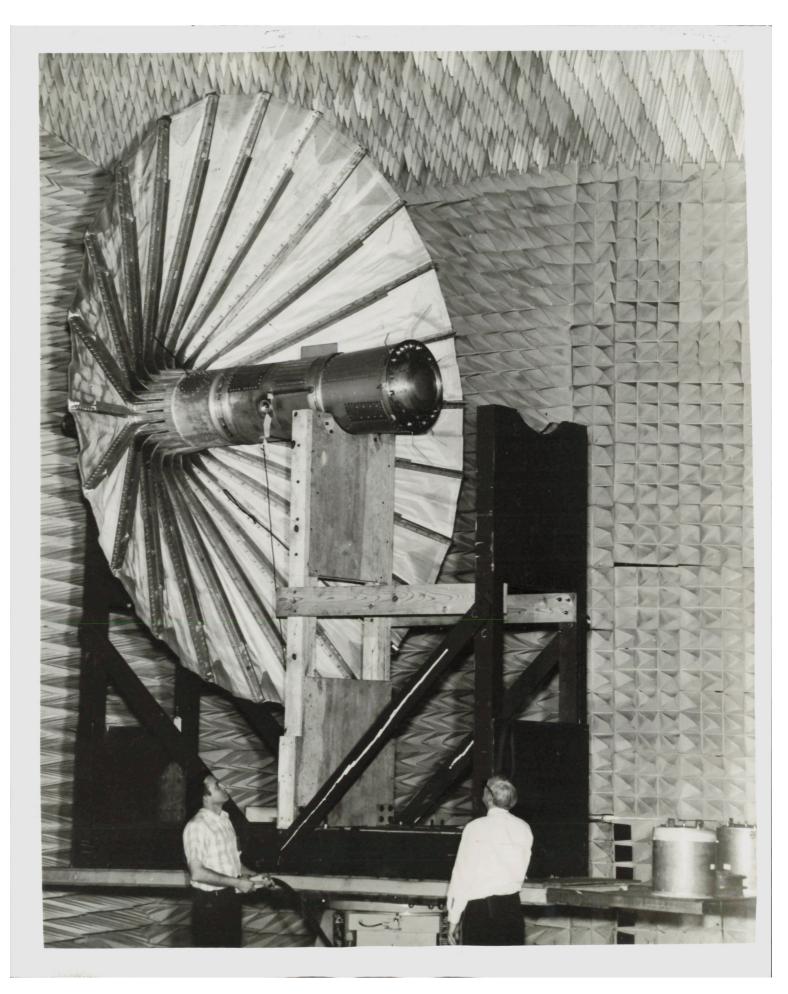
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WALLOPS ISLAND, VIRGINIA -- The SPED 11 Supersonic Planetary Entry Decelerator) Spacecraft and Launch Vehicle are shown in the shelter in launch area #4, as engineers and technicans make final mating preparations. A "parasol-popping" flight experiment to study the characteristics of a parachute designed to help land instruments on Mars will be rocketed over the Atlantic Ocean by the National Aeronautics and Space Administration no earlier than October 7, 1970. Purpose of the Supersonic Planetary Entry Decelerator (SPED) flight is (1) to study the deployment characteristics of a parachute designed to operate in a thin atmosphere in the disturbed wake of a blunt-shaped spacecraft and (2) to verify the new engineering technique (the erectable aeroshell) for testing parachutes or other drag devices attached to simulated planetary entry spacecraft. The SPED test will be launched-from NASA's Wallops Station, Wallops Island, Va., by a single-stage Castor rocket with two smaller Recruit rockets attached for additional liftoff thrust.





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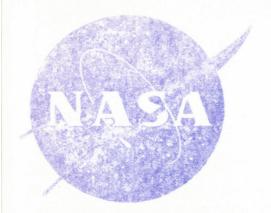
PARACHUTE FOR MARS -- Sound chamber at NASA S Langley Research Center, Hampton, Va., is used to test the erectable Supersonic Planetary Entry Decelerator (SPED) used in a flight experiment to study characteristics of parachutes on Mars.

> 3 less -O HUTE Destates stem JUL 14 1970

PARACHUTE FOR MARS - The sound chamber at the National Aeronautics and Space Administration's Langley Research Center, Hampton, Va., is used to test the

erectable Supersonic Planetary Entry Decelerator (SPED) used in a flight experiment to study characteristics of parachutes on Mars.





## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

FOR RELEASE: PHOTO NO.

Filed: September 14, 1971 71-H-1483

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BALD KNOB, Ark.--Three NASA-Marshall Space Flight Center men are shown working on the Stratoscope II astronomical talescope September 10 soon after arriving at the landing site near Bald Knob, Ark. Sidney W. Garrett, Test Division, top left, and Archie Absher, Quality and Reliability Assurance Laboratory, pass a battery down to Charles M. Rhodes, Astrionics Laboratory. Film taken from the astronomical instrument is now being processed by Princeton University personnel at the Marshall Center. The telescope suffered extensive structural damage and has been returned to the Marshall Center for repair. The balloon-borne astronomical instrument was launched at 7:33 p.m. September 9 from the Redstone Arsenal Airfield.





# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

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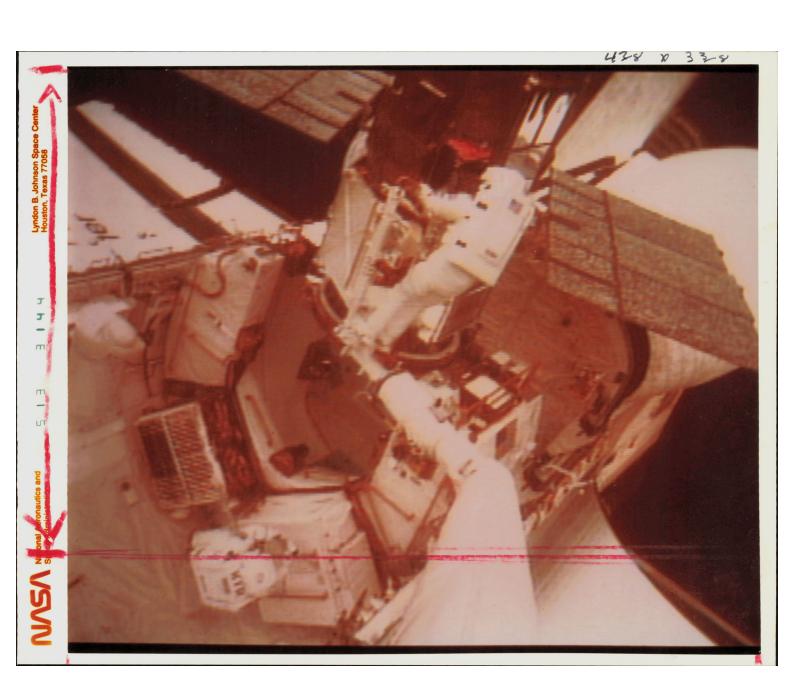
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MARSHALL SPACE FLIGHT CENTER, Ala .-- Stratoscope II, a large astronomical talescope package designed to get clear picutres of galaxies and planets from above most of the Earth's atmosphere, is readied for launch from the Redstone Airfield near the NASA-Marshall Space Flight Center. The giant instrument was launched by balloon at 7:33 p.m. CDT September 9. It rose rapidly to 82,800 feet and drifted westward as experimenters in the control station atop Green Mountain, Huntsville, Ala., aimed the 36-inch optical system at planned targets. The experimenters reported obtaining good photographs of galaxies M-31 (Andromeda) and its neighboring M-32, and of Planetary Nebula NGC 7662. No problems were encountered during the night-long flight, either from weather or hardware, as the 234-foot diameter main balloon drifted over Memphis and on into Arkausas. The astronomy experiments were stopped at 6:02 a.m. with the coming of dawn, and the telescope was secured at 7 a.m. for a semi-crash landing. The package landed between Augusta and Bald Knob, Ark. The tracking aircraft reported about 11 a.m. that Stratoscope II was sitting upright on the ground and appeared to be in good condition.



### NASA - SPACE REPAIR









Houston, Texas 77058

S-83-25920

Per Releases

Photo Mo.



S-83-25920

COLOR

23 DECEMBER 1982

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-7 CREW AT KSC FOR SHUTTLE INTERFACE TEST --- Four of the five crew members for NASA's STS-7 mission greet press representatives at the site of their spring 1983 launch during a trip to KSC for participation in the Space Shuttle interface test. Pictured (right to left) are Astronauts Robert L. Crippen, commander; Frederick H. (Rick) Hauck, pilot; and John M. Fabian and Sally K. Ride, both mission specialists. Not pictured is Astronaut Norman E. Thagard, a medical doctor.

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National Aeronautics and Space Administration

Houston, Texas 77058

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23 DECEMBER 1

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JOHNSON SPACE CENTER, HOUST M, TEXAS

STS-7 CREW AT KSC FOR SHUTTLE INTERFACE TEST --- Four of the five crew members for 1250 is STS-7 mission great cress representatives at the site of their Spring 1983 Danck during a trip to KSC for participation in the Space Shuttle interface test. Pictured (right to left) and Astronauts Robert L. Crippen, commander; Frederick E. (Rick) Havek, pilot; and John M. Fabian and Sally K. Ride, both mission specialists, Not pictured is Astronaut Norman E. Thagard, a medical doctor.

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**Lyndon B. Johnson Space Center** Houston, Texas 77058





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4 MARCH 1983

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-7 CREW -- These five astronauts represent the Space Transportation System's first five-member crew. They will be aboard the Space Shuttle Challenger for MASA's STS-7 mission, scheduled for June of this year. Astronaut Robert L. Crippen, center, first row) is crew commander. Other crewmembers are Astronauts Frederick H. Hauck, right, pilot, and Sally K. Ride, John M. Fabian and Norman E. Thagard, mission specialists. Seven stars and the Challenger provide the backdrop for the crew's portrait.

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23 MAY 1983

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-7 TRAINING -- Four-fifths of the STS-7 crew take a break from simulations in the Johnson Space Center's mission simulation and training facility and pose for NASA photographer. Standing on the steps leading into the motion-based Shuttle mission simulator (SMS) are (left-right) Astronauts Robert L. Crippen, John M. Fabian, Frederick H. Hauck and Sally K. Ride. Crippen is crew commander; Hauck, pilot; and Fabian and Dr. Ride are mission specialists, along with Dr. Morman E. Thagard (not involved in this phase of training and not pictured).

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Space travel-shuttle Challenger 6-18-83

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4 MARCH 1983

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-7 CREW -- These five astronauts represent the Space Transportation System's first five-member crew. They will be aboard the Space Shuttle Challenger for MASA's STS-7 mission, scheduled for June of this year. Astronaut Robert L. Crippen, center, first row) is crew commander. Other crewmembers are Astronauts Frederick H. Hauck, right, pilot, and Sally K. Ride, John H. Fabian and Norman E. Thagard, mission specialists. Seven stars and the Challenger provide the backdrop for the crew's portrait.

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JOHNSON SPACE CENTER, HOUSTON, TEXAS

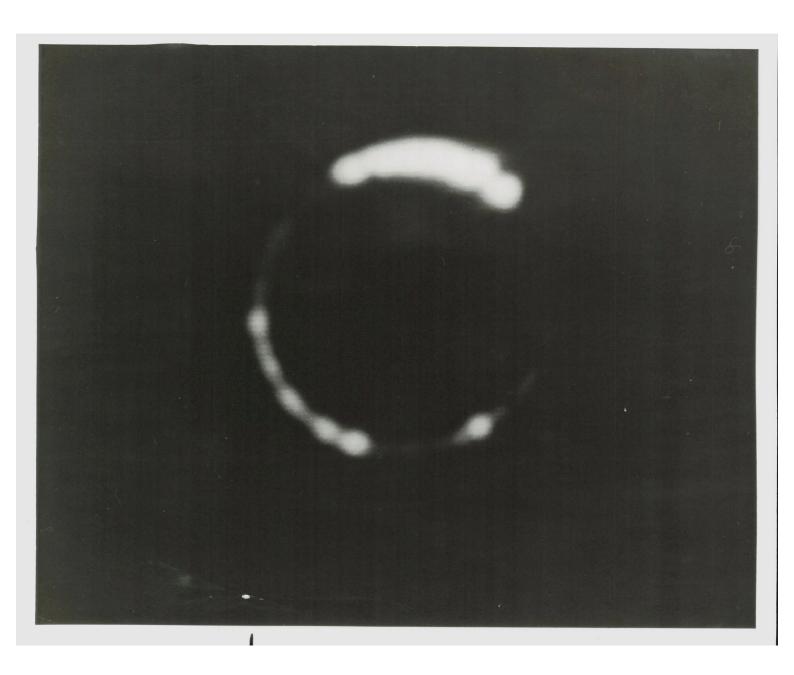
STS-7 CREN -- These five astronauts represent the Space Transportation System's first five-member crew. They will be aboard the Space Shuttle Challenger for MASA's STS-7 mission, scheduled for June of this shuttle Challenger for MASA's STS-7 mission, scheduled for June of this year. Astronaut Robert L. Crippen (center, first row) is crew commander, year. Astronaut Robert L. Crippen (center, first row) is crew commander. Other crewmembers are Astronauts Frederick H. Hauck, right, pilot, and Other crewmembers are Astronauts Frederick H. Hauck, right, pilot, and Sally K. Ride, John M. Fabian and Norman E. Thagard, mission specialists. Seven stars and the Challenger provide the backdrop for the crew's portrait.

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FOR RELEASE: April 24, 1067
FHOTO NO. 67-H-493

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PASADENA, Calif., SURVEYOR III = 33 -- Surveyor III's television camera photographs the Earth about midway through the eclipse of April 24. Brightest portion of the lighted ring around the Earth appears in the north polar regions -- Alaska and the Bering Strait. The solar disc passed slightly north of Earth's equator. This produced the extra brightness in the Northern Hemisphere. Picture was taken at 4:01 a.m. PST.

A 3 3 8 13 - Suveyor







NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, S. W., WASHINGTON, D. C. 20546

FOR RELEASE: December 31, 1966
PHOTO NO: 66-H-832

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SHADOW ON THE MOON. - With the evening sun furnishing proper backlighting, the National Aeronautics and Space Administration's Surveyor I spacecraft made this photo of its own shadow where it soft-landed on the surface of the moon. Launched last May, Surveyor I made this picture at 2:55 p.m. EDT on June 13 with the moon's sunset less than 24 hours away. The 600-scan-line, wide-angle television photo was received at NASA's Jet Propulsion Laboratory in Pasadena, Calif.

DAILY PICTURE ORDER by Kelton
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# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 2004

FOR RELEASE: Septer

September 13, 1968

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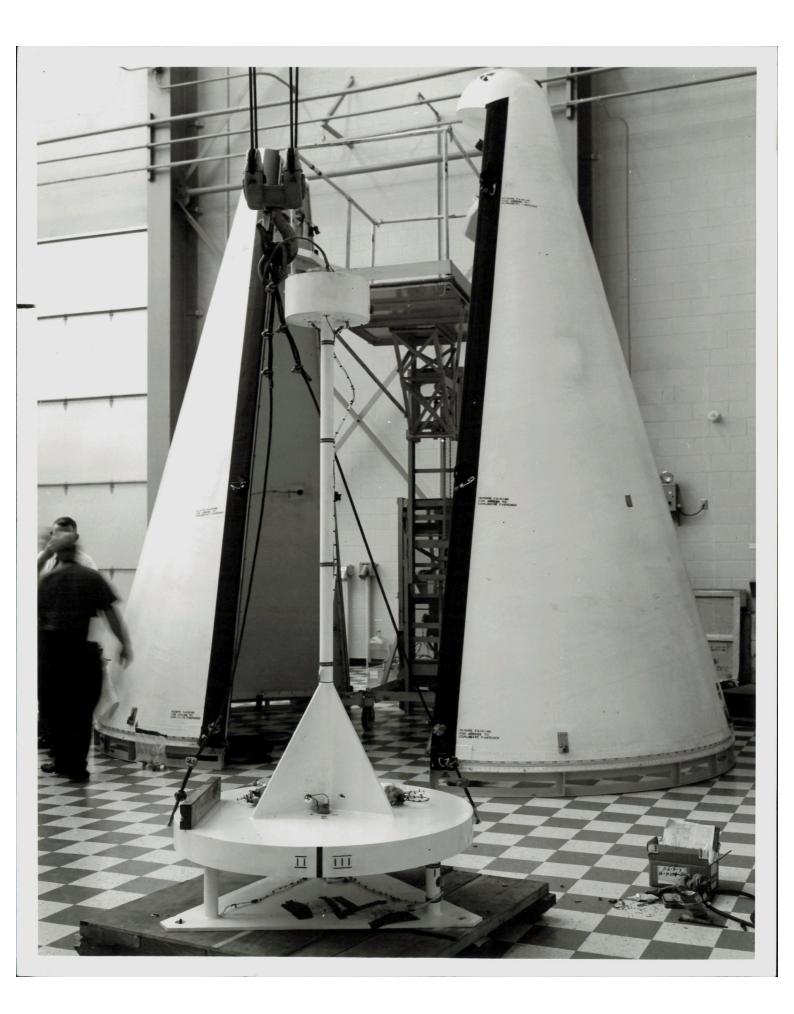
67-H-491 67-HC-217

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DIGGING ON THE MOON: Surveyor III's soil sampler device scooped up lunar mater al, dumped it on the white surface of its footpad to enable close examination under good viewing conditions last year for an historic first in the Surveyor lunar soft landing program, a highlight of the National Aeronautics and Space Administration's 10 years of space activity.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 440 MARYLAND AVENUE, SW, WASHINGTON, D. C. 20546

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December 1, 1964 a.m.

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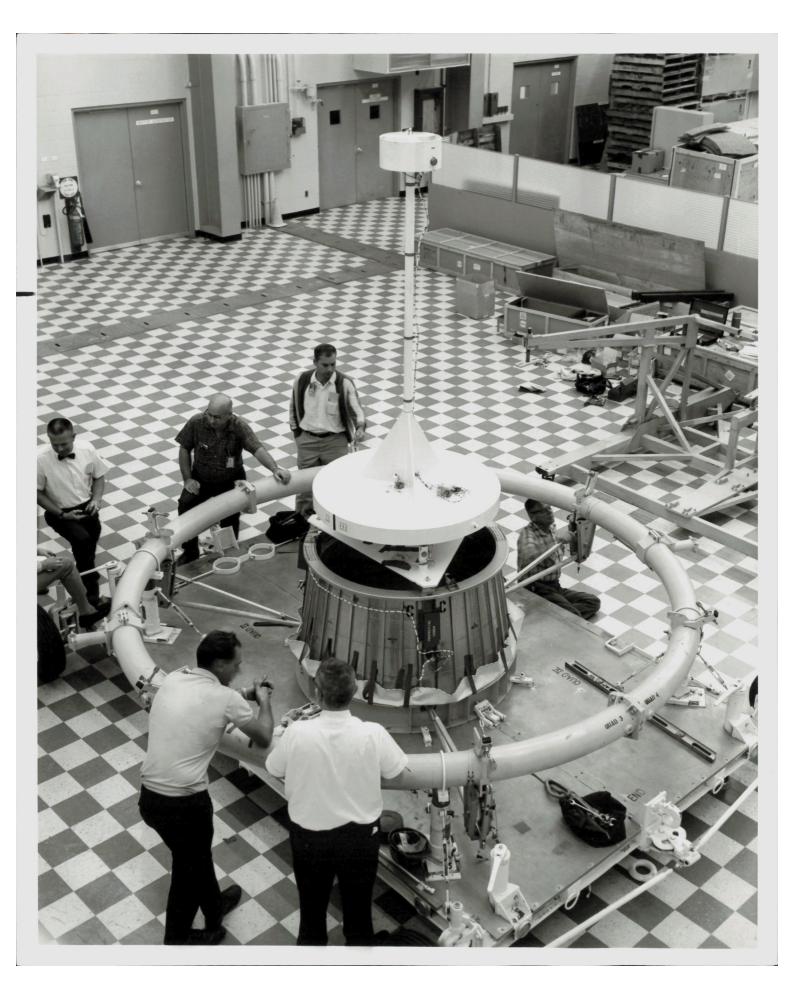
64-E-2725

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Cape Mennedy - Assembly of the 2100 lbs. mass model of the Surveyor spacecraft is under way in preparation for launch aboard a Centeur launch vehicle. This model will simulate the mass and weight of the Surveyor spacecraft that Centaur will soft-land on the Moon. There will be no separation of the model spacecraft.



1964



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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, SW., WASHINGTON, D. C. 20546

1964

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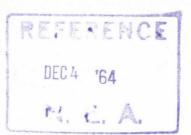
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Cape Kennedy - Assembly of the 2100 lbs. mass model of the Surveyor spacecraft is under way in preparation for launch aboard a Centaur Launch vehicle. This model will simulate the mass and weight of the Surveyor spacecraft that Centaur will soft-land on the Moon. There will be no separation of the model spacecraft.





SPACE-1964



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, SW., WASHINGTON, B. C. 20546

FOR RELEASE: December 1, 1964-A.M.

PHOTO NO.: 64-H-2723 (Centaur)

A94363

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X-FILE

CAPE KENNEDY--At launch complex 36 stands the Alias-Centaur booster ready for its fourth research and development mission. In the nose fairing will fly a 2100-pound mass model of the Surveyor spacecraft. This model will simulate the mass and weight of the Surveyor spacecraft that Centaur will soft land on the Moon. There will be no separation of the model spacecraft. A restart of the Centaur's hydrogen engine in space will also be attempted for the first time.

X-file







NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, S. W., WASHINGTON, D. C. 20546

FOR RELEASE: April 20, 1967
PHOTO NO. 67-H-457

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PASADENA, Calif., -- SURVEYOR IXI - 3 -- Inner wall of crater in which Surveyor IXI landed is seen in this television picture taken at 1:12 a.m. PST on April 20, 1967. Area portrayed is crater wall opposite that upon which spacecraft settled in off-level attitude. Horizon is several tens of yards or more from Surveyor's TV camera. Rocks casting shadows may be about one foot across. Picture covers a field of view of 25 degrees (wide-angle) and was taken in the 600-scan-line mode. Surveyor IXI landed on the moon at 4:04 p.m. PST on April 19 after a 65-hour flight from Cape Kennedy.

A33813 - Surveyor







NATIONAL, AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, S. W., WASHINGTON, D. C. 20546

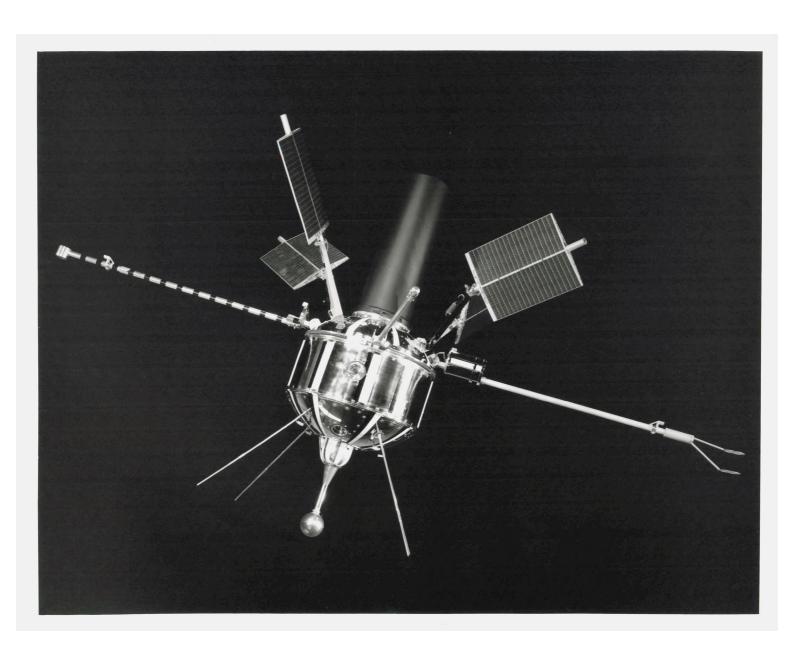
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PASADENA, Calif., -- SURVEYOR III - 17 -- Picture taken by Surveyor III at 1:05 a.m. PST, April 20, 1967. The wide-angle (25-degree field of view) 600-line picture should be viewed with the data block at the top. It shows portions of the spacecraft in the foreground and footpad \$2 -- the round object in the foreground. Of special interest is the imprint of a previous impact of the footpad just above the pad. It was made when Surveyor III bounced about one foot after its third touchdown on the lunar surface before the spacecraft came to rest in its final landing site. In the bottom of the depression is imprinted the honeycomb pattern of the bottom of the Surveyor footpad.

A 33813 - Surveyor





NASA - USAF PHOTO

LOD 62-2644 4/2/62

CAPE CANAVERAL, FLAO, - THE
FIRST OF SEVERAL PLANNED
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THIS JOINT UNITED KINGGOMUNITED STATES SATELLITE,
WEIGHING 132 POUNDS & 23 INCHES
IN DIAMETER, ORBITS THE EARTH
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THE SATELLITE IS DESIGNED
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KNOWLEDGE OF THE SONOSPHERE,
AN ELECTRIFIED REGION OF THE
ATMOSPHERE EXTENDING YROM ABOUT
THE EARTH. RESULTS OF THE
EXPERAMENTS WILL BE SHARED WITH
WORLD SCIENTIFIC COMMUNITY.

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Thaddeus Lott was at work as principal of Wesley Elementary School when someone rushed up to him with the news. At Bellaire High School, Maurice Megdal, a student, had just finished lunch. All around Houston and the rest of the country, routines stopped as people stood riveted to TV sets, watching the space shuttle Challenger explode. Some, like Gerald Griffin, ex-flight director at the Johnson Space Center, were closer to the event than others. Chronicle reporter Rad Sallee collects remembrances of Jan. 28, 1986. The cover photo, taken seconds after the accident, was provided by NASA.





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COLOR (PORTRAIT)

**JULY 1962** 

S62-8774

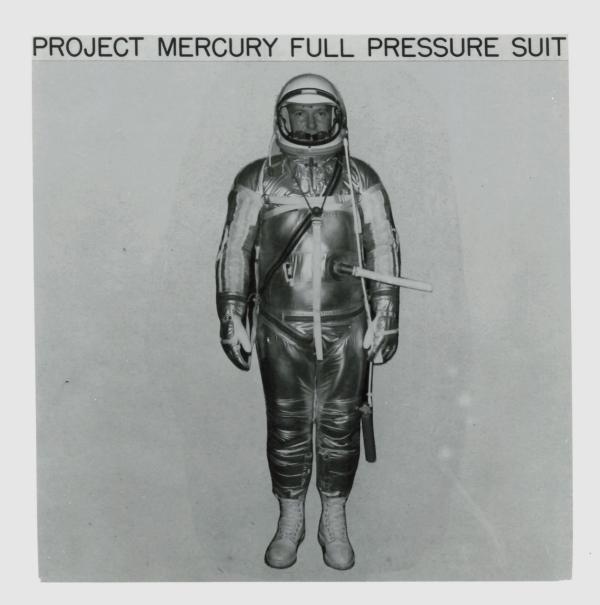
JOHNSON SPACE CENTER, HOUSTON, TEXAS

ASTRONAUT GROUP I PORTRAIT --- These seven men, wearing space suits in this portrait, composed the first group of astronauts announced by the National Aeronautics and Space Administration (NASA). They were selected in April of 1959 for the Mercury Program. Front row, left to right, are Walter M. Schirra Jr., Donald K. Slayton, John H. Glenn Jr., and M. Scott Carpenter. Back row, left to right, are Alan B. Shepard Jr., Virgil I. Grissom and L. Gordon Cooper Jr.

EDITOR'S NOTE: Grissom died in the Apollo/Saturn 204 fire at Cape Kennedy, Florida, on January 27, 1967. Carpenter, Slayton, Glenn, Schirra, Cooper and Shepard have resigned from the space program.



PHOTO CREDIT: NASA or National Aeronautics and Space Administration



you lite - Photos - 1963

CHRONICLE FILES

Project Mercury Astronaut Walter M. Schirra, Jr., in the Mercury full pressure suit, designed to protect the astronaut in space if the cabin environmental control system should malfunction.

#### OFFICIAL NASA PHOTOGRAPH

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Houston, Texas 77058

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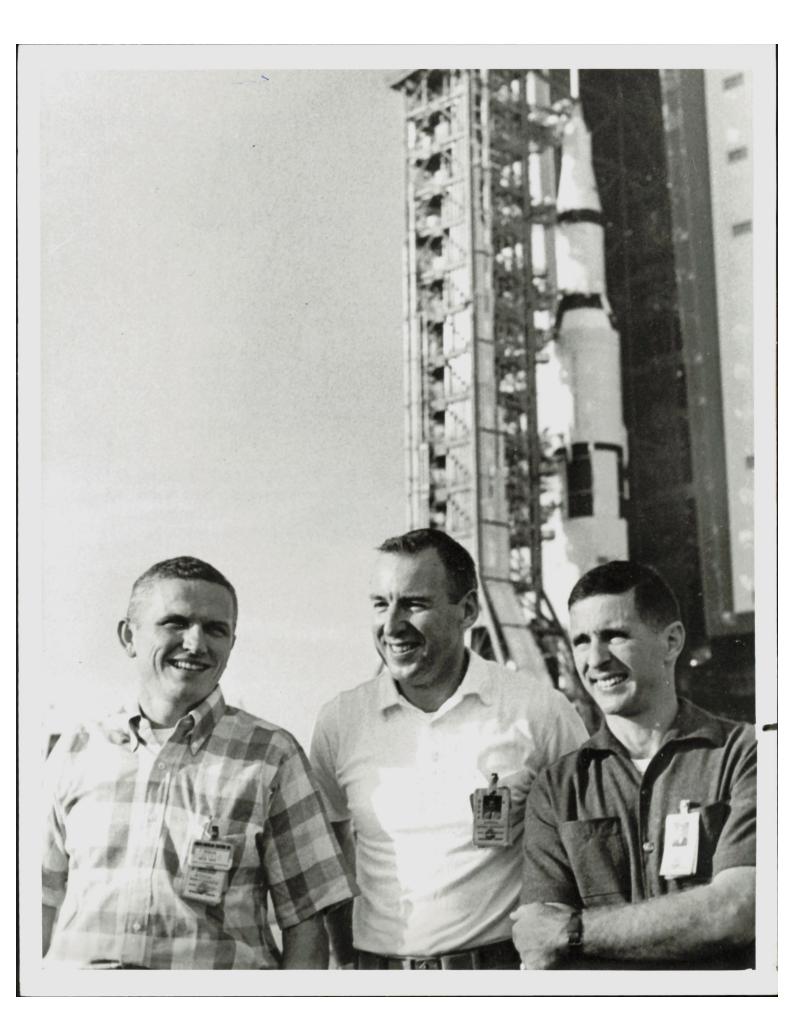
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16 JULY 1100

\$50-30050

CAPE KLHNEDY, FLORIDA

APOLLO 11 LAUNCH-A 70mm ALOTS camera mounted in a jod on a cargo door of a U.S. Air Force EC-135H aircrat photographed this event in the early moments of the Apollo 11 launch. The mated Apollo spacecraft and Saturn V second (S-II) and third (S-IVE) stages will away from the expended first (S-10) stage, becaration occurred at an altitude of about 28 miles, some 55 miles downrange from Lape Kennedy. ALOTS stands for Airborne Lightweight Optical Tracking System. The aircraft's pod is 20 feet long and 5 feet in diameter. The crew of the Apollo 11 lunar landing mission were Astronauts Heil A. ARmstrong, Hiebael Colling, and Liwin E. Aldrin Jr.



James A. Lovell Jo.

NATIONAL AEROHAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D. C. 20546



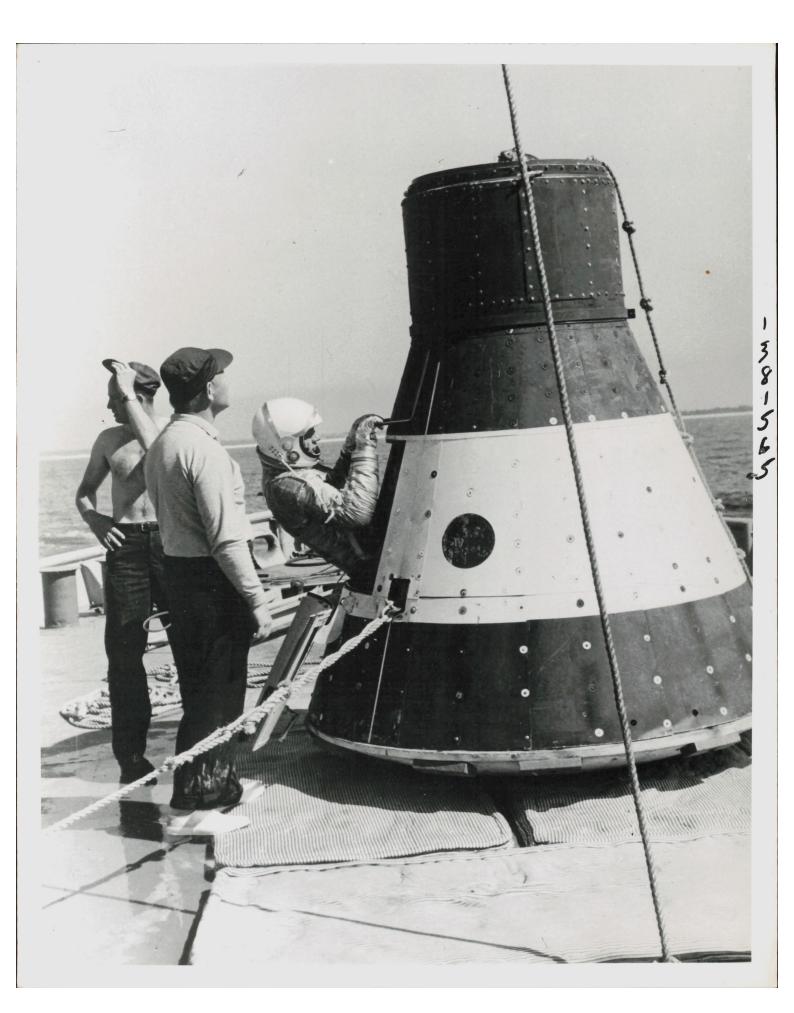
FOR RELEASE: November 29, 1965

PHOTO NO. 68-H-911

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APOLLO 8 CREW: Standing in front of the 363-foot-high Saturn V which is scheduled to launch them on their flight to orbit the moon on Dec. 21 are: left to right, Command Pilot Frank Borman, Command Module Pilot James A. Lovell Jr., and Lunar Module Pilot William A. Anders.





## NASA PHOTO

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
1520 H STREET, NORTHWEST WASHINGTON 25, D. C.
TELEPHONES: DU 2-7544 DU 2-6325 EX 3-3260

FOR RELEASE ON REQUEST PHOTO NO. -II 422 1/2 M-60-21

Pensacola, Florida--(NASA)--Astronaut climbs into egress capsule as a National Aeronautics and Space Administration technician and U. S. Navy crewman stand by aboard the Navy "Road Runner" recovery barge off Pensacola in the Gulf of Mexico. In the background is Santa Rosa Island. The egress training took place in late March and early April.



Don L. Lind

MANNED SPACECRAFT CENTER

HOUSTON, TEXAS

OFFICIAL PHOTOGRAPH

LIBRARY

COLOR

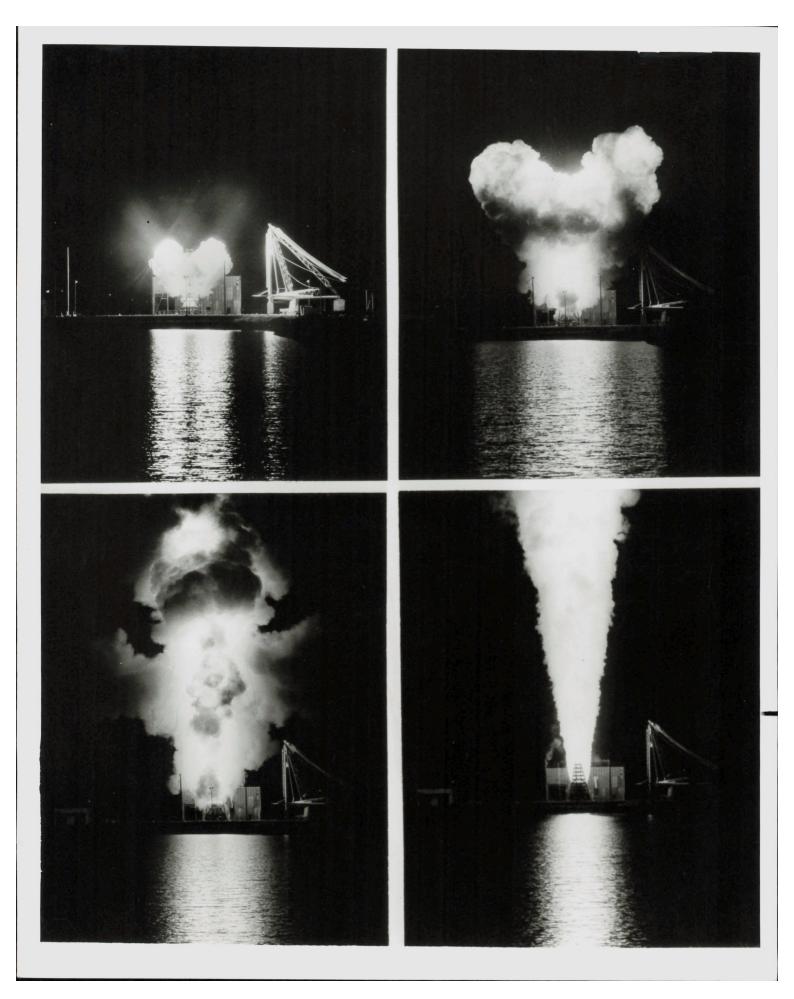
11 JUNE 1968

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

ALSEP DEPLOYMENT——Astronaut Don L. Lind deploys components of the Apollo Lunar Surface Experiments Packago at the MSC Lunar Topographical Simulation Area. The simulation training was conducted at night. The sun was simulated by a huge search-light suspended from a crane. The ALSEP will be emplaced on the moon by Apollo astronauts to provide advanced scientific study of the lunar environment, particularly in the fields of geology, geophysics, geochemistry, particles and fields. Bendix is the contractor to MSC for the ALSEP.

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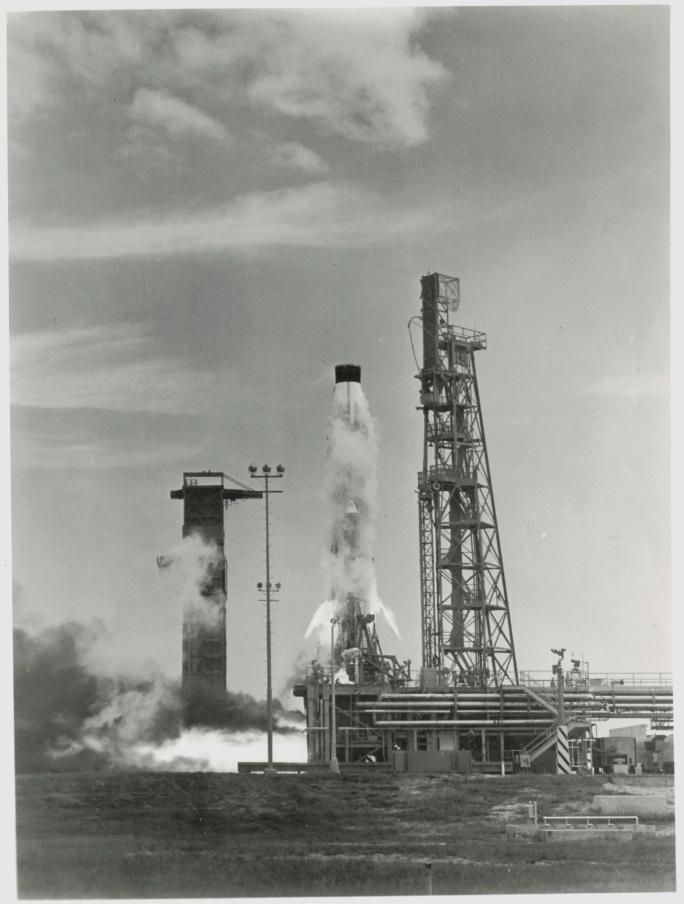
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FOR RELEASE. March 29, 1966

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FIASHING NIGHT SCHARS - These photos were recorded as the National Acronautics and Space Administration's largest solid propellant rocket motor was fired at Homestead, Fla., south of Niami. The motor, built for MASA by Assojet-General Corp., produced about 3.6 million pounds of thrust during its two-minute run on Feb. 23.



5 Chorry 5-62-2897

Static test firing of MA-8 Atlas 113-D during preflight verification of launch vehicle systems.

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TWO WAY TRIP TO THE MOON - will be taken by this suit, so far the only object designed to land on the lunar surface and then return to earth. It is the National Aeronautics and Space Administration's Project Apillo spacesuit.

Charact of muish

WAM WOOM &







File: astronauts

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COLDE.

27 HOVELBER 1985

61-P-41-034

JOINSON SPACE CRITTER, POUSTON, TEXAS

STE 61-D OFDOARD PHOTO --- Astronaut Sherwood C. Spring, standing on the end of the remote manipulator system (RMS) arm, checks joints on the manipulator system (RMS) arm, checks joints on the assembly concept for construction of creatable assembly concept for construction of creatable space structures (ACCESS) tower extending from space structures (ACCESS) tower extending from Atlantis's cargo bay. Scattered clouds and Guif Atlantis's cargo bay. Scattered clouds and Guif of Mexico maters form the backdrop for the scene, of Mexico maters form the backdrop for the scene, photographed with a 76mm handheld Masselblad camera.

pg.1-2





Houston, Texas 77058

## National Aeronautics and Space Administration

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OLOR

16 JULY 1969

569-39963

CAPE KENNEDY, FLORIDA

#### NASA-

APOLLO 11 LIFTOFF --- A fish-eye lens view of the launch of the huge, 363-foot tall Apollo 11 (Spacecraft 107/ Lunar Module 5/ Saturn 506) space vehicle from Pad A. Launch Complex 39, Kennedy Space Center, at 9:32 a.m. (EDT), July 16, 1969. Aboard the Apollo 11 spacecraft were Astronauts Neil A. Armstrong, commander; Nichael Collins, command module pilot; and Edwin E. Aldrin Jr., lunar module pilot. Apollo 11 is the United States' first lunar landing mission. This photograph of the liftoff was taken by a camera mounted on the mobile launch tower.

pg.1-2





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C., 20546

FOR RELEASE: October 23, 1974
PHOTO NO. 74-11-913

DEC 2 1974

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UMBRELLA ANTENNA: Charles W. Mathews, NASA Associate Administrator for Applications, holds a simple portable antenna that can beam a matage over a 50,000-mile range through NASA's Applications Technology Satellite-3 (ATS-3). The ground equipment consists of a simple antenna built on the stripped-down frame of a golfer's unbrells and a hand-held walkie-talkie. The device was demonstrated recently on Washington, D.C.

STATES-ITEM ANTENNA 2 col wild Saturday States





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NOUSTON, TEXAS

Lyndon B. Johnson Space Center Houston, Texas 77058

National Aeronautics and Space Administration

S81-28961



Houston, Texas 77098

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COLOR

6 MARCH 1981

S-81-28961

KENNEDY SPACE CENTER, FLORIDA

ATLAS CENTAUR WITH CONSTAN D-b PAYLOAD --- Comstar D-b communications satellite, etop its Atlas Centaur launch wehicle, lifts off from Launch Complex 36 at Kennedy Space Center (KSC), bound for its geosynchronous orbital position. It is the fourth in a series of domestic communications satellites owned by ComSat General Corp. in Washington, D.C.

PROVO CREDIT: NASA or Metional Agreemetics and Space Administration

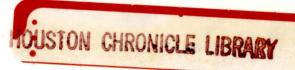




## File: Southern Lights

### SAT MAY 1 8 1991

NASA astronauts captured this view of the Aurora Australis, or southern lights, from the shuttle Discovery during their eight-day the exhaust glow of its maneuvering engines. A curtain of light, the aurora on the right extends about 75 miles into the atmosphere.





**NASA** S-69-52987

# Charles Conrad gr.



## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

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S-69-52987

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COLOR

20 SEPT 1969

5-69-52987

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

AFOILO 12 TRAINING-----Astronaut Charles Conrad Jr., prime crew commander of the Apollo 12 lunar landing mission, relaxes aboard the NASA Motor Vessel Retriever prior to participating in water egress training in the Gulf of Mexico.







Space Shu











### National Aeronautics and Space Administration

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#### COLOR

3 OCTOBER 1985

51-J (S)-002

KERNEDY SPACE CERTER, FLORIDA

STS 51-J LAUNCH---This photograph, taken from the support structure at Launch Pad 30a, capture: the first moments of the inital blastoff of the Space Shuttle Atlantis. Five crewmembers inside Atlantis's cabin were headed for several day; stay in Earth orbit. They are Astronauts Karol J. Bobko, Ronald J. Crabe, Robert L. Stewart and David C. Hilmers; and USAF Najor Lilliam A. Pailes.

pg.15

Rockwell International will build a replacement for the destroyed shuttle Challenger. The craft will most closely resemble Atlantis, shown during a 1985 launch.

SATURDAY ALG.

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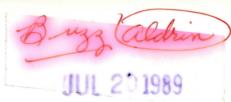
THU AUG 1 5 1991
An artist's conception of Galileo in a close encounter with Jupiter.

- Space Prube

FRI DEC 1 4 1990

Galileo, seen in an artist's conception at right, snapped this shot of the moon Dec. 8. The 550-mile-wide meteorite impact crater Mare Orientale is visible at center.







# NATIONAL AERONALTICS AND SPACE ADMINISTRATION NOWSTON, TEXAS 77058

FOR FFLEASE PHOTO NO.

5-69-32743

GOLOR (PORTRAIT.

JULY 1969

5-69-33.743

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, SW., WASHINGTON, D. C. 20546

FOR RELEASE: May 21, 1965 pm PHOTO NO.: 65-H-795

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cape Kennedy, Fla., -- Astronaut James A. McDivitt goes through a wet mock simulated test as part of the checkout procedure for the Gemini 4 mission at Cape Kennedy. The National Arronautics and Space Administration will launch the United States' longest duration manned space flight to date from Cape Kennedy, Fla., The two-man Gemini 4 mission is scheduled to circle the Earth 62 times in four days to evaluate the effects of extended space flight on crew performance and physical condition. Astronaut James A. McDivitt is command pilot and Astronaut Edward H. White II is pilot for the flight. Astronauts Frank Borman and James A. Lovell, Jr. the back-up crew, will replace the primary crew should either member of that team become ineligible for the flight.

CHRONICLE FILES 1965



Die Robert R. Gil received The President's Award For Distinguation rederal Civilian Service from President John F. Kennedy in Washington, D.C. at the Capital.

### OFFICIAL NASA PHOTOGRAPH

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COLOR

OCTOBER 1906

\$85-27221

JOHNSON SPACE CENTER, HOUSTON, TEXAS

ART CONCEPT OF NEW VISITOR COMPLEX --- Food services at the planned JSC Visitor Center would be designed to accompodate both quick meals and Teisurely dining. One concept for the cafeteria area is seen in this artist's rendering, where the motif suggests a Victorian, Jules Verne concept of space flight and high technology.

pg.7

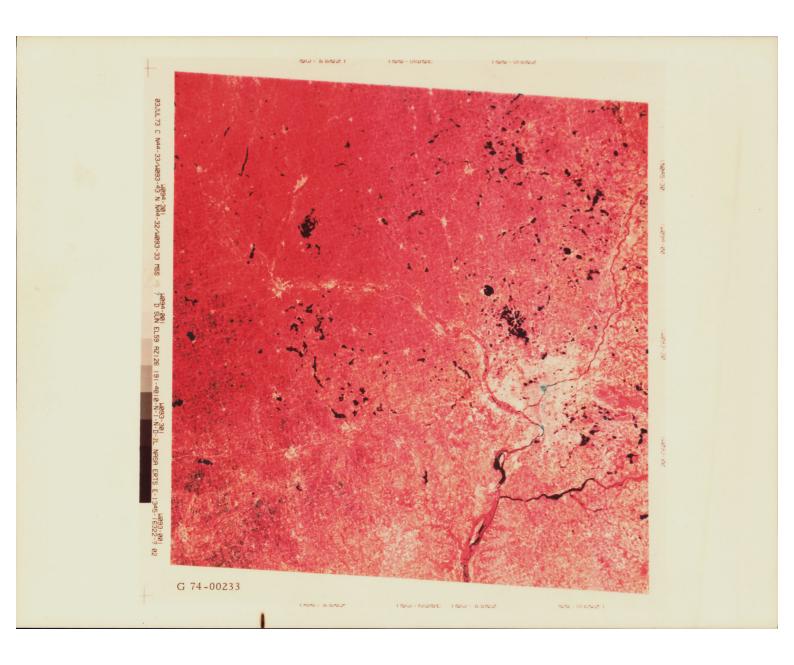


Houston (Shronick in bearing

Lyndun

3 Johnson

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# GODDARD SPACE FLIGHT CENTER OFFICE OF PUBLIC AFFAIRS GREENBELT, MARYLAND 20771

FOR RELEASE: July 5, 1974
PHOTO NO.: G-74-00233

ERTS-1 PHOTOGRAPHS SOUTHEASTERN MINNESOTA

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This color composite image of southeastern Minnesota was taken from an altitude of 925 kilometers (575 statute miles) on July 3, 1973, by NASA's Earth Resources Technology Satellite (ERTS-1). Three colors, green, red, and infrared, seen and recorded separately by the satellite, were photographically combined at NASA's Goddard Space Flight Center, Greenbelt, was a state of produce this "false color" composite image. Healthy, dense areas of cultivation appear pink. Cities and towns appear light gray, and water and wetland appear light blue.

While a portion of Wisconsin appears east of the St. Croix River (A), southeastern Minnesota covers the remainder of the image. The regionally St. Paul (C), separated by the Mississippi River, dominate the top half the image. The many other towns and cities, such as Austin (D), mankato (E), and Hutchinson (F), appear as much smaller pink-to-white spots. Highways like I-35 (G) and I-95 (H), contrast with the background pattern of fields and lakes.

The many lakes in this image are representative of a pattern across much of the state. They are reminders of past glaciation which scoured this land. Today they provide year-round recreation for the people of the state.

The Minnesota River (I), flowing southeast to Mankato and then northeast to Minneapolis, cuts through an area of rich farmland. Fields of corn, soybean, and oats are used to support hog, beef, and dairy farms, and are sold as cash crops.

With ERTS-1 image coverage every 18 days, it is possible to Observe significant changes as they occur. Federal agencies, as well as NASA-sponsored private investigators, are using these images to help understand and manage our resources and environment in the fields of agriculture, forestry, land use, hydrology, pollution, oceanography, and meteorology.

Space Photography



Headquarters Washington, D.C.



National Aeronauties and Space Administration

# NICHOLS, NICHELLE ACTRESS The Huntsville Cimes LIBRARY

FOR RELEASE:

Filed: March 24, 1977

77-H-150

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Nichelle Nichols Briefed In Manned Flight at JSC

Nouston, Texas -- Ms. Nichelle Nichols, one of the stars (Lt. Uhura) of the television series "Star Trek", relaxes during a briefing session at NASA's Johnson Space Center. Ms. Nichels was briefed by NASA astronaut Alan Bean prior to a nationwide tour she will take on behalf of NASA to acquaint potential minority applicants with opportunities symilable to them in the Space Shuttle Recruitment Program.

PHOTO CREDIT-NASA or National Aeronautics and Space Administration





MATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, SW. WASHINGTON 25, D.C.

FOR RELEASE: IMMEDIATE PHOTO NO.: 63-F-1-2

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This fireball and smoke pall that looks like an oil well fire is the result of a ten-second test of a space rocket engine. The nighty explosion was touched off when an F-1 engine was ground-tested at NASA's Marshall Space Flight Center, Huntsville, Ala. A cluster of five F-1's all power Saturn V, the rocket booster to be used for Moon exploration launches. Each F-1 generates 1.5 million pounds of thrust. For three years, the Marshall Center has static-tested Saturn I engines, the H-1, eight of which are required for 1.5 million pound thrust. But this is the first time it has captive-fired F-1, a single engine packing that much power.





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11 DECEMBER 1070

AS17-107-20505

CONTROL SPACE CENTER, MOUSTON, TEXAS

### NASA -

Apollo 17 LVA PROTO---Astronaut Eugene A. Sernau Lotes a short checkeut of the Lurar Review Vericle during the early part of the first Apollo 17 extravelibrate activity (EVA-11 at the Taurus-Lithron landing site. This view of the "stripped four" haven is prior to leadur. Equipment later loaded onto the LIV included the ground-controlled television assembly, the lurar communications relay unit, in-pain antenna, lemenain antenna, aft this photograph was taken by Scientific goar. Partison I. Schmitt, lunar module nilet. Corner list the Apolle 17 champeder. The mountain in the right lead thems is the rest end of Scoth Possif.



Houston, Texas 77053

### National Aeronautics and Space Administration

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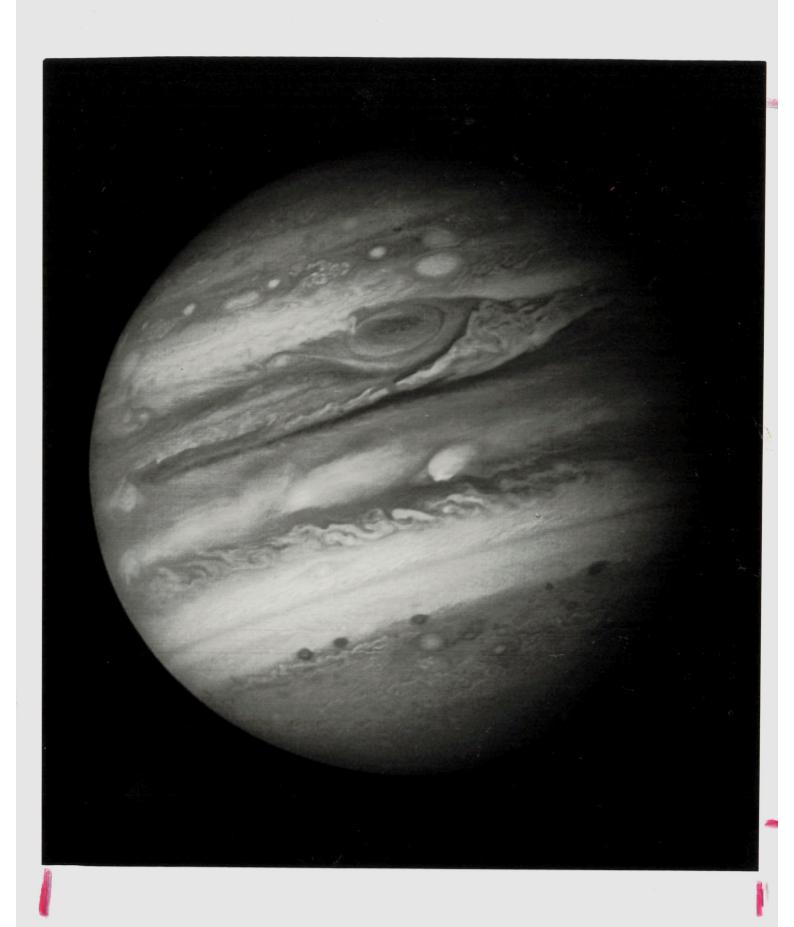
FUBRUARY 1984

5-84-27032

JOHNSON SPACE CHETER, HOUSTON, TEXAS

Al-B ORBOARD ACENE OF RVA---The helmet visor of Astronaut Bruce Accardless II. 41-B mission specialist, reflects the cutside of the forward bulkhead (cabin axea) of the Earth-orbiting Space Shuttle Challenger. Because of the nitrogen-propolice manned maneuvering unit (MMU) the astronaut is wearing, he was able to become independent of the acther ship, marking the first time in history that a crevmember had such freedem. The spacewalker is occupied with two cameras--a 35mm attached to his NMU and a TV camera on his helmet.

PG . 8-3



# Jupiter (Planet)

OFFICE OF PUBLIC INFORMATION

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CALIFORNIA INSTITUTE OF TECHNOLOGY
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
PASADENA, CALIFORNIA. TELEPHONE (213) 354-5011

PHOTO CAPTION

Voyager 1-18 P-20993 2/15/79

Voyager 1 took this photo of Jupiter Feb. 1, 1979, at a range of 20 million miles (32.7 million kilometers). Voyager scientists can now see that different colors in clouds around the Great Red Spot imply that the clouds swirl around the spot at varying altitudes. They also observe apparently regular spacing between the small white spots in the southern hemisphere and similar positioning of dark spots in the northern hemisphere. A major activity will be to understand the form and structure of the spots and how they may relate to interactions between the atmospheric composition and its motions. When scientists compare this image with the 6,000 others already taken, they see many changes both large and small. The bright cloud in the equatorial region north of the Great Red Spot, for example, appears to be where bright clouds originate, then stream westward. On the other hand, the bright ovals south of the Great Red Spot were seen to form about 40 years ago, and have remained much the same ever since. The Great Red Spot itself has been observed for hardreds of years though never in the detail seen here. Objects as smales 375 miles (600 kilometers) across can be seen in this image. That resolution is the best achieved of Jupiter. This black-andwhite photo was taken through a blue filter. The Voyager Project is managed

BAT FEB 0 8 1992

Chronicle files

The Ulysses probe makes its closest approach to Jupiter today.

Library





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### File: Astronauts NSN

National Aeronautics and **Space Administration** 

Houston, Texas 77058

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11 MAY 1992

S49-214-028

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-49 ONBOARD SCENE --- With his feet anchored in a portable foot restraint on the remote manipulator system (RMS) end effector, astronaut Pierre J. Thuot is pictured during one of four STS-49 sessions of extravehicular activity (EVA). The mission specialist awaits with a special grapple bar as the Shuttle Endeavour heads for a rendezvous with the Intelsat VI communications satellite (out of frame). After this second attempt failed to garner the 4.5 ton satellite, three crewmembers teamed to successfully grab it and prepare it for release into space. A 35mm camera was used to expose the image.



PHOTO CREDIT: NASA or National Aeronautics and Space Administration



534-594-038

Satellite, U.S.





Houston, Texas 77058

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DETOBER 1991

503-46607

JOHNSON SPACE CENTER, HOUSTON, JEANS

SPACE STATION ART --- MASA's latest artist's concept of Space Station Freedom, entitled, "The dission", shows the station in its completed permanently manned configuration. With Earth as a backdrep, the painting also looks toward the mehn and lars. Following the establishment of Freedom in orbit, the next steps in MASA's Space Exploration Initiative are a permanent lunar base and a human mission to mars. The art work was done by Alan Chincher.

Pr. 15-5

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Photo No.

5-74-32048

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COLOR

1 JULY 1974

8-74-32048

KENNEDY SPACE CENTER, ELORIDA

ATLANTIC LIGHTNING STORM -- This time exposure was made with a handhold TOwn camera from the groundmat the Kennedy Space Center on July 1, 1974. A number of streaks of lightning and storm clouds over the Atlantic Ocean are visible.

PHOTO CREDIT: NASA or Medional Association and Space Administration





# Space Shuttle XXIII

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AS12-49-7278

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B & W

19-20 NOV 1969

AS12-49-7278

MANNED SPACECRAFT CENTER, HOUSTON, TX

APOLLO 12 EVA --- Astronaut Alan L. Bean, lunar module pilot, is pictured with a container of lunar soil collected during the Apollo 12 extravehicular activity. Astronaut Richard F. Gordon Jr., command module pilot, remained with the Apollo 12 Command and Service Modules in lunar orbit while Astronauts Charles Conrad Jr., commander, and Bean descended in the Lunar Module to explore the Moon.



#500 H-9H "8-01 OF 3P1 AND HOURS

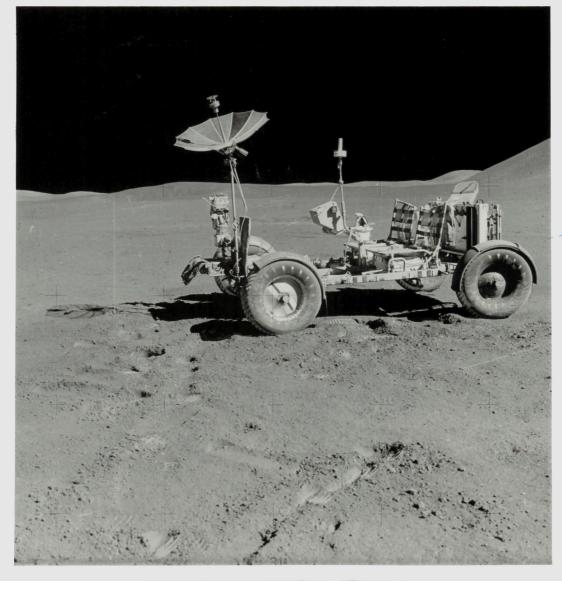


#### 15 117-133-20247

Lyndon B. Johnson Space Center Houston, Texas 77058







Houston, Texas 77508



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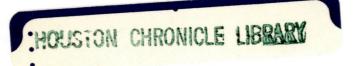
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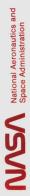
2 AUGUST 1971

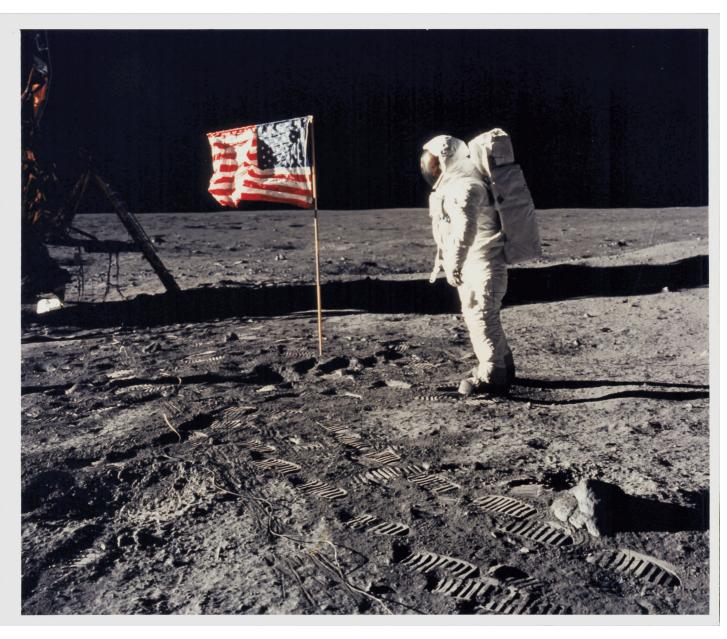
as15-88-11901

MANNER SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 15 VA PHOTO---The Lunar Roving Vehicle is photographed alone against the desolate lunar background during the third Apollo 15 lunar surface extravehicular activity (EVA-3) at the Hadley-Apennime landing site. This view is looking north. The west edge of Mount Hadley is at the upper right edge of the picture. Mount Hadley rises approximagely 4,500 meters (about 14,765 feet) above the plain. The most distant lunar feature visible is approximately 25 kilometers (about 15.5 statute miles) away. While Astronauts David R. Scott and James B. Irwin descended in the Lunar Module to explore the Moon, Astronaut Alfred M. Worden remained with the Apollo Command Service Module in Yunar orbit.









## National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

20 JULY 1969

AS11-40-5875

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 11 EVA -- Astronaut Edwin E. Aldrin Jr. lunar module pilot of the first lunar landing mission, poses for a photograph beside the deployed United States flag during Apollo 11 extravehicular activity on the lunar surface. The Lunar Module "Eagle" is on the left. The footprints of the astronauts are clearly visible in the soil of the moon. Astronaut Neil A. Armstrong, commander, took this picture with a 70mm Hasselblad lunar surface camera.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration

NASA \_AS9-20-3094

Project spollo 9





## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

FOR RELEASE: PHOTO NO.

March 15, 1969 AS9-20-3094

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COLOR

6 MARCH 1969

AS9-20-3094

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 9 EVA----Astronaut Russell L. Schweickart, lunar module pilot, stands in "golden slippers" on the Lunar Module 3 porch during his extravehicular activity on the fourth day of the Apollo 9 earth-orbital mission. This photograph was taken from inside the Lunar Module "Spider." The Command/Service Module and Lunar Module were docked. Schweickart is wearing an Extravehicular Mobility Unit (EMU). Inside the "Spider" was Astronaut James A. McDivitt, Apollo 9 commander. Astronaut David R. Scott, command module pilot, remained at the controls in the Command Module "Gumdrop."



\$14-44109

Lyndon B. Johnson Space Center Houston, Texas 77058



# ia Shuttle XVI

# National Aeronautics and Space Administration

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COLOR

30 AUGUST 1934.

\$14-44-109

JOHNSON SPACE LEMBER, HOUSTON, TEXAS

41-D ONSOARD Scene-one of the best scenes of a gibbous moon over Earth's horizon was recorded by the 41-D cremmembers during their flight aboard the Space Shuttle Discovery in late August and early September 1984.

THESDAY FEB 19 185





#### National Aeronautics and Space Administration

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COLOR

12 DECEMBER 1972

AS17-137-21011

MAMBLED SPACEGRAFT CERTER, HOUSTON, TEXAS

APOLLO 17 EVA PHOTO --- An excellent view of the desolate lunar scape at Station 4 showing Scientist-Astronaut Harrison II. Schmitt working at the Lunar Roving Vehicle during the second Apollo 17 extravehicular activity (EVA-2) at the Taurus-Littrow landing site. This is the area where Schmitt first spotted the orange soil. Orange soil is clearly visible on either side of the Rover in this picture. Shorty Crater is to the right. The peak in the center background is Family Hountain. A portion of South Hassif is on the horizon at the left edge. This photograph was taken by Astronaut Eugene A. Cernan, Apollo 17 commander. Schmitt is the lunar module pilot.

HOUSTON, TEXAS

PO.40

O CARDIT: MASS, or Wellighal Assonautics and Spage Administration



Apollo // Washington D.C. 20545

Actional Acronautics and Space Acministration

> FOR RELEASE: PHOTO NO.

July 31, 1969

69-H-1378 69-HC-905 AS11-44-6549

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APOLLO II -- BARTH VIEW --- This view of the rising Parth greeted the Apollo II astronauts as they came from behind the Moon after the lunar orbit insertion burn. Earth is just above the lunar horizon in this photograph. The unmanned surface features in the foreground are near the eastern limb of the Moon as viewed from Earth. Earth is 240,000 statute miles away.

Chronicle file farth, as seen from the moon.

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## File: Apollo 11

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HERE MEN FROM THE PLANET EARTH FIRST SET FOOT UPON THE MOON JULY 1969, A. D.

WE CAME IN PEACE FOR ALL MANKIND

NEIL A. ARMSTRONG

**ASTRONAUT** 

Toiled Collins

MICHAEL COLLINS **ASTRONAUT** 

EDWIN E. ALDRIN, JR.

Edvin E. alding

**ASTRONAUT** 

RICHARD NIXON

PRESIDENT, UNITED STATES OF AMERICA



PHOTO NO. 69-H-1016

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aPOLLO 11 PLAQUE: This plaque with its simple four-line inscription was left on the Moon by the Apollo 11 crew on the first manned lunar landing mission five years ago in July 1969. The plaque was fastened on the hadder of the lunar module descent stage which remained on the hoon.

NASA AS17-140-21496

Project App Apollo 17
CHRONICLE FILES

THE DEC 26 1972

MAN ON THE MOON FRI DEC 22 1972

Astronaut Harrison H. Schmitt roams the surface of the Moon in this photo of the Apollo 17 mission released today, Schmitt, a geologist, was the first

civilian scientist to take part in the lunar explorations. The photo was taken by Navy Capt. Eugene A. Cernan, in the valley of Taurus Littrow.

E97.5





## National Aeronautics and Space Administration

Houston, Texas 77058

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**COLOR** 

5 MAY 1961

S88-31379

DOWNRANGE RECOVERY AREA, ATLANTIC OCEAN

MR-3 RECOVERY VIEW --- Astronaut Alan B. Shepard, Jr. strides across the deck of the U. S. Navy Carrier Champlain following an inspection of his Freedom 7 capsule. Shepard had just completed the first manned U. S. space mission, a 15-minute suborbital flight.

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#### WASA-

APOLLO 11 IF INTERIOR----This interior view of the Apollo 11 Lunar Module Shows Astronaut Edwin El Aldrin Jr., lunar module pilot. during the translanding mission. This picture was taken by Astronaut Leil A. Armstrong, commander.







#### National Aeronautics and Space Administration

to spyright is asserted for this photograph. If a recognizable person appears in the photo, use for commercial part case may a dring a night of privacy or publicity, it may not be used to state or imply the automorphism of the photograph of the automorphism of the photograph is any other manner than in the manner of promisional. Accordingly, it is requested that it till photograph is able tilling and other commercial promotion, layout and copy be submitted to NASA prior to purpose.

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7 FEBRUARY 1984

s-84-27017

JUMNSON SPACE CENTER, HOUSTON, TEXAS

41-B ONBOARD SCENE. -- Astronaut bruce McCandless II, one of two
41-B mission specialists participating in a historical extravehicular activity (EVA), is a few meters away from the cabin of
the Earth-orbiting Space Shuttle Challenger in this 70mm frame.
This spacewalk represented the first use of a mitrogen-propelled,
hand-controlled device called the manned maneuvering unit (MMU),
which allows for much greater mobility than that afforded
over lows spacewalkers who had to use restrictive tethers. Robert
L. Stewart later tried out the Will McCandless is using here and
the two of them tested another similar unit two days later.
inside the spacecraft were Astronauts Vance D. Brand, commander;
Robert L. Gibson, pilot: and Ronald E, McNair, mission
excision.





# MANNED SPACECRAFT CENTER OFFICIAL PHOTOGRAPH

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13 NOV 66

S-66-63504

GEMINI XII FARTH\_SKY VIEW -- Texas Gulf Coast area as seen from the Gemini XII spacecraft during its 29th revolution of the earth. A 100 ft. tether line connects the Agena Target Docking Vehicle with the Gemini XII spacecraft. Houston and Galveston bay area is in center of picture. At bottom left below the Agena is the Red River Valley area of Arkansas and Louisians.

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23 AUG 65

S-65-51941

BALVESTON BAY, TEXAS

GEMINI VI PARASAIL TRAINING - Astronaut Thomas P Stafford, Gemini VI prime crew pilot, pauses during suiting up operations in preparation for parasail training.



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#### SPACE TRAVEL -U.S. (GEMINI 6-1965 \* RENDEZVOUS)



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C. 20546

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FIRST SPACE RENDEZVOUS: On December 15, 1965, Gemini 6 maneuvered to within a few feet of Gemini 7 for the world's first rendezvous in space. This photograph showing Gemini 7 was taken through the hatch window of Gemini 6 during the rendezvous and station keeping which lasted about five and a half hours at an altitude of 160 miles.

OGT 15 1973





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 400 MARYLAND AVENUE, S. W.,

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FOR RELEASE: December 31, 1966 66-H-1277

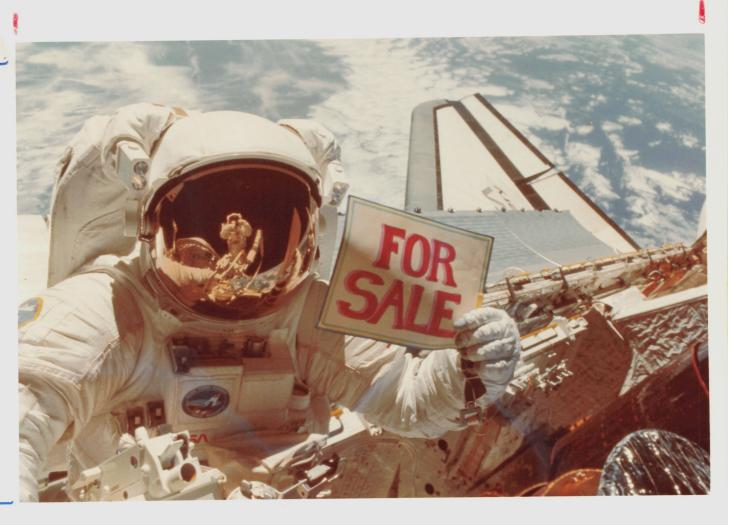
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FIRST APOLLO PRIME CREW. -- In training for the Apollo/ Saturn 204 mission, scheduled for early 1967, is America's first three-astronaut space flight crew. Left to right are Virgil I. Grissom, an Air Force lieutenant colonel, command pilot; Roger B. Chaffee, a Navy lieutenant commander, pilot; and Edward H. White II, an Air Force lieutenant colonel, senior pilot. Veteran astronaut Grissom will be making his third space flight, White his second and Chaffee his first. All National Aeronautics and Space Administration manned missions are launched at Cape Ke ledy, Fla.

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NASA - SPACE SHOTTLE DISCOVERY STS 14





What am I bid? Astronaut Dale Gardner made a high-flying pitch for a used satellite during the recent flight of the space shuttle Discovery. Reflected in Gard-

NASA photo

ner's helmet visor is his colleague Joe Allen. More pictures released by NASA on Saturday and a report on the condition of the shuttle are found on page 1D.



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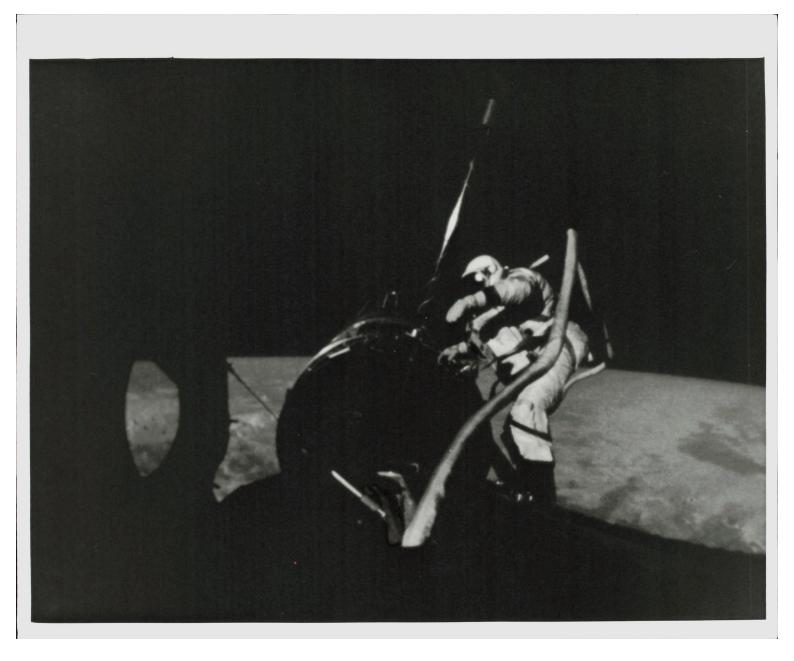
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Project

GEMINI XII EVA -- View of Astronaut Edwin Aldrin, pilot for the National Aeronautics and Space Administration's Gemini XII space flight, during initial extravehicular activity. At lower left is Mauer camera used to photograph some of the EVA activity. Astronaut James A. Lovell was command pilot for the final mission in the Gemini space program.

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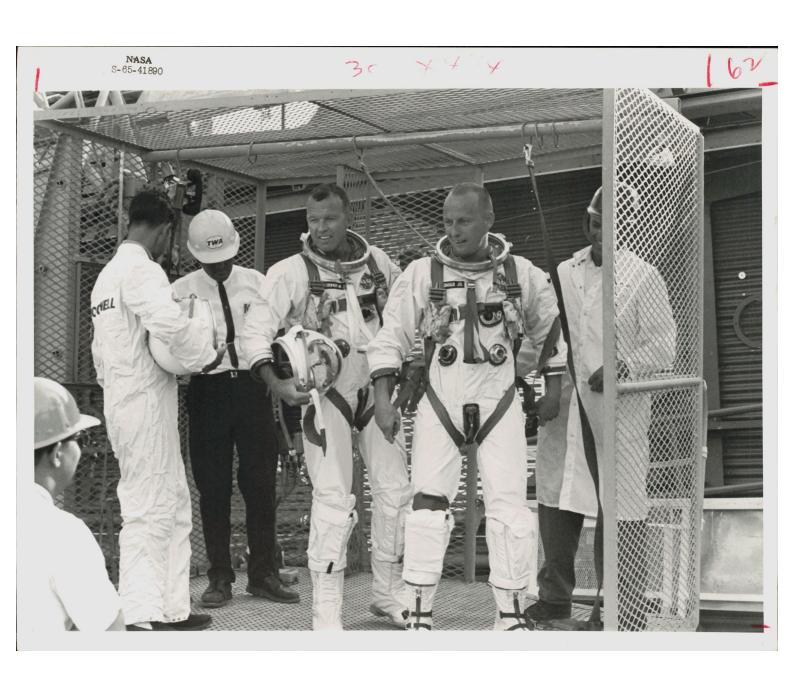
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Project

GEMINI XII EVA -- Astronaut Edwin Aldrin, pilot for the National Aeronautics and Space Administration's Gemini XII space flight, floats near the Agena Target Docking Vehicle during umbilical extravehicular activity. Command pilot for the space flight, the last in the Gemini program, was Astronaut James A. Lovell.

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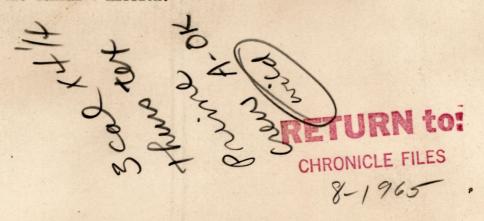
B & W

22 JULY 65

S-65-41890

CAPE KENNEDY, FLORIDA

GEMINI-V SIMULATION -- Prime crew for the Gemini-V space flight prepares to be hoisted to the white room atop gantry at Pad 19 during simulation exercise for the mission. They are accompanied by NASA and McDonnell technicians. Astronauts-L. Gordon Cooper Jr., (third from right) is command pilot; and Charles Conrad Jr. (second from right) is pilot for the Gemini-V mission.



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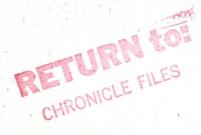
GEMINI XI PHOTOGRAPHY — View of the Agena Target Docking Vehicle tethered to the National Aeronautics and Space Administration's Gemini XI spacecraft. Sunlit clouds are in the background. The earth is not visible. This picture was taken during the 31st revolution of the mission. Crew members for the Gemini XI space flight were Astronauts Charles Conrad, command pilot, and Richard F. Gordon, pilot.

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Project.

ANGRY ALLIGATOR -- View of the Augmented Target Docking Adapter with fiber glass cover still attached as seen from the orbiting National Aeronautics and Space Administration's Gemini IX spacecraft. North is in lower left corner of picture. Island at left is Isla Los Roquez. Carib Sea is directly below the ATDA. Caracas, Venezuela is at right, below cloud cover.



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S-66-54519

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GEMINI XI PHOTOGRAPHY -- Side view of the Agena Target Docking Vehicle with tether line loose. Distance between the Agena and the National Aeronautics and Space Administration's Gemini XI spacecraft is approximately 80 feet. Crew members for the Gemini XI mission were Astronauts Charles Conrad, command pilot, and Richard F. Gordon, pilot.

SEP 28 1966

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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14 SEPT 66

S-66-54754

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GEMINI XI PHOTOGRAPHY -- View of the Agena Target Docking Vehicle tethered to the National Aeronautics and Space Administration's Gemini XI spacecraft during the 31st revolution of the mission. Crew members for the Gemini XI space flight were Astronauts Charles Conrad, command pilot, and Richard F. Gordon, pilot.

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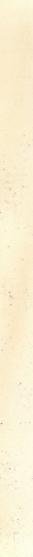
APOLLO 11 PRIME CREW: Aboard Apollo II, the first manned lunar landing mission to the Moon, five years and in July 1969 were: left to right, Meil A. Armstrong, Commander; Michael Collins, Command Module Pilot; and Ldwin E. Aldrin, Jr., Lunar Mod le Pilot.

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## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION NOUSTON, TEXAS 77058

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17 JULY 1969

S-69-39536

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 11 MCC-Overall view of the activity in the Mission Operations Control Room in the Mission Control Center, Building 30, on the second day of the Apollo 11 lumar landing mission. A picture of Astronaut Neil A. Armstrong was being transmitted from the color television camera aboard the Apollo 11 spacecraft as it traveled toward the moon. The spacecraft was about 130,000 nautical miles from earth when this picture was taken.

(80)



NAVIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

FOR RELEASE: PHOTO NO.

January 23, 1969 69-H-73

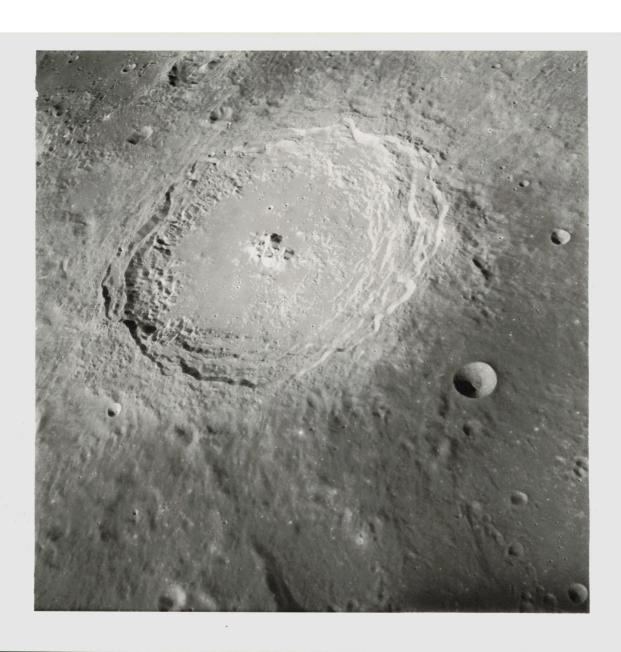
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KENNEDY SPACE CENTER, FLA., --- The prime crew of the third manned Apollo mission at Complex 39. Astronauts (L-R) McDivitt, Scott and Schwelkart have been assigned the Apollo 9 mission.

A76502-apollo 9-

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· NASA-apollo 8



## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77058

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COLOR

24 DEC 1968

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLIO 8 MOON VIEW — The crater Langrenus as photographed from an altitude of nearly 150 nautical miles as the Apollo 8 spacecraft orbited the moon on December 24, 1968. Langrenus is about 85 statute miles in diameter. Command Module Pilot James A. Lovell Jr. described the crater, its central peak, and the conspicuous terraces on the inner crater wall shortly after aquiring earth communications for the first time after lunar orbit insertion. At the time the photograph was made, Langrenus was about 100 nautical miles (190 kilometers) south of the spacecraft ground track. The camera was pointed southward. The sharp, small, circular crater nearby is Langrenus C. The lunar surface probably has less pronounced color indicated by these prints.





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Project apollo 9

NASA Phote

SPIDER IN FLIGHT

The lunar module was snapped in flight by Apollo 9 astronaut David Scott shortly after the lander separated from the mother ship. Astronauts Jim McDivitt and Russell Schweikart piloted the two-man craft, holding it steady and turning it around so Scott could take pictures of

it. Later, the lunar module was maneuvered about 109 miles away from the mother ship and a rendezvous exercise was conducted as the two craft orbited the Earth. The lunar ship was nicknamed "Spider"; the command ship was "Gumdrop." (Related Photo, section 1, page 3.)



# Moon - App spollo 8 ( Seen from space)



HATIONAL AERONAUTICS AND SPACE ADMINISTRATION HOUSTON, TEXAS 77050

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COLOR

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APOLLO 8 MOON VIEW---This is a near vertical photograph of the lunar surface taken with a telephoto lens during the Apollo 8 lunar orbit mission. The photographed area is approximately 20 miles on a side, and is located within a large, unmamed 100-statute-miles-in-diameter crater on the farside of the moon. This large crater is located at 10 degrees south latitude and 160 degrees east lengitude. The lunar surface probably has less pronounced color than indicated by this print.



## Missiles and Rockets- Saturn SIVB





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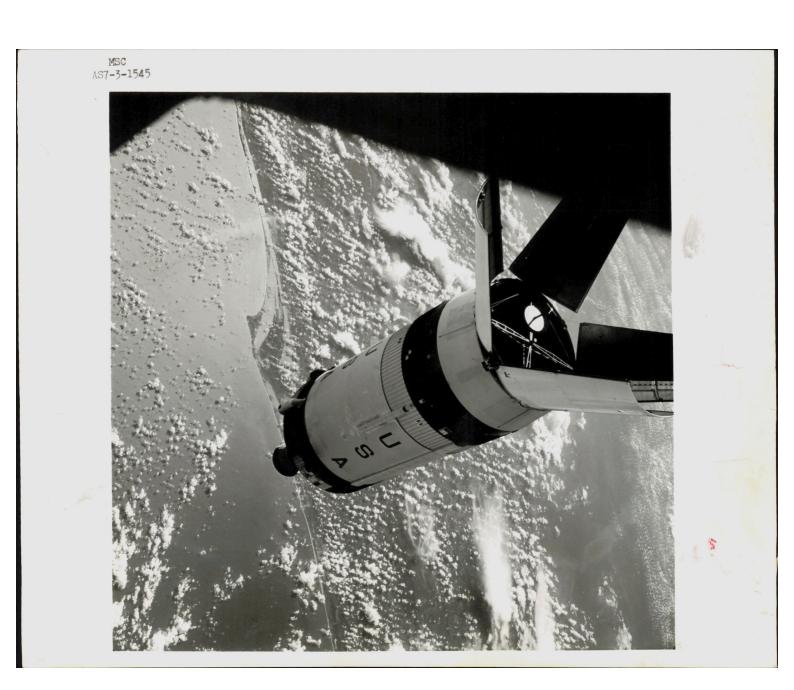
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21 DRC 1968

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MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 8 VIEW OF S-IVB---This is a photograph taken from the Apollo 8 spacecraft looking back at the Saturn V third (S-IVB) stage from which the spacecraft had just separated following translumar injection. Attached to the S-IVB is the Lunar Module Test Article (LTA) which simulated the mass of a Lunar Module on the Apollo 8 lunar orbit mission. The 29-ft. panels of the Spacecraft LM Adapter which enclosed the LTA during launch have already been jettisched and are out of view.



#### Missiles and Rockets - Saturn IVB

MANNED STACECRAFT CENTER

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HOUSTON, TEXAS

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11 OCT 68

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 7/S-IVB RENDEZVOUS -- The expended Saturn IVB stage

(beginning of third revolution). This view is over the Atl Ocean off the coast of Cape Kennedy, Florida. Florida coas miles, at ground elapsed time of three hours and 16 minute and docking maneuvers at an approximate altitude of 125 nau round, white disc inside the open panels of the S-IVB is a Apollo 7 spacecraft and the S-IVB is approximately 100 photographed from the Apollo 7 spacecraft during transposi simulated docking target similar to that used on the picture. Much of the Florida peninsula can also be seen. from Flagler Beach southward to Vero Beach is clearly visi for docking during lunar missions. the open panels is the Gulf of Mexico. Distance between

The expended Saturn IVB stage is shown as photographed from the Apollo 7 spacecraft during docking maneuvers 125 miles above Cape Kennedy, Fla., the launching site. The Atlantic Ocean appears in the lower part of picture. Florida

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scientific-engineering projects.

coastline from Flagler Beach to Vero Beach is clearly visible. Much of the Florida peninsula can be seen. Behind open panels is Gulf of Mexico. The S-IVB is about 100 feet from the spacecraft

787.

**NASA** S-68-56533





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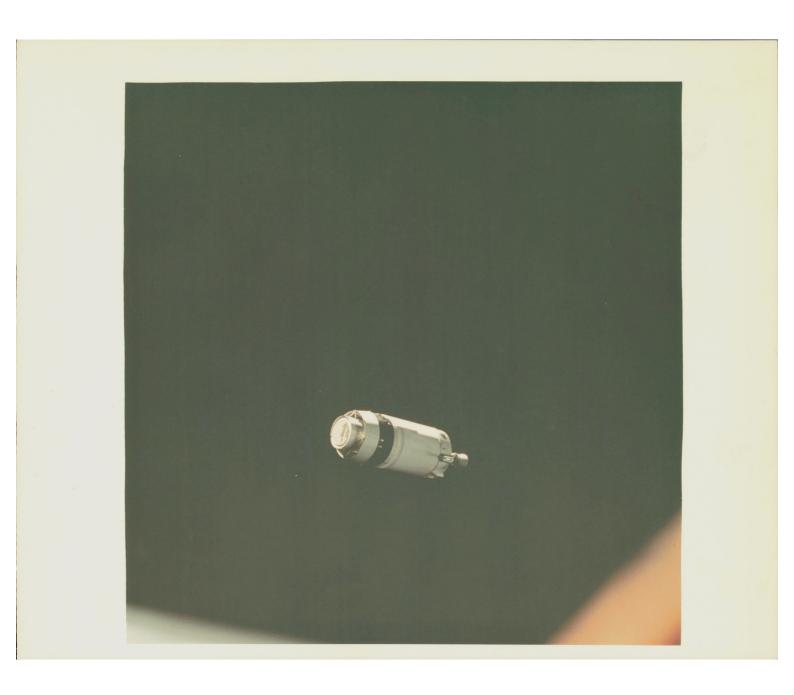
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MANIFO SPACECRAFT CENTER, HOUSTON, TEXAS

APCLIO 8 IVA----Astronaut James A. Lovell Jr., command module pilot, is shown during intravehicular activity on the Apollo 8 lunar orbit mission. This still print was made from movie film taken by an on-board loam motion picture camera.

James Lovell, shown in this 1968 NASA photo, pilots the Apollo 8 spacecraft during the lunar orbit mission.

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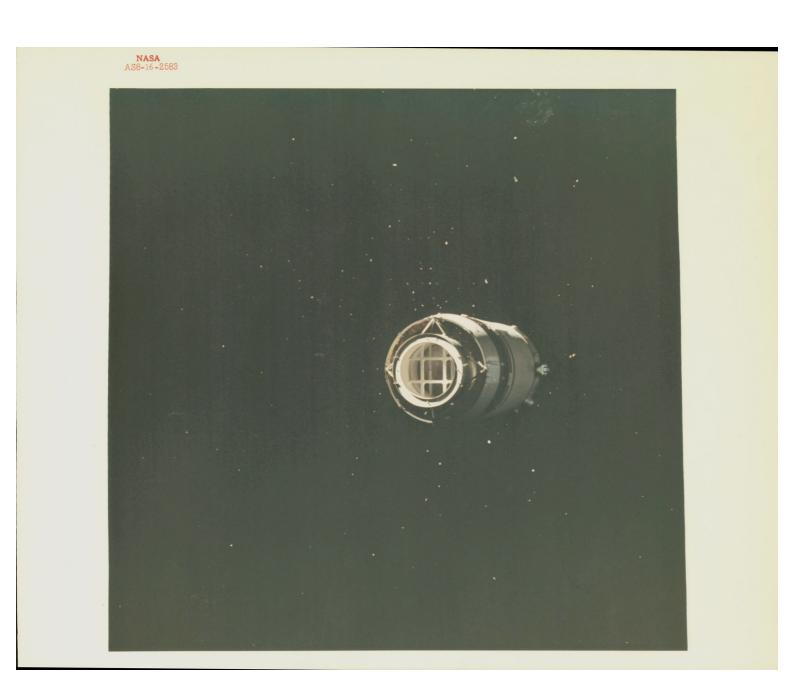
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MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 8 VIEW OF S-IVB---This is a photograph taken from the Apollo 8 spacecraft looking back at the Saturn V third (S-IVB) stage from which the spacecraft had just separated following translunar injection. Attached to the S-IVB is the Lunar Module Test Article (LTA) which simulated the mass of a Lunar Module on the Apollo 8 lunar orbit mission. The 29-ft. panels of the Spacecraft LM Adapter which enclosed the LTA during launch have already been jettisoned and are out of view.



Missiles and Satellities-Missiles and Rochets - Saturnes IVB CHROMAN FILES



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APOLLO 8 VIEW OF S-IVB---This is a photograph taken from the Apollo 8 spacecraft looking back at the Saturn V third (S-IVB) stage from which the spacecraft had just separated following translunar injection. Attached to the S-IVB is the Lunar Module Test Article (LTA) which simulated the mass of a Lunar Module on the Apollo 8 lunar orbit mission. The 29-ft. panels of the Spacecraft LM Adapter which enclosed the LTA during Launch have already been jettisoned and are out of view. Sunlight reflected from small particles shows the "firefly" phenomenon which was reported by Astronaut John H. Glenn Jr. during the first earth orbital flight (Mercury-Atlas 6) of the Mercury Program.





NATIONAL APRONAUTICS AND SPACE ADMINISTRATION
WASHINGTON D.C. 2004

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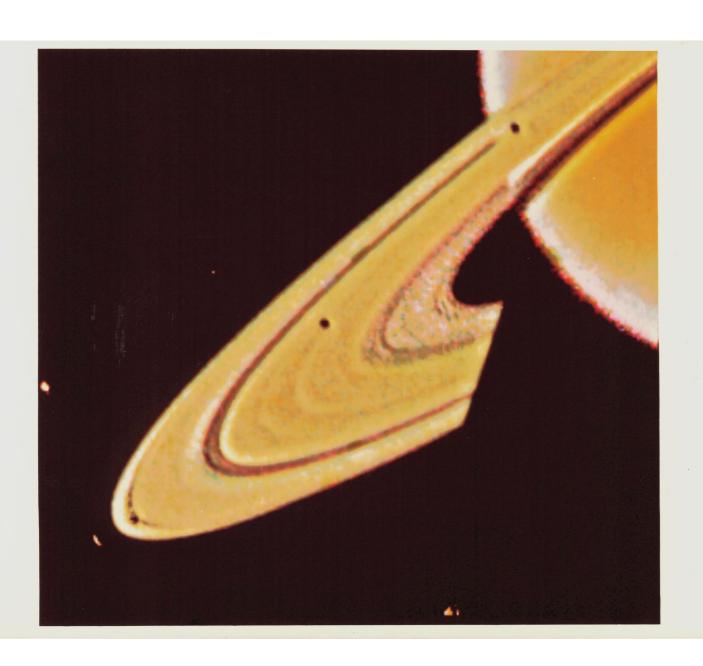
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RECORD SETTER: Tucked under the wing of a B-52 aircraft from which it is launched, this sleet X-15 research plane is poised for another of its many experimental missions. The rocket-propelled plane has made nearly 200 flights in the National Aeronautics and Space Administration-Air Force program. Records set by the plane include speed of 4,534 miles per hour and 67 miles peak altitude.

OCT 11 1968

NASA AS12-48-7160





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TOP

PHOTO CAPTION

Voyager S-1-7 P-22990C Oct. 28, 1980

This computer composite of four Voyager 1 photos contains a wealth of new information on the rings of Saturn, including subtle color variations and new structural features. Voyager 1 took the pictures on Oct. 13, 1980, while 40 million kilometers (25 million miles) from the planet. They were combined and enhanced in the Image Processing Lab at Jet Propulsion Laboratory to make this false-color picture. Although colors are false (a product of the computerenhancement process), color variations are real. Satellite Mimas is at bottom edge of photo; bright spot at right edge is an artifact of processing. Portions of four of Saturn's rings can be seen: Small arc-shaped feature at lower right is part of the F-ring, discovered by Pioneer 11 during its Saturn encounter in 1979. Next ring inward is the A-ring, split by the dark Enke Division. Dark region between A-ring and B-ring is Cassini Division, filled with material discovered by Voyager 1. Considerable variations in distribution and brightness of material can be seen in the B-ring. Innermost ring visible here is the C-ring, which also shows variations in distribution and brightness of material. Color variations can be seen in the planet itself.

(Three black dots in image are reseau marks, artifacts of Voyager camera system.)



# MANNED SPACECRAFT CENTER OFFICIAL PHOTOGRAPH

7 JUNE 66

S-66-38021

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS/

COMMAND PILOT -- Thomas Stafford, command pilot of the National Aeronautics and Space Administration's Gemini IX spacecraft, inside the cockpit during the three day mission in space. This photograph was taken by Eugene Cernan, pilot.



CHROMICLE FILESS

JUN 8 1966

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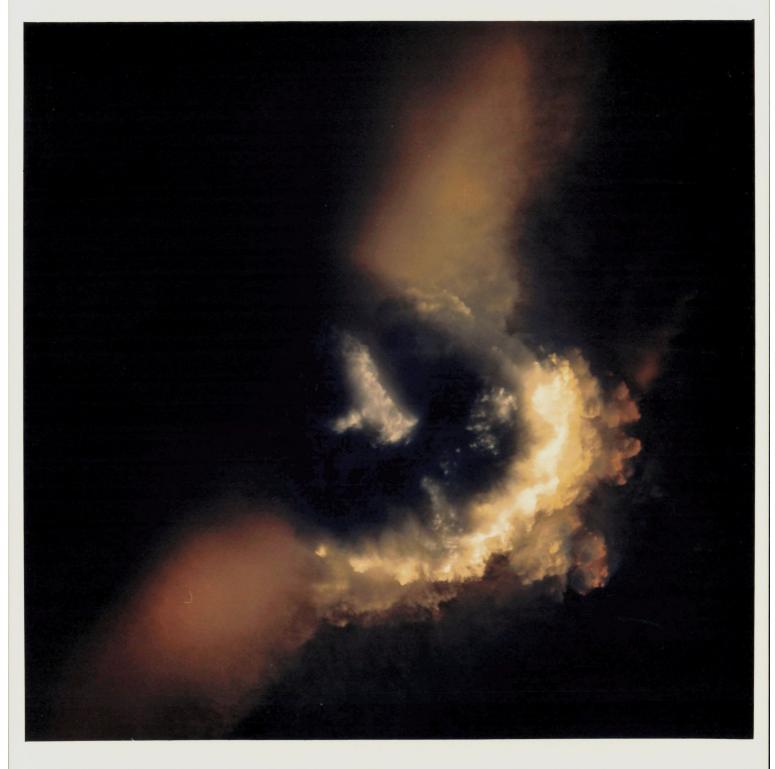


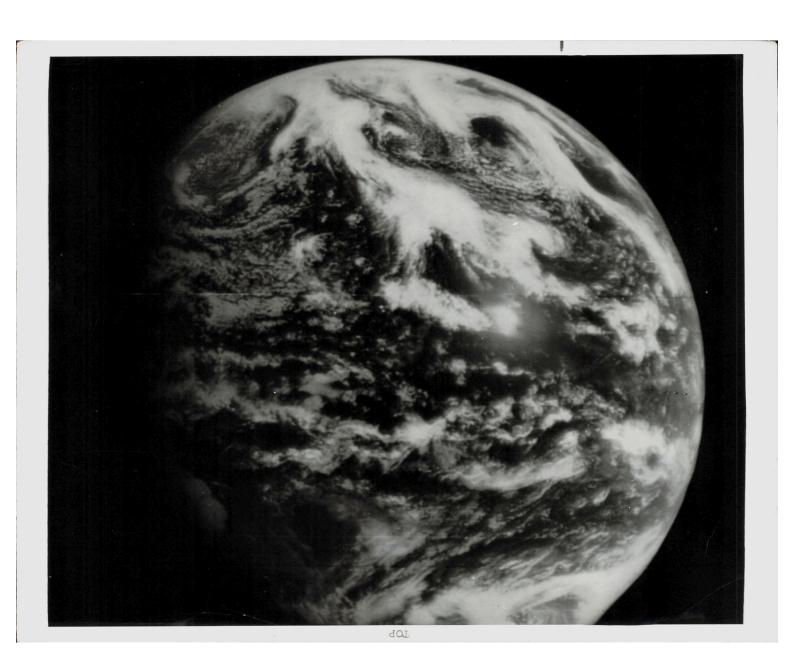
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, S. W., WASHINGTON, D. C. 20546

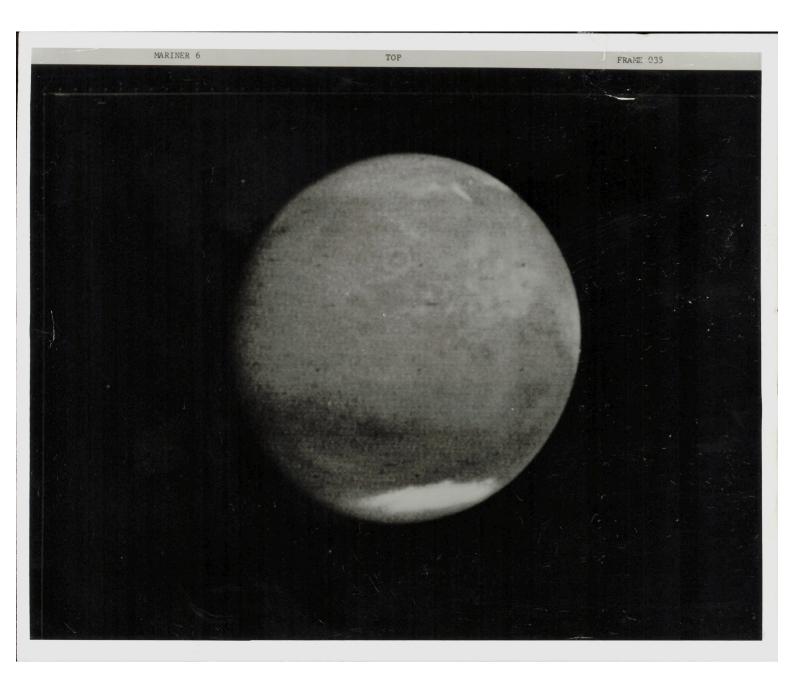
FOR RELEASE: December 20, 1966

PHOTO NO.: 66-H-1635E

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CLOUDY WEATHER. From 22,300 miles up, here is the way the cloud pattern over the earth looked at 5:44 p.m. Dec 13. The photo was made by the National Aeronautics and Space Administration's Applications Technology Satellite (ATS-1), a highly versatile satellite designed to advance the fields of spacecraft communications, meteorology and control technology. ATS-I also carried scientific experiments to measure the orbital environment of the satellite.

JAN 19 1967





### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

FOR RELEASE: December 25, 1969

PHOTO NO. 69-H-1287

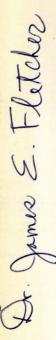
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DEC 24 1969

"RED" PLANET -- 1969 as also the year for Mars. Shown here is the "red" planet as photographed on July 30, 1969 by the MASA spacecraft Mariner 6. This photo was taken from a third of a million miles away as the Mariner spacecraft made its far encounter of Mars. This photo was received by a 210-foot "dish" antenna at NASA's Goldstone, Calif., tracking station.







### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D. C. 20546

FOR RELEASE: PHOTO NO.

May 19, 1971

71-H-791

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NEW NASA ADMINISTRATOR: Dr. James E. Fletcher was sworn into office recently by District of Columbia Superior Court Judge James A. Belson as President Nixon and Mrs. Fletcher watch. The swearing in took place in the President's office.

PHOTO CREDIT -- NASA or National Aeronautics and Space Administration





#### MANNED SPACECRAFT CENTER

## HOUSTON, TEXAS OFFICIAL PHOTOGRAPH

COLOR

20 OCT 1968

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

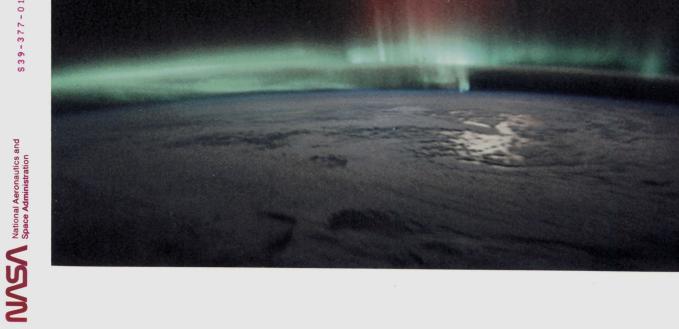
APOLLO 7 ON-BOARD PHOTOGRAPHY----Astronaut Donn F. Eisele, Apollo 7 command module pilot, smiles through a heavy growth of beard as he is photographed during a momentary pause on the ninth day of the Apollo 7 mission.

D'Se

7770

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## Southern Lights

## AQUISTON CHRONICLE LIBRARY

#### SAT MAY 1 8 1991

NASA astronauts captured this view of the Aurora Australis, or southern lights, from the shuttle Discovery during their eight-day flight earlier this month. At left is Discovery's open payload bay and the exhaust glow of its maneuvering engines. A curtain of light, the aurora on the right extends about 75 miles into the atmosphere.





# MANNED SPACECRAFT CENTER OFFICIAL PHOTOGRAPH

B&W

29 AUG 65

S-65-44216

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

GEMINI V COMPLETED - - The three Mission Control Center flight directors light up a victory cigar after learning that Astronauts L. Gordon Cooper Jr. and Charles Conrad Jr. had been recovered in the western Atlantic to successfully conclude the eight-day Gemini V space flight. Left to right, are Christopher C. Kraft Jr., John D. Hodge, and Eugene F. Kranz.

#### PHOTO CREDIT — NASA OR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, S. W., WASHINGTON, D. C. 20546

FOR RELEASE: PHOTO NO,: 65-H-2012

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SOLAR FLARES, erupting as far as 500,000 miles into space, are studied by National Aeronautics and Space Administration satellites carrying equipment developed by universities. Universities conduct about 70 percent of NASA's astronomy research through federal grants and contracts.





#### C (With Article No. 2)

The M-2, a motorless and wingless aircraft, is shown in test after being dropped by its mother ship, a B-52. The M-2 may eventually replace space capsules now being used to return astronauts to earth.





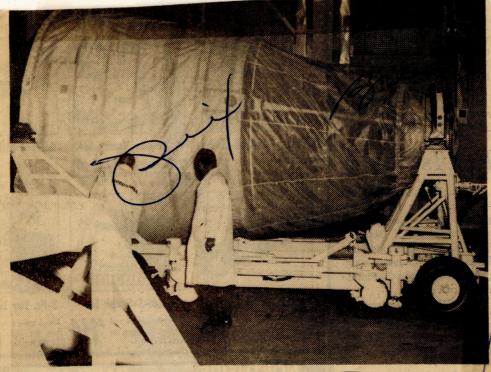
Flynn NASA - PHOTO 100MSC64C-4547 11-13-64 CKMTA, MASA/CONST. CKAFS Overall serial view of "Missile Row", looking South. UNCLASSIFIED



Uncl

104 KSC 64-17928

Unmanned Gemini Spacecraft #2 arrives in Pyrotechnic Bldg. at MILA for NASA: GEMINI checkout



Spacebound

A two-man Gemini spacecraft has ar-

rived at Cape Kennedy, where it is sched-uled for unmanned launch in November. The next Gemini spacecraft, due for launch sometime before April, will be the nation's first manned Gemini flight.

SEP 24 1964

NASA B-60-794 138156 NATIONAL AERCHAUTICS AND

Inside the capsule. All switches are important but the dark panel at the top in the middle of the picture is the one you look at most. They give the pitch, yaw and roll indications. The white button at the top left is the abort button or what the astronauts call the "chicken switch."

National Aeronautics & Space
Administration Photograph

NATIONAL AERCHAUTICS AND

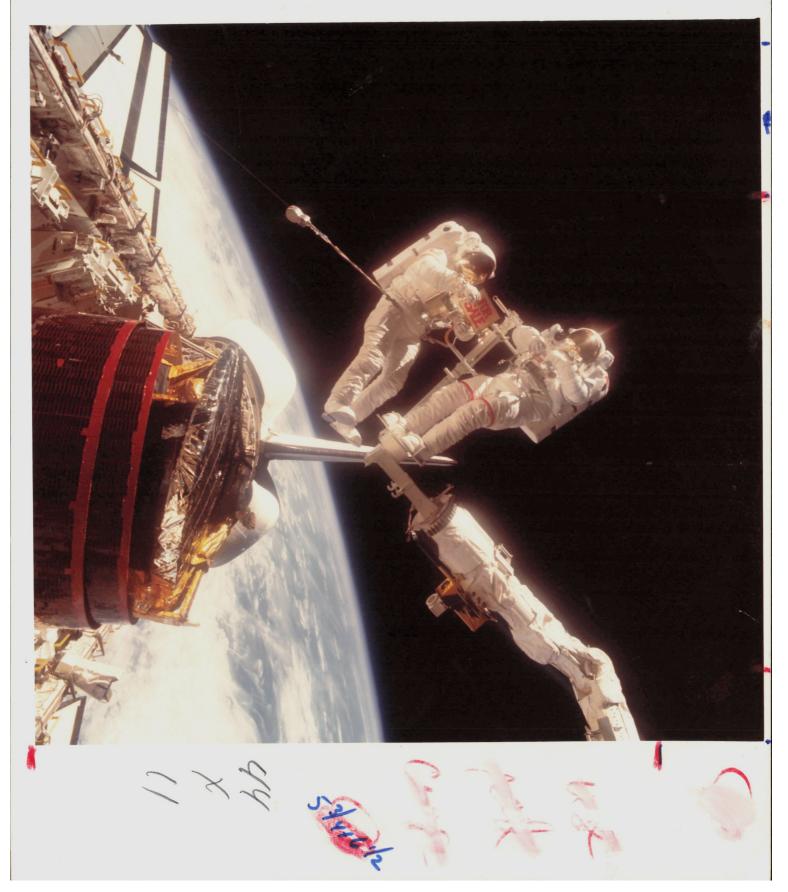
Inside the capsule. All switches are important but the dark panel at the top in the middle of the picture is the one you look at most. They give the pitch, yaw and roll indications. The white button at the top left is the abort button or what the astronauts call the "chicken switch."

National Aeronautics & Space
Administration Photograph



S19-39-063

Lyndon B. Johnson Space Center Houston. Texas 77058







#### National Aeronautics and Space Administration

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COLOR

KJVE'4BER 14, 1984

319-39-063

JOHNSON SPACE CENTER, HOUSTON, TEXAS

51-A ONBOARD SCENE---70mm frame of Westar VI post-retrieval activity. Astronaut Dale A. Gardner, left, holds a For Sale sign, making light reference to the status of the re-captured communications spacecraft, which has been stranded since its inital deployment. Astronaut Joseph P. Allen IV stands on the mobile foot restraint (MFR), which in tandem with the RMS arm, controlled by Dr. Anna L. Fisher inside Discovery's cabin, served as a cherry-picker for capture efforts. Westar VI.









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#### OCLOR

1 DECEMBER 1985

61-5-102-022

JOINSON SPACE CENTER, HOUSTON, TEXAS

STS 61-D CHECARD SCRIE OF EVA --- Astronaut Jerry L. Ross, anchored to the foot restraint on the remote manipulator system (PPS), holds onto the tower-like Assembly Concept for Construction of Erectable Space Structures (ACCESS) device, as the Atlantis flies over white clouds and blue ocean waters. The frame was exposed with a negative-equipped camera held by Astronaut Sherwood C. Spring, who was also on the EVA-task.

PE-25



## Space Station-Russia



#### National Aeronautics and Space Administration

Houston, Texas 77058

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COLOR

29 JUNE 1995

STS071-744-030

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-71 VIEW OF MIR --- Russia's Mir Space Station is backdropped against blue and white Earth near its horizon, as photographed from the approaching Space Shuttle Atlantis on June 29, 1995. Five NASA astronauts and two cosmonauts were onboard Atlantis as it approached the Mir, which housed the three-member Mir-18 crew.

American astronauts photographed the Russian space station, Mir, against the blue and white Earth in June 1995

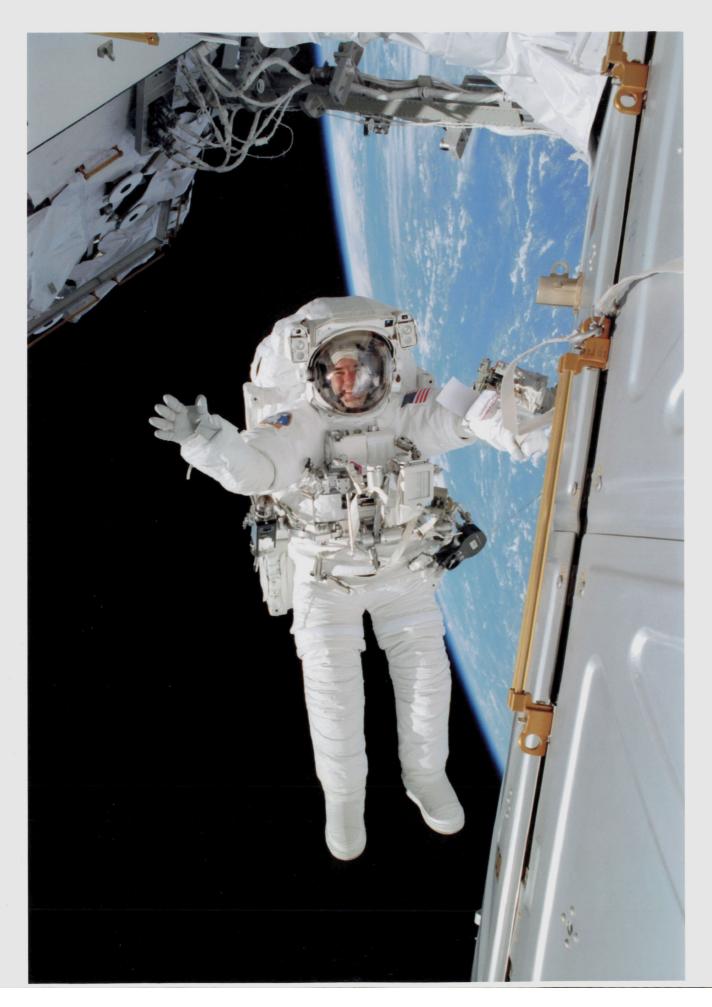
SUN JUN 8 1997

The astronauts have plenty to say about their missions, but little about themselves.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration.







Space Station

STS110-336-015 (14 April 2002) --- Astronaut Rex J. Walheim, STS-110 mission specialist, translates along the Destiny laboratory on the International Space Station (ISS) during the STS-110 mission. The space walk was the mission's second and lasted 6 hours and 20 minutes.

der No-37682002 im<del>9</del>003

MSA 9/38/2882





#### National Aeronautics and Space Administration

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COLUR

APRIL 1988

5-28-34323

JOHNSON SPACE CLATER, HOUSTON, TEXAS

SPACE CENTER HOUSTON --- An artist's concept of the front entrance to the new Space Center Houston, designed by Malt Disney Imagineering, and scheduled for completion on the present Johnson Space Center grounds in late 1900. Primary access for visitors will be through the existing main entrance off NASA Rd. 1. The complex will be built and operated by the Nanned Spaceflight Education Foundation. Inc., a non-profit private organization.

PS-43-2







National Aeronautics and Space Administration

John F. Kennedy Space Center Kennedy Space Center, Florida 32899 AC 407 867-7819

FOR RELEASE: July 27, 1999

PHOTO NO.: KSC-99PP-985

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KENNEDY SPACE CENTER, FLA. -- The Space Shuttle orbiter Columbia swoops out of the darkness onto runway 33 at the Shuttle Landing Facility after a successful mission of nearly five days and 1.8 million miles. Main gear touchdown was at 11:20:35 p.m. EDT on July 27. Aboard are the STS-93 crew members: Commander Eileen M. Collins, Pilot Jeffrey S. Ashby, and Mission Specialists Stephen A. Hawley (Ph.D.), Catherine G. Coleman (Ph.D.) and Michel Tognini of France, with the Centre National d'Etudes Spatiales (CNES). The mission's primary objective was to deploy the Chandra X-ray Observatory, which will allow scientists from around the world to study some of the most distant, powerful and dynamic objects in the universe. This was the 95th flight in the Space Shuttle program and the 26th for Columbia. The landing was the 19th consecutive Shuttle landing in Florida and the 12th night landing in Shuttle program history.

PHOTO CREDIT: NASA, OR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION





National Aeronautics and Space Administration

John F. Kennedy Space Center Kennedy Space Center, Florida 32899 AC 407 867-7819

FOR RELEASE: July 27, 1999

PHOTO NO.: KSC-99PP-983

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KENNEDY SPACE CENTER, FLA. -- The space Shuttle orbiter Columbia, with its drag chute deployed, touches down on runway 33 at the Shuttle Landing Facility after a successful mission of nearly five days and 1.8 million miles. Main gear touchdown was at 11:20:35 p.m. EDT on July 27. Aboard are the STS-93 crew members: Commander Eileen M. Collins, Pilot Jeffrey S. Ashby, and Mission Specialists Stephen A. Hawley (Ph.D.), Catherine G. Coleman (Ph.D.) and Michel Tognini of France, with the Centre National d'Etudes Spatiales (CNES). The mission's primary objective was to deploy the Chandra X-ray Observatory, which will allow scientists from around the world to study some of the most distant, powerful and dynamic objects in the universe. This was the 95th flight in the Space Shuttle program and the 26th for Columbia. The landing was the 19th consecutive Shuttle landing in Florida and the 12th night landing in Shuttle program history.

PHOTO CREDIT: NASA, OR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION





Space Shuttle

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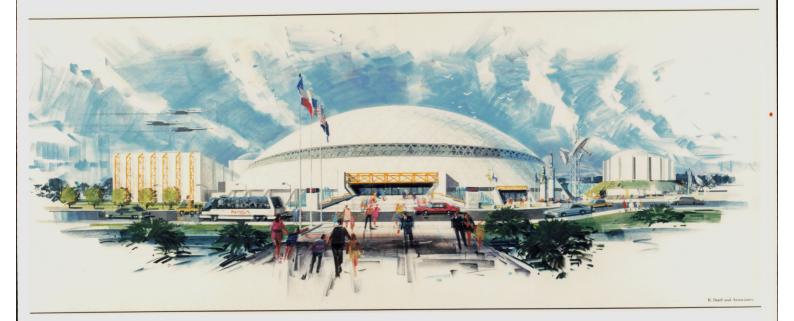
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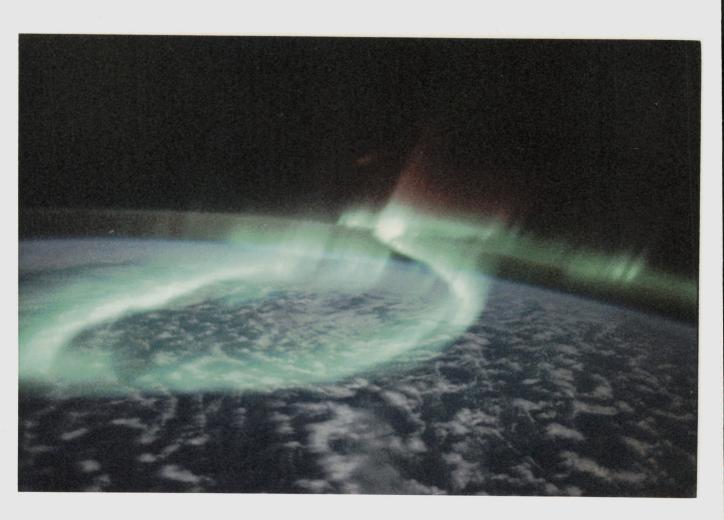




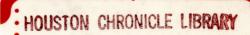
Lyndon B. Johnson Space center

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### Southern Lights

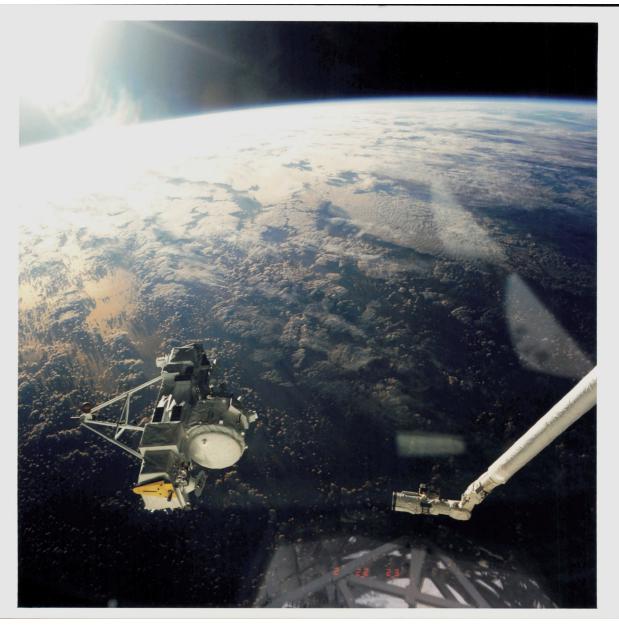


#### SAT MAY 1 8 1991

NASA astronauts captured this view of the Aurora Australis, or southern lights, from the shuttle Discovery during their eight-day flight earlier this month. At left is Discovery's open payload bay and the exhaust glow of its maneuvering engines. A curtain of light, the aurora on the right extends about 75 miles into the atmosphere.



USEL I SIN HOM



### bile: Space Shuttle

HOUSION CHRONICLE LIBRARY SAI MAY 1 8 1991









Space Shuttle

22) Typhoon Pat in the Western Pacific (511-35-075)

Typhoon Pat was photographed on the morning of August 30th at a position of approximately 25°N, 131°E. Stereoscopically-overlapping photographs taken by the STS-51I crew provide much more detail of the three-dimensional structure of tropical cyclones than can be determined form data returned from meteorological satellites.





Houston, Texas 77058

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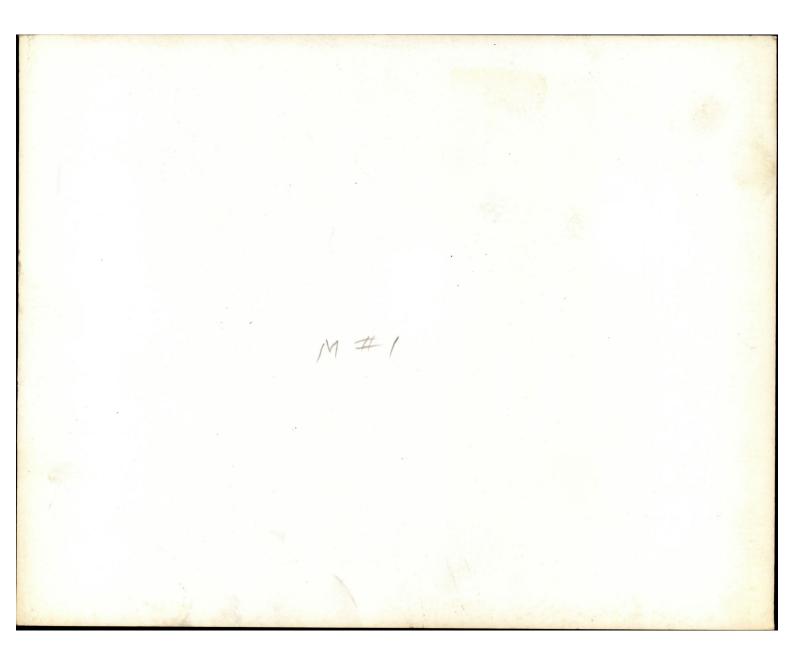
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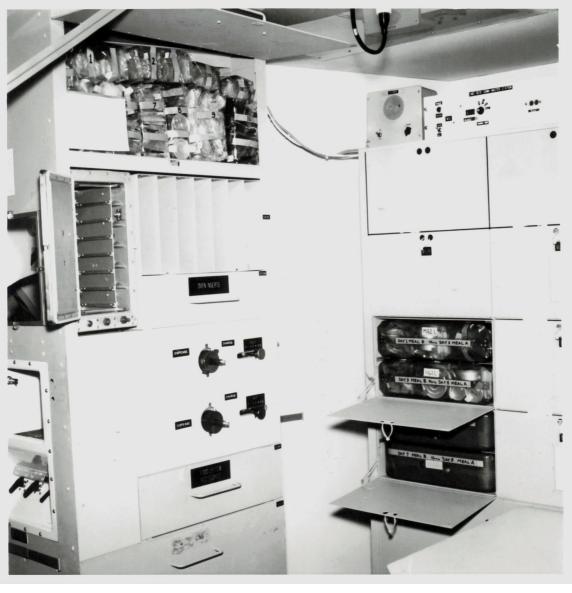
AS8-16-2588

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

APOLLO 8 EARTH VIEW --- Both sides of the Atlantic Ocean are visible in this view from Apollo 8 spacecraft. (HOLD PICTURE WITH EARTH AT BOTTOM LEFT). The large, most prominent land mass is the bulge of west Africa. The portion of Africa near the equator is dark and cloudy, but the more northerly portions are clear, showing the prominent cape at Dakar and the Senegal River in Senegal; Cap Blanc; the Adrar Plateau in Mauretania; the wide expanse of desert in Algeria and Spanish Sahara; and the far edge, the Atlas and Anti-Atlas Mountains in Morocco. Clouds cover the eastern coast of South America, southward from Surinam and Guyana to near the city of Salvador, Brazil. The view was photographed following translunar insertion.









FOR RELEASE: PHOTO NO. May 1977 80-H-171 80-HC-148

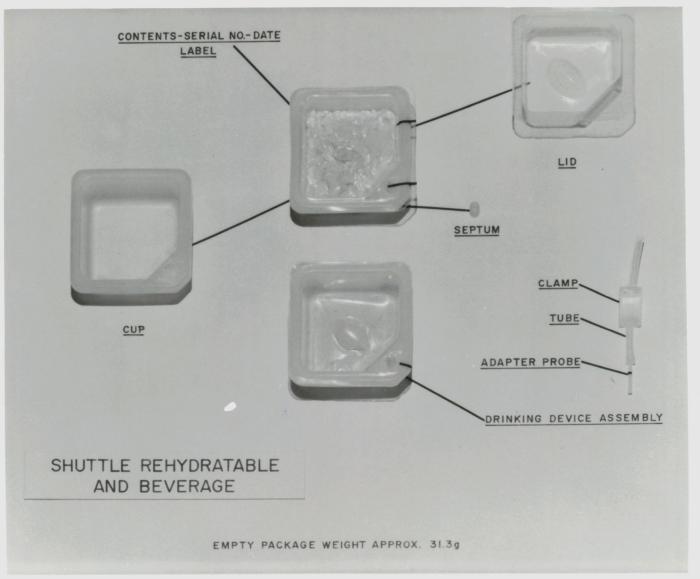
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## JOHNSON SPACE CENTER, HOUSTON, TEXAS

SPACE SHUTTLE GALLY MOCKUP --- This mockup of a galley approximates the configuration which will be used for Space Shuttle orbiters. The stored packages at top left represent four days of contingency rations for four crewmembers. The oven beneath will hold narrow trays horizontally. Note the water heater at floor level of the storage/ oven cabinet. Cabinets on the right will hold stored packages, utensils condiments and other items.







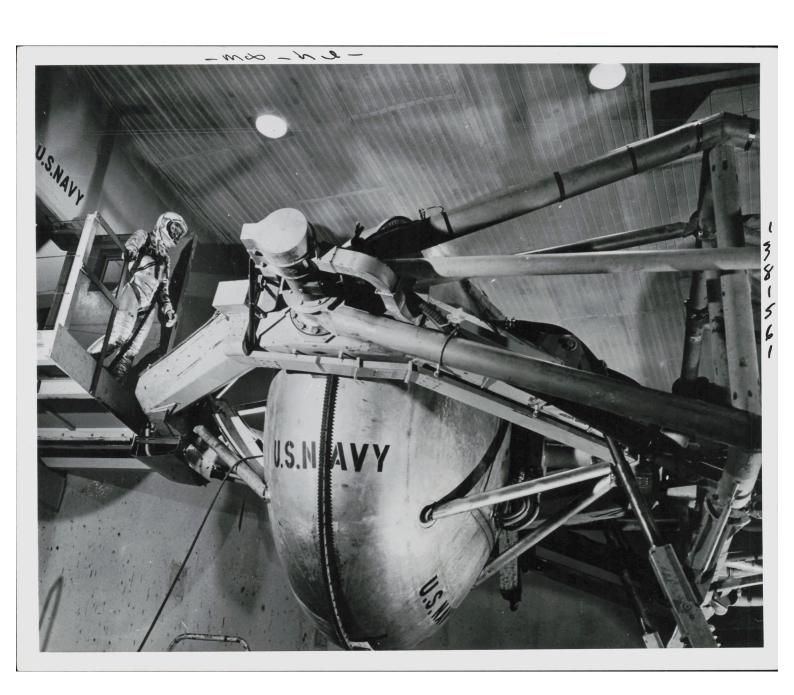
FOR RELEASE: Sept. 1979 PHOTO NO. 80-H-348

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## JOHNSON SPACE CENTER, HOUSTON, TEXAS

SHUTTLE OPERATIONAL MISSION FOOD PACKAGE --- The component parts for a new food package designed for Space Shuttle operational missions, with labels. The same package design will be used for rehydratable foods and beverages. Manufacture and assembly of this package is much more simple than previously used packages (S-77-265572, Apollo spoonbowl, and S-77-26574, Skylab beverage).



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PHOTO-GRAPH. NO. 60-M-80

Shirra enters centrifuge

NASA B-60-1586 1381549

# HATTOHAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON 25, D.C.

The Procedures Trainer at Langley Field is checked out by engineer Charles Olaskey. The engineer can recreate any known condition in space. In addition to his instruments he also has a complete replica of the control panel in the capsule.





NASA - USAF PHOTO

LOC 62-6472 8/13/62

COMTA, NASA: LOC-MARINER II.

CAPE CANAVERAL, FLORIDA - THE

MARINER II VENUS PROBE IS PUT

THROUGH TESTS BY NASA TECHNICIANS

PRIOR TO ITS LAUNCH FROM CAPE

CANAVERAL AUGUST 27, 1962. THE

NASA SPACECRAFT CAME WITHIN 21,000

MILES OF VENUS ON DECEMBER 14, 1962,

AND BEGAN SCANNING THE PLANET ON

A COMMAND SENT FROM EARTH OVER

36-MILLION MILES AWAY. THIS WAS A

NEW RECORD IN COMMUNICATIONS

TRANSMISSION FOR THE UNITED STATES.

UNCLASSIFIED

RCA INSPECTOR ACCEPTABLE





# NASA-SPACE SHUTTLE-STS Z9

exas 77058

# National Ae phautics and Space Administration

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GEDY PACE OF ARE

LAURCH Trom Laurch Pad 39B, the Space of Discove Launched on Mission STS-29. The Pad 39B and State Sta

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National Aeronautics and Space Administration

John F. Kennedy Space Center Kennedy Space Center, Florida 32899 AC 407 867-7819

FOR RELEASE: July 23, 1999

PHOTO NO.: KSC-99PP-954

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KENNEDY SPACE CENTER, FLA. -- Clouds of smoke and steam spiral away from Space Shuttle Columbia as it shoots through the night sky on its successful liftoff from Launch Pad 39-B on mission STS-93. After two unsuccessful attempts on previous nights, liftoff occurred at 12:31 a.m. EDT. STS-93 is a five-day mission primarily to release the Chandra X-ray Observatory, which will allow scientists from around the world to study some of the most distant, powerful and dynamic objects in the universe. The crew numbers five: Commander Eileen M. Collins, Pilot Jeffrey S. Ashby, and Mission Specialists Stephen A. Hawley (Ph.D.), Catherine G. Coleman (Ph.D.) and Michel Tognini of France, with the Centre National d'Etudes Spatiales (CNES). The target landing date is July 27, 1999, at 11:20 p.m. EDT.

PHOTO CREDIT: NASA, OR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION





# NASA- SPACE SHUTTLES 5TS-29

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Houston, Texas 77058

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THEOR SPACE CENTER, FLORIDA

A low-angle shot of the Space state as a second state of the Space state as a second state of the space state as a second state of the space of nley satellite (TDRS-1) into orbit. Onhoard the sacecraft were Astronauts Nichael L. Coats, reander, John E. Blaha, pilot; and James F. Duchli. ers P Jacian and Robert C. Springer, all ression shirralists.

pg.44





COLOR

4 MAY 1989

S30-71-070

JOHNSON SPACE CENTER, HOUSTON, TEXAS

STS-30 ONBOARD SCENE --- This scene is one of two released by NASA showing the process of solar array panel deployment on the Magellan spacecraft. Though partially blended into the backdrop of the blackness of space, it appears the two panels are fully extended in this frame. The spacecraft had earlier been released by the STS-30 crewmembers to begin its long journey to the planet Venus for an extensive radar mapping mission. The frame was photographed through Atlantis' aft flight deck windows with a handheld 70mm camera. The complementary photograph is \$30-71-063.

# NEAR FULL EARTH





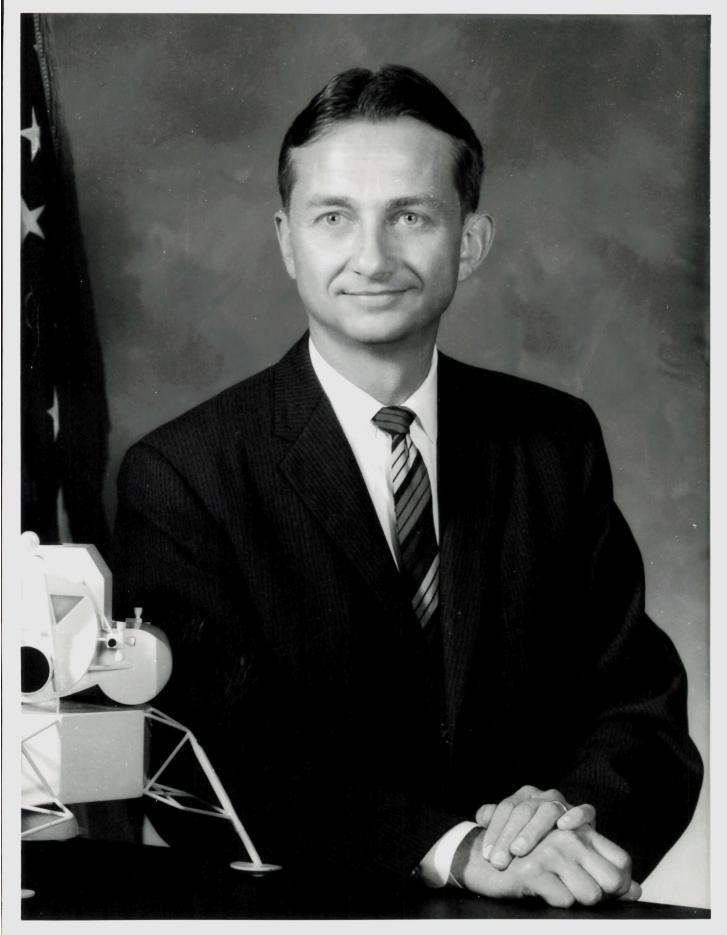
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, S. W., WASHINGTON, D. C. 20546

FOR RELEASE: December 29, 1967 PHOTO NO. 67-H-1432

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LUNAR ORBITER PROTO: Circling the moon, Lunar Orbiter V took its photograph of the earth from a distance of 214,806 miles. NASA's Lunar Orbiter program, completed this year, was one of the space agency's most successful.







# MANNED SPACECRAFT CENTER OFFICIAL PHOTOGRAPH

OCT 65

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

OWEN K. GARRIOTT

Scientist-Astronaut (Physicist)

Born: November 22, 1930 Birthplace: Enid, Oklahoma

## PHOTO CREDIT - NASA OR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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PROJECT MERCURY ASTRONAUT

WINGIL I. CRICEGI

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M. SCOTT CARPENTER

PROJECT MERCURY ASTRONAUT



## PROJECT MERCURY ASTRONAUT

ALAN B. SHEPARD, JR.

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#### PROJECT MERCURY ASTRONAUT

JOHN H. GLENN, JR.

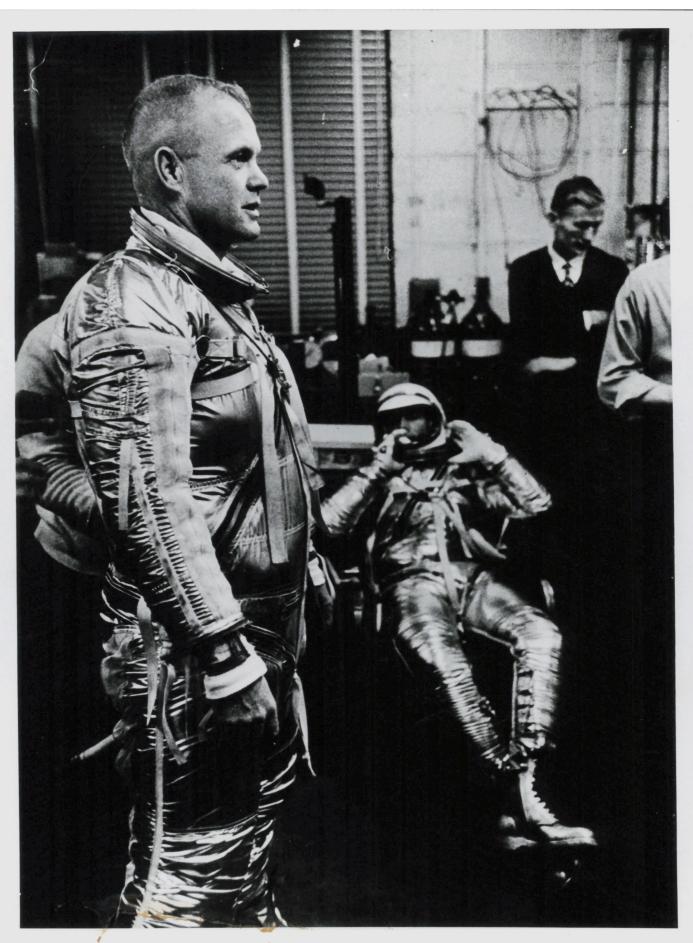
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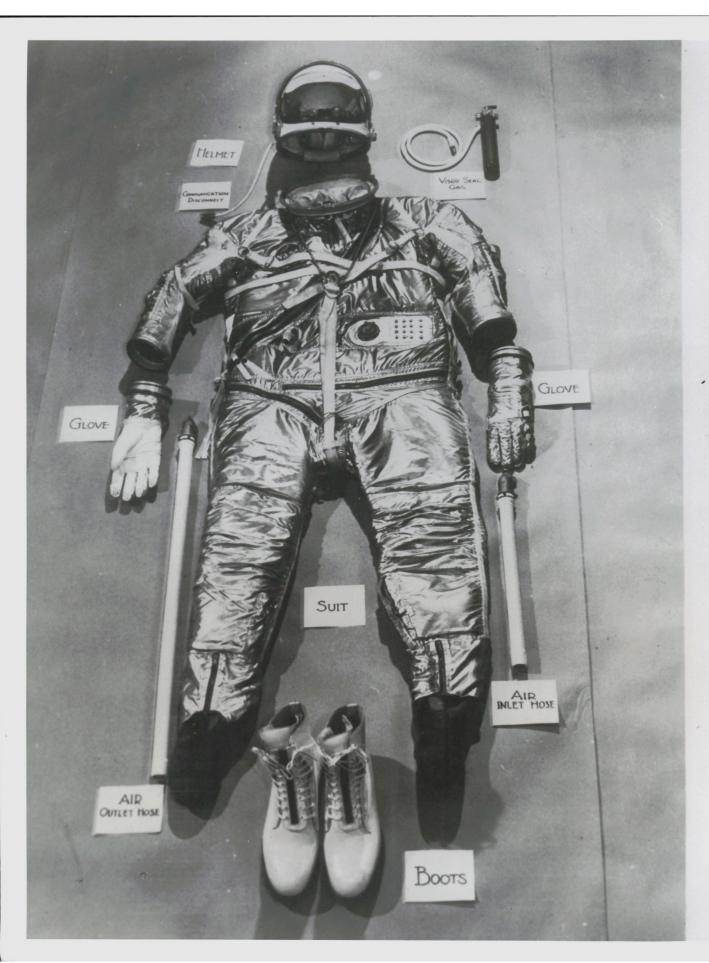
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WALTER M. SCHIRRA

PROJECT MERCURY ASTRONAUT



JOHN GLENN, TR. - 5
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## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PHOTOGRAPH

FOR IMMEDIATE RELEASE

NASA PHOTO NO. M-251

MERCURY Astronaut Suit with associated equipment.

B-60-32



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PROTOGRAPH 1520 H STREET, N. W. WASHINGTON 25, D. C.

FOR RELEASE

April 9, 1959

PHOTO NO.

MASA

Malcolm S. Carpenter, on of the seven men chosen for the Project Mercury astronous program, a given a stress check on a treadmill at the Wright Aid Development Center, Dayton, Ohio. This is a measure of physical fitness. Attendents are Dr. Edward B. Weiss, Jr. and Sirman see git and Anton P. Engbretsen. (2a)

Please credit NASA



medeeln Scott Caypen Fir

**NASA** G-60-2743

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DONALD K. SLAYTON

PROJECT MERCURY ASTRONAUT





The autograph on the reverse side of this card is a facsimile. I truly regret that it is necessary to send facsimile autographs. The volume of requests has made this necessary so that we can best use our time for our important work on hand.

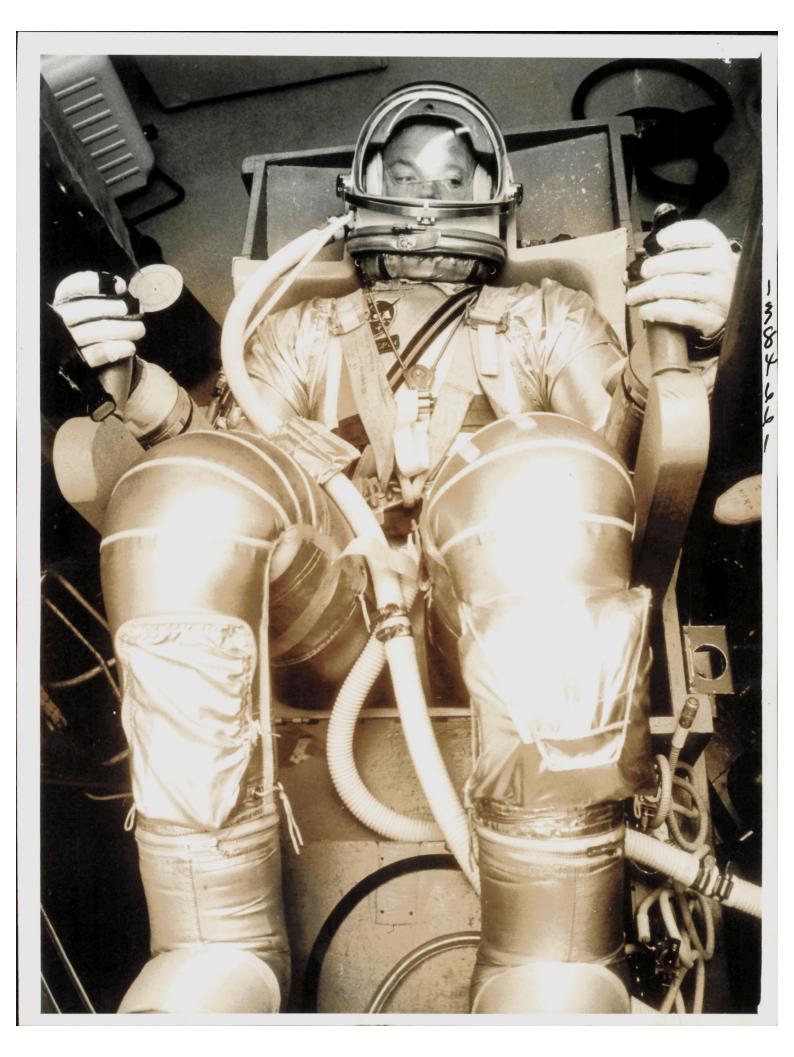
Sincerely,

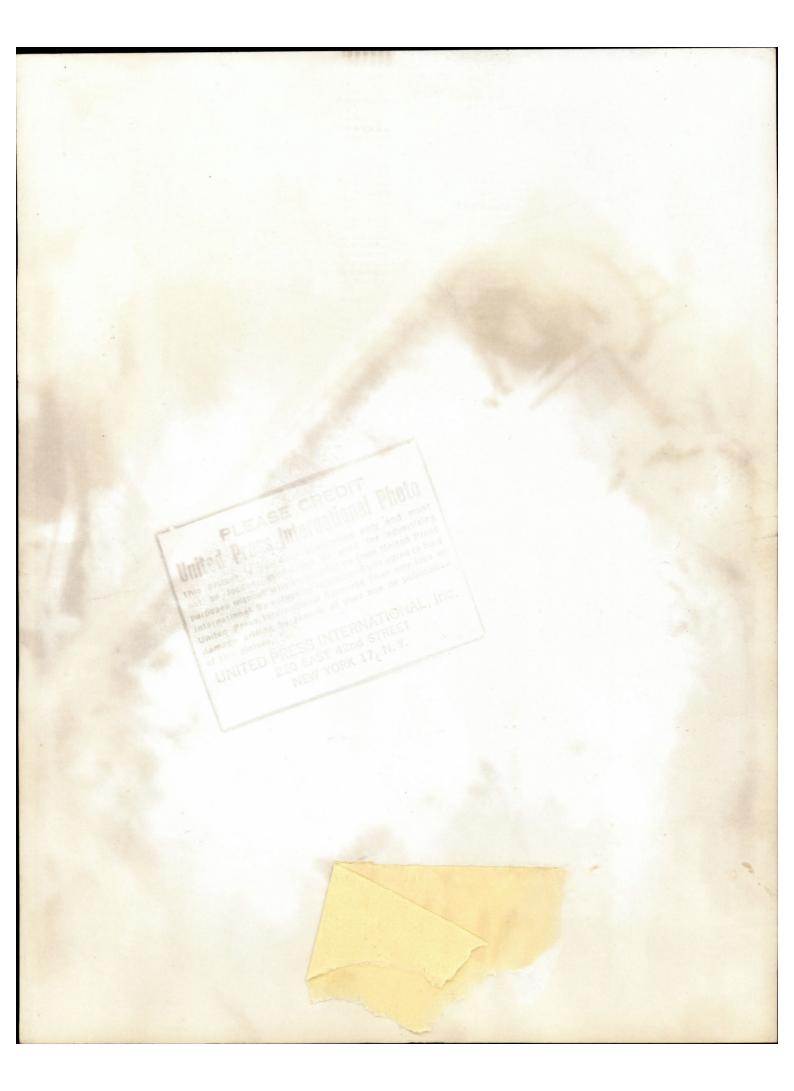
John H. Glenn, Jr. Lt Col USMC Mercury Astronaut

The autograph on the reverse side of this card is a facsimile. I truly regret that it is necessary to send facsimile autographs. The volume of requests has made this necessary so that we can best use our time for the important work on hand.

Sincerely,

John H. Glenn, Jr. Lt Col USMC Mercury Astronaut









FOR RELEASE:

July 2, 1971

PHOTO NO.

71-H-1059

71-HC-851

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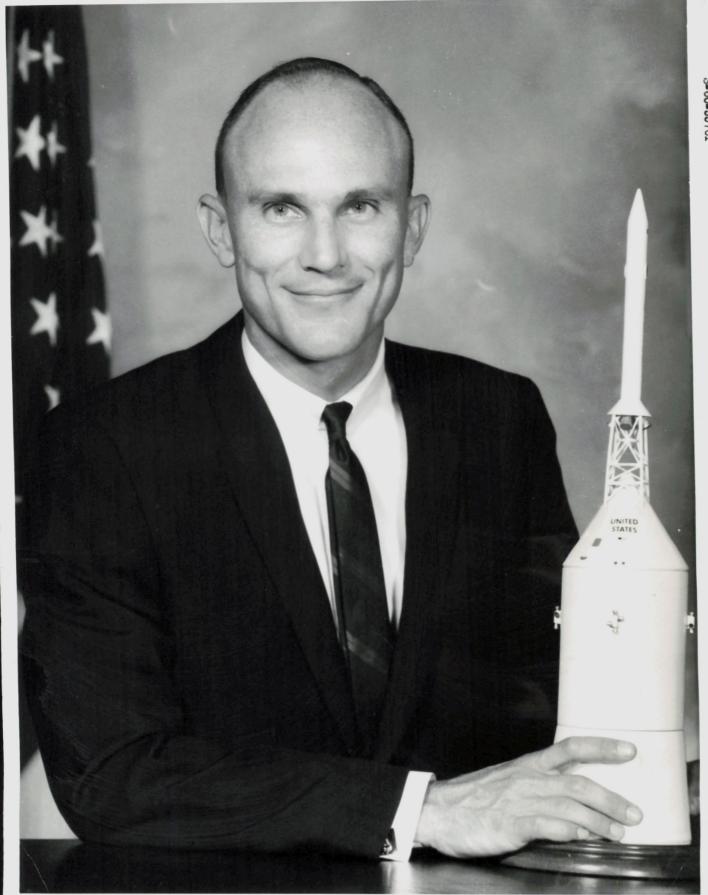
KENNEDY SPACE CENTER, FLA. -- Apollo 15 Lunar Module Pilot James B. Irwin will be making his first space flight when he is launched to the Moon with Astronauts David R. Scott and Alfred M. Worden. Irwin and Scott will conduct three traverses of the Moon's Hadley-Apennine region while Worden maintains the command module in lunar orbit and conducts experiments. They will be launched to the Moon no earlier than July 26, 1971.

11/8

IRwin, James 13.

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## MANNED SPACECRAFT CENTER OFFICIAL PHOTOGRAPH

COLOR (PORTRAIT)

MAY 1966

S-66-33761

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

ASTRONAUT THOMAS K. MATTINGLY

### THOMAS MATTINGLY APR 1 3 1970

HOUSTON - (UPI) - A bitterly disappointed Thomas K. Mattingly, grounded from Apollo 13 by the German measles, watched on television yesterday as the flight he trained nine months for

went up with a substitute in his place. APR 13 1970
"Sorry to see you here, Ken," said Milton Windler, the flight director, as Matingly 34 a backeler was ingly, 34, a bachelor, wan-dered into Mission Control to watch the liftoff of America's third moon-landing mission.

Mattingly had trained to be command-module pilot. He lost his place to John L. Swigert Jr., the day before plastoff because he had been exposed to the German measles and medical tests showed he had no immunity.

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# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Washington 25. D. C.

FOR IMMEDIATE RELEASE

NASA PHOTO NO. 60-M-55

Astronaut in MASTIF Trainer (View-up Vertical)